**Evidence Table 1a. Study descriptions for vaginal delivery, maternal and infant outcomes - good or fair quality studies**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of Study<br>Research Objective | Population |
|---|---|---|---|
| ***Randomized Controlled Trials*** | | | |
| Lelaidier 1994[35]<br><br>FAIR | France | Unclear<br><br>Study duration 6 months, manuscript received May 1993<br><br>To evaluate the tolerance and efficacy of mifepristone in women with prior CD with an unfavorable cervix. | Women with one prior delivery, by CD. Bishop's scores </= 3<br><br>I/A: 16<br>SL: 16<br><br>Age: Mean age 33(m), 32(pl)<br>Parity: 1<br>Race: Not reported<br>Insurance:NR |
| Rayburn 1999[32]<br><br>FAIR | USA | To compare effectiveness of PGE2 vaginal to expectant management | 1 prior low-transverse CD, gestational age >/=38 wks, accurate gestational dating by exam or ultrasound < 20 wks, no labor, no fetal growth abnormalities, reassuring FHR tracings, and unfavorable cervix (Bishop score </= 6)<br><br>IA: 143<br>SL: 151<br><br>Age: Mean age 27 (both groups)<br>Parity: NS<br>Race: White: 15% (PGE), 18% (EM)<br>Black: 34% (PGE), 32% (EM)<br>Hispanic: 47% (PGE), 48% (EM)<br>Asian: 2% (PGE), 2% (EM)<br>Other: 1% (PGE), 0% (EM)<br>Insurance: NS |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1a. Study descriptions for vaginal delivery, maternal and infant outcomes - good or fair quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Intervention<br>Control<br>Other Procedures | Reasons for induction |
|---|---|---|---|
| Lelaidier 1994[35]<br><br>FAIR | • Unknown scar<br>• Nonvertex presentation<br>• Multiple pregnancies<br>• Premature rupture of membranes<br>• Previously delivered vaginally. | *Intervention:* Mifepristone 200mg on days one and two, monitored on days 3 and 4.<br><br>*Control:* Placebo on days one and two, monitored on days 3 and 4.<br><br>*Other Procedures, Interventions:* If no labor by day 4: induction with prostaglandins if Bishops score </=3, ARM+oxytocin if >/=4 | 66% Prolonged pregnancy<br>22% pre-eclampsia<br>0.1% IUGR |
| Rayburn 1999[32]<br><br>FAIR | • Medical complications (insulin-dependent DM, pregnancy-induced HTN)<br>• Grand multiparity<br>• Hypertonic uterine patterns<br>• Nonvertex presentation<br>• Multifetal gestation<br>• Ruptured membranes<br>• Known hypersensitivity to prostaglandins<br>• Placenta previa<br>• Unexplained vaginal bleeding<br>• Active genital herpes infection<br>• Suspected cephalopelvic disproportion. | *Intervention:* Prostaglandin E2 gel (Prepidil(r)) 0.5mg into cervical canal; patients supine x 15 min after, FHM x 2 hrs, repeated at weekly visits.<br><br>*Control:* Expectant management (EM).<br><br>*Other Procedures, Interventions:* None, patients to return for exams in qwks 40, 41 if no labor. | NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1a. Study descriptions for vaginal delivery, maternal and infant outcomes - good or fair quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of Study<br>Research Objective | Population |
|---|---|---|---|
| ***Population-Based Database*** | | | |
| McMahon 1996[5]<br><br>GOOD | Canada<br>Nova Scotia | 1986-1992<br><br>To determine the morbidity and mortality of TOL vs. elective repeat CS | Database Description:<br>Nova Scotia Perinatal Database covering more than 80% of pregnant women in the province<br><br>Singleton pregnancies with one prior low transverse CD<br><br>SL/IA- 3249<br>ERCD- 2889<br><br>*Age:* <19 - >35<br><br>*Parity:* SL/IA- 1 = 2468 (76%)<br>2= 547 (16.8%)<br>> = 234 (7.2%) |
| Smith 2002[6]<br><br>FAIR | Scotland | 1992-1997<br><br>To determine the risk of intrapartum still birth or neonatal death from TOL versus planned repeat CD in women with prior CD | Database Description: All patients discharged from maternity hospitals in Scotland<br><br>Singleton pregnancies between 37-42 weeks, cephalic, without lethal congenital anomalies<br><br>SL/IA- 15515<br>Repeat CD- 9014<br><br>Age: SL/IA- median 30 (interquartile range 26-33)<br>ERCD- median 31 (interquartile range 27-34)<br>Parity: NR<br>Race: NR<br>Insurance: NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1a. Study descriptions for vaginal delivery, maternal and infant outcomes - good or fair quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Intervention<br>Control<br>Other Procedures | Reasons for induction |
|---|---|---|---|
| McMahon 1996[5]<br><br>GOOD | • Non-vertex presentation (119)<br>• Multiple gestation (118)<br>• Vertical or T-incision (37)<br>• Previa (36)<br>• HSV (7)<br>• Prior uterine surgery (2) | NA | NR |
| Smith 2002[6]<br><br>FAIR | • Multiple gestation<br>• Noncephalic outside 37-42 weeks GA<br>• Perinatal deaths or stillbirths due to congenital anomalies | NA | NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1a. Study descriptions for vaginal delivery, maternal and infant outcomes - good or fair quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of Study<br>Research Objective | Population |
|---|---|---|---|
| ***Prospective Cohort*** | | | |
| Blanchette 2001[52]<br><br>FAIR | USA | 1996-99<br><br>To report the results of a 4 year attempt to aggressively promote a TOL. | All patient with prior CD offered TOL, unless medically contraindicated<br><br>IA- 16<br>SL- 9<br><br>Age: NR<br>Parity: NR<br>Race: NR<br>Insurance: NR |
| Blanco 1992[34]<br><br>FAIR | USA | 1987-88<br><br>To determine the safety and efficacy of PGE2 gel for induction of labor or ripening the cervix in women with a prior low-transverse CD for a TOL. | Prior lower segment CD attempting TOL, with a medical indication for delivery, an unfavorable cervix and a singleton, vertex fetus with a reactive nonstress test<br><br>IA- 25 (I)<br>of these 5 (I+a)<br>SL- 56<br>of these 9 (a)<br><br>Age: mean 24.7 (PGE2), 22.4 (oxy)<br>Parity: mean 1.4 (PGE2), 1.3 (oxy)<br>Race: NR<br>Insurance: NR |
| Cowan 1994[25]<br><br>FAIR | USA | 1990-91<br><br>To examine factors that may affect the success rate for TOL, as well as those for uterine rupture | Any woman with prior CD choosing TOL<br><br>I- 67<br>A-167<br>SL-359<br><br>Age: NR<br>Parity: NR<br>Race: NR<br>Insurance: NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1a. Study descriptions for vaginal delivery, maternal and infant outcomes - good or fair quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Intervention<br>Control<br>Other Procedures | Reasons for induction |
|---|---|---|---|
| Blanchette 2001[52]<br><br>FAIR | Not defined | *Intervention:* Misoprostol and/or oxytocin.<br><br>*Control:* SL<br><br>*Other procedures, interventions:* None stated | NR |
| Blanco 1992[34]<br><br>FAIR | • Asthma<br>• OB indication for an immediate delivery<br>• Active labor<br>• Favorable cervix | *Intervention:* 1mg PGE2 gel (pharmacy compounded) intracervically with repeat after 4 hrs if active labor not established<br><br>*Control:* SL<br><br>*Other procedures, interventions:* FHR and uterine contractions monitored. | NR |
| Cowan 1994[25]<br><br>FAIR | • Known vertical scar<br>• Breech presentation<br>• Multiple gestation | *Intervention:* NA<br><br>*Control:* NA<br><br>*Other procedures, interventions:* Continuous EFM, Oxytocin used for induction or augmentation of labor | NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1a. Study descriptions for vaginal delivery, maternal and infant outcomes - good or fair quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of Study<br>Research Objective | Population |
|---|---|---|---|
| Duff<br>1988[26]<br><br>GOOD | USA<br>Madigan Army Medical Center | 1984-1987<br><br>To evaluate the outcome of TOL in women with a history of a single low transverse CD. | All women with 1 prior low transverse cesarean<br><br>SL/IA- 227<br>(281 eligible; 54 excluded for vertical incision (10), unknown incision (5), footling breech (3), medical complications of pregnancy and unfavorable cervix (18), EFW>4500g (18))<br>ERCD- NR<br><br>Age: NR<br>Parity: NR<br>Race: NR<br>Insurance: Armed services medical coverage |
| Flamm<br>1997[33]<br><br>FAIR | USA<br>Southern California, Kaiser | 1990-92<br><br>To evaluate the use of intravaginal PGE2 in patients with prior CD. | All pregnant women with prior CD<br><br>IA- 453<br>SL-4569<br><br>Age: NR<br>Parity: NR<br>Race: NR<br>Insurance: NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1a. Study descriptions for vaginal delivery, maternal and infant outcomes - good or fair quality studies (continued)**

| Author Year Quality | Exclusion criteria | Intervention Control Other Procedures | Reasons for induction |
|---|---|---|---|
| Duff 1988[26]<br><br>GOOD | • Indication for repeat cesarean<br>• EFW >4500gm<br>• Unknown scar. | *Intervention:* NA<br><br>*Control:* NA<br><br>*Other procedures, interventions:* Oxytocin used for induction or augmentation if indicated. Uterine exploration after VD for defect. | NR |
| Flamm 1997[33]<br><br>FAIR | • Known classical or low vertical incision<br>• Breech presentation<br>• Twin gestation. | *Intervention:* PGE2 gel (pharmacy compounded) 2-4 mg intravaginally q 4hrs (max dose not stated).<br><br>*Control:* SL<br><br>*Other procedures, interventions:* Electronic FHM in all patients. Oxytocin induction or augmentation if indicated. | NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1a. Study descriptions for vaginal delivery, maternal and infant outcomes - good or fair quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of Study<br>Research Objective | Population |
|---|---|---|---|
| Flamm 1994[20]<br><br>FAIR | USA<br>Southern California, Kaiser | 1990<br><br>To evaluate the outcomes of TOL and ERCD. | All women with prior CD delivery (unknown scar and more than 1 prior CD allowed)<br><br>SL/IA- 5022<br>ERCD- 2207<br><br>Age: SL/IA: 294 + 5.1<br>CD: 30.5 + 5.2<br>Parity: NR<br>Race (overall):<br>White = 208,577 (38.9%)<br>Hispanic = 226,526 (42.2%)<br>Black = 36,522 (6.8%)<br>Other+Unknown = 65,160 (12.1%)<br>Insurance:<br>Government 261,297 (48.7%)<br>HMO 160,130 (28.9%)<br>PPO 64,669 (12.1%)<br>Private 19,071 (3.6%)<br>Self-pay 19,069 (3.6%)<br>BCBS 11,328 (2.1%)<br>Misc 1221 (0.2%) |
| Flamm 1990[22]<br><br>FAIR | Southern California, Kaiser | 1986-1988<br><br>To evaluate the probability of rare events such as uterine rupture in women with prior CD attempting TOL. | Prior CD wanting to attempt TOL.<br><br>IA- 1201<br>Repeat CD- 2756<br><br>Age: NR<br>Parity: 156 >1 prior CD<br>Race: not clear, reported by hospital system<br>Insurance: NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1a. Study descriptions for vaginal delivery, maternal and infant outcomes - good or fair quality studies (continued)**

| Author Year Quality | Exclusion criteria | Intervention Control Other Procedures | Reasons for induction |
|---|---|---|---|
| Flamm 1994[20]<br><br>FAIR | • Known prior classical or low vertical uterine incision<br>• Spontaneous abortion (491)<br>• Therapeutic abortion (79)<br>• Transfer out of Kaiser (56)<br>• Incomplete medical records (26) | *Intervention:* NA<br><br>*Control:* NA<br><br>*Other procedures, interventions:* Oxytocin used for induction/augmentation as needed. Postpartum exam of uterus at discretion of provider. | NR |
| Flamm 1990[22]<br><br>FAIR | • Know breech presentation<br>• Classical or low vertical scar<br>• Twin gestation | *Intervention:* NA<br><br>*Control:* NA<br><br>*Other procedures, interventions:* FHR monitored continuously in all patients, Oxytocin as per standard of care. | |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1a. Study descriptions for vaginal delivery, maternal and infant outcomes - good or fair quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of Study<br>Research Objective | Population |
|---|---|---|---|
| Flamm 1987[28]<br>USA<br><br>GOOD | USA<br>Southern California, Kaiser | 1984-85<br><br>To evaluate the outcome of oxytocin administration inpatients with prior CD attempting TOL. | Prior CD<br><br>IA- 485<br>SL- 1291<br><br>Age: mean age 27 (oxytocin), 28 (control)<br>Parity: NR<br>Race: NR<br>Insurance:NR |
| Martin 1983[24]<br><br>FAIR | USA<br>Universities in Mississippi and Alabama | 1981-1982<br><br>To evaluate the safety of VBAC. | One or more prior CD (includes low vertical (76))<br><br>SL/IA- 717<br>(789 eligible; 72 ineligible for study)<br>162 attempted TOL<br>ERCD- 555<br>8 desired cesarean and delivered vaginally<br><br>Age:<br>SL/IA:Successful VBAC = 22.2 + 0.9<br>Failed VBAC = 21.8 + 0.9<br>ERCD:mean = 23.3 + 0.3<br>Parity:<br>"Distributed approximately equally"<br>Race:<br>"Distributed approximately equally"<br>Insurance: NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1a. Study descriptions for vaginal delivery, maternal and infant outcomes - good or fair quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Intervention<br>Control<br>Other Procedures | Reasons for induction |
|---|---|---|---|
| Flamm 1987[28]<br>USA<br><br>GOOD | • Known breech presentation<br>• Twin gestation | *Intervention:* Oxytocin as per standard, up to max dose of 20mU/min<br><br>*Control:* Those who did not receive oxytocin<br><br>*Other procedures, interventions:* None stated | NR |
| Martin 1983[24]<br><br>FAIR | • Classical, suspected macrosomia (EFW >4000gm)<br>• Fetal malpresentation<br>• Multiple gestation | *Intervention:* NA<br><br>*Control:* NA<br><br>*Other procedures, interventions:* All uteri explored postpartum, if dehiscence noted not repaired unless >2cm diameter. Oxytocin used for augmentation. | NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1a. Study descriptions for vaginal delivery, maternal and infant outcomes - good or fair quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of Study<br>Research Objective | Population |
|---|---|---|---|
| Meehan 1989[50]<br><br>FAIR | Ireland | 1982-87<br><br>To evaluate the safety of TOL. | One prior CD without a recurring indication for CD<br><br>IA- 127 (I)<br>Oxy: 17<br>ARM: 16<br>PG: 8<br>ARM+oxy: 42<br>ARM+PG: 21<br>A+O+P:23<br>217 (a)<br>oxy: 30<br>ARM: 137<br>ARM+oxy: 50<br>SL- 162<br>ERCD- 430<br><br>Age: NR<br>Parity: NR<br>Race: NR<br>Insurance: NR |
| Meier 1982[57]<br><br>FAIR | USA<br>Kaiser<br>SanDiego | 1980<br><br>to assess the safety of having most patients with prior cesarean attempt TOL | All TOL, 1st 6 of each month with elective repeat and one prior CS<br><br>SL/IA- 207<br>ERCD- 62<br><br>Age: NR<br>Parity: NR<br>Race: NR<br>Insurance: Kaiser Permanente Health Plan |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1a. Study descriptions for vaginal delivery, maternal and infant outcomes - good or fair quality studies (continued)**

| Author Year Quality | Exclusion criteria | Intervention Control Other Procedures | Reasons for induction |
|---|---|---|---|
| Meehan 1989[50]<br><br>FAIR | Not defined | *Intervention:* NA<br><br>*Control:* NA<br><br>*Other procedures, interventions:* Continuous cardiotocography, oxytocin, AROM, prostaglandins and combinations used for induction and augmentation, uterine exploration immediately post-delivery. | NR |
| Meier 1982[57]<br><br>FAIR | • Recurrent indication for cesarean<br>• No obvious CPD | *Intervention:* NA<br><br>*Control:* NA<br><br>*Other procedures, interventions:* All monitored with IUPC and FSE, oxytocin used for augmentation and induction when indicated, more than 1 cesarean not excluded. | |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1a. Study descriptions for vaginal delivery, maternal and infant outcomes - good or fair quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of Study<br>Research Objective | Population |
|---|---|---|---|
| Phelan<br>1987[23]<br><br>FAIR | USA<br>USC | 1982-1984<br><br>To evaluate the risks of TOL. | TOL<br>1982-3 1 prior CD<br>1983-4 1-2 prior CD<br>(low vertical, unknown allowed)<br><br>SL/IA- 1796 (SL,I+A)<br>ERCD- 314<br><br>Age: NR<br>Parity: NR<br>Race: NR<br>Insurance: NR |
| Stovall<br>1987[27]<br><br>FAIR | USA | 1985-86<br><br>To determine whether the indications for TOL, use of epidural anesthesia, and use of oxytocin can be safely liberalized. | All patient with prior CD offered TOL (low-transverse or low-vertical sections), unless medically contraindicated.<br><br>IA- 133<br>SL-139<br><br>Age: NR<br>Parity: NR<br>Race: NR<br>Insurance: NR |
| ***Retrospective Cohorts*** | | | |
| Lao<br>1987[31]<br><br>FAIR | Hong Kong | 1992-1993<br><br>Report experiences with induction of labor in women with previous CS | One previous lower segment CS<br><br>SL- 529<br>IA-137 (102 (a/o), 35 (a)<br><br>Age: NR<br>Parity: NR<br>Race: NR<br>Insurance: NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1a. Study descriptions for vaginal delivery, maternal and infant outcomes - good or fair quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Intervention<br>Control<br>Other Procedures | Reasons for induction |
|---|---|---|---|
| Phelan 1987[23]<br><br>FAIR | • Classical<br>• Multiple gestation<br>• Malpresentation | *Intervention:* NA<br>*Control:* NA<br>*Other procedures, interventions:* oxytocin administered according to ACOG guidelines, epidurals allowed, uterine exploration routinely performed | NR |
| Stovall 1987[27]<br><br>FAIR | • Prior classical incision<br>• Prior low-vertical in preterm pregnancy (e.g. preterm breech)<br>• Low-transverse and low-vertical scar (T incision)<br>• Failed TOL after primary CD | *Intervention:* NA<br><br>*Control:* NA<br><br>*Other procedures, interventions:* Internal monitoring,Oxytocin for induction or augmentation mean dose 7mU/min (range 0.4 - 32) mean duration 276 min (range 45-960). | NR |
| Lao 1987[31]<br><br>FAIR | • Recurring cause of previous CS<br>• Non-cephalic presentation<br>• X-ray pelvimetry showing obstetric conjugate of <10cm and transverse diameter of <11.5cm | Bishop score 4-6: amniotomy + oxytocin<br>Bishop score <4: 3mg PGE2 tablets + amniotomy + oxytocin<br>Also, manual monitoring of contractions and fetal HR<br>Reason for Induction: 43% post-maturity<br>6% PROM<br>13% hypertension<br>23% leaking at term7% antepartum hemorrhage | NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population |
|---|---|---|---|
| ***Randomized Controlled Trials*** | | | |
| Xenakis<br>1995[175]<br><br>POOR | USA | 1993<br><br>To compare efficacy and safety of low-dose versus high-dose oxytocin augmentation | IA: 22<br>IC: 26<br><br>All nulliparous or multiparous women admitted >/= 37 wks gestation in active labor (including those with prior low transverse CD attempting TOL).<br><br>Age: mean age 24 yrs<br>Parity: NR<br>Race:<br>White: 10% (LD), 11% (HD)<br>Black: 4.5% (LD), 2.6% (HD)<br>Hispanic: 83% (LD), 86% (HD)<br>Other: 2% (LD), 1% (HD)<br>Insurance: NR |
| Wing<br>1998[176]<br><br>POOR | USA | NR<br><br>To compare the safety and efficacy of vaginally administered misoprostol with IV oxytocin for cervical ripening and labor induction in women with Prior CD | IA: 17<br>IC: 21<br><br>Requiring induction of labor for medical or OB indications with a history of one immediate prior CD without subsequent VD<br><br>Age: NR<br>Parity: NR<br>Race: NR<br>Insurance: NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Intervention<br>Control<br>Other Procedures | Reasons for Induction |
|---|---|---|---|
| ***Randomized Controlled Trials*** | | | |
| Xenakis 1995[175]<br><br>POOR | • Malpresentation<br>• Placenta previa<br>• Previous classic CD<br>• Multiple gestation | *Intervention:* Low-dose: oxytocin 1mU/min increased by 1mU/min q30min up to max 4mU/min x 2 hrs. If no adequate contractions after 2hrs, dose increased by 1mU/min every 30 min until adequate contractions.<br><br>*Control:* High dose: oxytocin 4mU/min and increased by 4mU/min every 15min until adequate contractions.<br><br>*Other Procedures, Interventions:* Protocols for labor management, criteria for diagnosis of labor abnormalities, and indications for operative delivery were the same for both groups. | Augmentation started if: arrest of dilation or descent defined as no cervical change for 2hrs after latent phase with cervix >/=4cm, or no change in station of presenting part at full dilation for >1hr. |
| Wing 1998[176]<br><br>POOR | NR | *Intervention:* Misprostol 25mcg intravaginally q6 hrs to max 4 doses.<br><br>*Control:* Oxytocin by standard protocol (doses not stated).<br><br>*Other Procedures, Interventions:* use of continuous FHR, uterine activity monitoring, and amniotomy in all patients. | NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population |
|---|---|---|---|
| Lyndon-Rochelle 2001[72]<br><br>POOR | USA<br>Washington state | 1987-1996<br><br>To examine the risk of uterine rupture associated with VBAC (spont, induced) and repeat C/S<br><br>Database Description: Retrospective. Washington state birth certificates,hospital discharge data (Comprehensive Hospital Discharge Reporting System). | Primiparous women who gave birth to singleton infants by CD and delivered a second child.<br>Age: 14-48<br>SL: n=10,789<br>IA: n=1,960 induced with PGs; 366 without PGs<br>ERCD: n=6,980<br>Parity: Overall- P2<br>Race: SL- White = 8949 (82.9%)<br>Black = 318 (2.9%)<br>Hispanic = 621 (5.8%)<br>Other = 901 (8.4%)<br>*ERCD:*<br>White = 6056 (86.8%)<br>Black = 164 (2.3%)<br>Hispanic = 281 (4.0%)<br>Other = 479 (6.9%)<br>*Insurance:*<br>SL:<br>Commercial = 5659 (52.5%)<br>Medicaid/uninsured = 2730 (25.3%)<br>Managed care = 1992 (18.5%)<br>Other = 408 (3.8%)<br>*IA:*<br>Without PG:<br>Commercial = 1081 (55.2%)<br>Medicaid/uninsured = 473 (24.7%)<br>Managed care = 384 (19.6%)<br>Other = 22 (1.1%)<br>IA: White =1999<br>Black = 318<br>*With PG:*<br>Commercial=206 (56.3%)<br>Medicaid/uninsured = 90 (24.6%)<br>Managed care = 64 (17.5%)<br>Other = 6 (1.6%)<br>*ERCD:*<br>Commercial= 3936 (56.4%)<br>Medicaid/uninsured = 1741 (24.9%)<br>Managed care = 1119 (16.0%)<br>Other = 184 (2.6%) |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Intervention<br>Control<br>Other Procedures | Reasons for Induction |
|---|---|---|---|
| Lyndon-Rochelle 2001[72]<br><br>POOR | Women who delivered before 1989 b/c "repeat cesarean no labor" was not specified in birth cert until 1989 | *Other Procedures, Interventions:* SL, induction of labor with or without prostaglandins on hospital discharge | Reasons not specified, health conditions such as diabetes, chronic hypertension, breech presentation, herpes, previa, preeclampsia reported |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population |
|---|---|---|---|
| Stone 2000[177]<br><br>POOR | Australia | 1995<br><br>To describe the population-based delivery outcomes for women giving birth in 1995 whose penultimate delivery was a cesarean<br><br>Database Description: Perinatal Morbidity Statistics maintained by Victoria Perinatal Data Collection Unit, mandatory reporting of all births in Victoria represents 99.6% of all births | Women who gave birth in 1995 and whose penultimate delivery within a 5-year period was a cesarean<br><br>SL/IA- 1482<br>Repeat CD-4663<br><br>Age: NR<br>Parity: one - 3079<br>2 or more - 1584<br><br>Race: aboriginal - 32<br>non-aboriginal 3579<br><br>Insurance: NR |
| Gregory 1999[164]<br><br>POOR | USA<br>California | 1995<br><br>To describe attempted and successful VBAC rates and rupture rates for women with and without prior cesareans and compare outcomes in hospitals with difference attempted VBAC rates<br><br>Database Description: California Office of Statewide Health Planning and Development | All hospital deliveries in the state of CA (DRG 370-375) classified as prior cesarean if ICD9=654.2<br><br>No Prior CD- 469,929<br>SL/IA- 39,096 TOL<br>15,072 failed VBAC<br>24,024 VBAC<br>ERCD- 27760<br><br>*Age:*<br>>35 = 71,815 (13.4%)<br><35 = 464,970<br>Parity: NR<br>Race: NR<br>Insurance: NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Intervention<br>Control<br>Other Procedures | Reasons for Induction |
|---|---|---|---|
| Stone 2000[177]<br><br>POOR | Multiple getation in current or previous delivery | NR | |
| Gregory 1999[164]<br><br>POOR | NR | NR | NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population |
|---|---|---|---|
| Rageth 1999[60]<br><br>POOR | Switzerland | 1983-1996<br><br>To examine risk of VBAC<br><br>Database Description: containing 40% of Switzerland's deliveries | Prior cesarean<br><br>NPCS- 226407<br>SL- 15154<br>IA- 2459<br>ERCD- 11433<br><br>Age: SL/IA- <30 = 8640 (49.05%)<br>Parity: NR<br>Race: NR<br>Insurance: SL/IA- private = 6293 (35.73%)<br>ERCD- private = 4862 (42.53%) |
| Holt 1997[59]<br><br>POOR | USA Washington state | 1987-1993<br><br>To examine relationships between prior obstetric complications and VBAC success | Primiparous women with prior cesarean<br><br>SL- 6491<br>ERCD- 3619<br><br>Age: <20 - >35<br>Parity: Primiparous<br>Race:<br>White = 8784 (88.5%)<br>Black = 253 (2.5%)<br>Asian = 285 (2.9%)<br>Hispanic = 452 (4.6%)<br>Other = 153 (1.5%)<br>Unknown = 183<br>Insurance:<br>Private = 5281 (56.6%)<br>HMO = 1338 (14.3%)<br>Medicaid = 2013 (21.6%)<br>Self = 501 (5.4%)<br>Other = 202 (2.2%)<br>Unknown = 775 |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Intervention<br>Control<br>Other Procedures | Reasons for Induction |
|---|---|---|---|
| Rageth 1999[60]<br><br>POOR | Twin pregnancies | Other Procedures, Interventions: Methods of Augmentation and Induction NR | NR |
| Holt 1997[59]<br><br>POOR | • Second births prior to 1989 (when TOL added to birth certificate)<br>• Unknown delivery method with second delivery | NA | NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population |
|---|---|---|---|
| Stalnaker 1997[178]<br><br>POOR | USA<br>Florida | 1989 - 95<br><br>To summarize demographic information and characteristics of antepartum care, intrapartum events and neonatal outcomes from the successful claims to the Florida Neurological Injury Compensation Fund | IA- 7<br>SL- 2<br><br>Age: NR (27 for whole group)<br>Parity: NR (0.8 for whole group)<br>Race: NR<br>Insurance: NR<br><br>Successful claim: Injury to the brain or spinal cord of a live infant weighing at least 2500gm at birth caused by oxygen deprivation or mechanical injury occurring in the course of labor deliver, or resuscitation in the immediate post-delivery period in a hospital which renders the infant permanently and substantially mentally and physically impaired. |
| ***Prospective Cohort*** | | | |
| Arulkumaran 1989[179]<br><br>POOR | Singapore | Not clear<br><br>To examine the characteristics, and success of TOL in patients requiring augmentation with oxytocin. | Prior lower segment CD attempting TOL, with fetus in cephalic presentation and abnormal progress of labor<br><br>IA- 63<br><br>Age: 31 (FTOL), and 29 (VBAC)<br>Parity: NR<br>Race: NR<br>Insurance: NR |
| Bais 2001[180]<br><br>POOR | Netherlands | 1990-1994<br><br>To determine clinical outcomes of VBAC in population with low overall cesarean rate | Prior CS<br>• 20 breeches<br>• 36 >1 prior CS<br>• 30=forceps<br>• 4=vacuum<br><br>SL/IA- 184<br>142 VBAC<br>42 failed VBAC<br>ERCD- 68/252 (27%)<br><br>Age: NR<br>Parity: NR<br>Race: NR<br>Insurance: NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Intervention<br>Control<br>Other Procedures | Reasons for Induction |
|---|---|---|---|
| Stalnaker 1997[178]<br><br>POOR | Delivering physician not participating in the fund, infant not meeting inclusion criteria and a determination by the board that the infant was not injured or that the injury was not birth-related. | NR | NR |
| ***Prospective Cohort*** | | | |
| Arulkumaran 1989[179]<br><br>POOR | Required CD for reasons other than failure to progress (e.g. fetal distress or prolapse). | *Intervention:* Oxytocin 2mU/min increased q30 min (by 2 units up to 12, then by 4 units up to max 24mU/min)<br><br>*Control:* None<br><br>*Other procedures, interventions:* None stated | NR |
| Bais 2001[180]<br><br>POOR | NR | NR | NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population |
|---|---|---|---|
| Gherman 2001[181]<br><br>POOR | USA | NR<br><br>To evaluate the efficacy and safety of oral misoprostol for preinduction cervical ripening among patients with prior CD. | Gravidas with at least 36 weeks gestation, and one documented low transverse delivery. Bishop score <6 with medical or OB indication for labor induction<br><br>IA- 10<br><br>Age: NR<br>Parity: NR<br>Race: NR<br>Insurance: |
| Goldberger 1989[182]<br><br>POOR | Israel | 1987-1988<br><br>To compare effectiveness of PGE2 vaginal to expectant management. | One prior uncomplicated transverse lower uterine scar, with fully documented uneventful current term pregnancy<br><br>IA: 19<br>SL: 155<br>ERCD:43<br><br>Age: NR<br>Parity: NR<br>Race: NR<br>Insurance: NR |
| Goldman 1998[183]<br><br>POOR | Israel | 1991-1996<br><br>To report experience with oxytocin and PGE2 in TOL. | Prior CD<br><br>IA- 208 oxytocin, 146 PGE2<br>SL- 166<br><br>Age: "Similar"<br>Parity: "Similar"<br>Race: NR<br>Insurance: NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Intervention<br>Control<br>Other Procedures | Reasons for Induction |
|---|---|---|---|
| Gherman 2001[181]<br><br>POOR | NR | *Intervention:* 50mcg dose. If cervical ripening or active labor did not ensue, repeat 50 mcg dose q 4 hr x max 6 doses. Oxytocin was subsequently administered.<br><br>*Control:* None<br><br>*Other procedures, interventions:* None stated | NR |
| Goldberger 1989[182]<br><br>POOR | • Recurring cause of prior CD<br>• Non-cephalic presentation<br>• Estimated fetal weight > 4000g<br>• Reactive NST<br>• Pelvis deemed inadequate for vaginal delivery | *Intervention:* 1.5mg PGE2 pessary to posterior fornix, repeated after 6 hrs if no contractions.<br><br>*Control:* Retrospective controls: 155 women with prior CD allowed spontaneous TOL (1985-6) and 43 women with no prior CD induced in similar way.<br><br>*Other procedures, interventions:* Continuous recording of uterine activity and fetal HR, maternal BP, HR, UOP/color every 30min, epidural anesth. Encouraged, oxytocin augmentation if indicated | NR |
| Goldman 1998[183]<br><br>POOR | •Prior classic or low vertical incision<br>• Unknown scar<br>• Prior hysterectomy or conservative myomectomy<br>• Multiple gestation<br>• Breech presentation<br>• >1 prior CD. | *Intervention:* Oxytocin dosing not stated, PGE2 vaginal gel (Prostin E2(r))<br><br>*Control:* Spontaneous labor<br><br>*Other procedures, interventions:* If vaginal delivery did not occur within 12 hours, CD performed. | NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population |
|---|---|---|---|
| Norman 1992[184]<br><br>POOR | Sweden | NR<br><br>To investigate if preinductive cervical ripening with PGE2 in women with 1 prior CD was safe. | Unripe cervix (cervical score </= 5) with one prior CD<br><br>IA- 30<br><br>Age: Mean 30 (of those with prior VD) and 33 (those with no prior VD)<br>Parity: NR<br>Race: NR<br>Insurance: NR |
| Silver 1987[185]<br><br>POOR | USA | 1983-85<br><br>To evaluate if oxytocin is effective for induction or augmentation in TOL. | Singleton pregnancy, one prior low-transverse CD requiring oxytocin for induction or augmentation.<br>Induction criteria: an OB indication for delivery, absence of regular contractions, pretreatment dilation <3cm.<br>Augmentation criteria: dilation >/= 4cm, regular uterine activity, no change in cervix x 1 hr<br><br>I- 34<br>A-64<br><br>Age: NR<br>Parity: Stated as not significantly different between success/failure groups<br>Race: NR<br>Insurance: NR |
| Sims 2001[186]<br><br>POOR | USA | 1997-99<br><br>To determine the impact of labor induction on success and safety of TOL. | Consecutive deliveries by women with prior CD<br><br>IA- 57<br>SL- 179<br>ERCD- 269<br><br>Age, Parity: Reported as similar<br>Race: Reported as a significantly higher proportion of African American women in SL group |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author Year Quality | Exclusion criteria | Intervention Control Other Procedures | Reasons for Induction |
|---|---|---|---|
| Norman 1992[184]<br><br>POOR | Not defined | *Intervention:* 0.5mg PGE2 gel (Cerviprost (r)) intracervically, repeated at 24 hrs if cervix not changed. If cervix ripe, but no active labor at 5 and 24 hrs after gel, oxytocin started (dose not stated).<br><br>*Control:* None<br><br>*Other procedures, interventions:* External cardiotocography 30 min prior and 1 hr after gel application. After ROM, internal scalp electrodes placed on fetus. | NR |
| Silver 1987[185]<br><br>POOR | Requiring oxytocin in 2nd stage only | *Intervention:* NR<br><br>*Control:* NR<br><br>*Other procedures, interventions:* NR | NR |
| Sims 2001[186]<br><br>POOR | • Deliveries < 24 weeks<br>• Intrauterine fetal death. | *Intervention:* NR<br>*Control:* NR<br><br>*Other procedures, interventions:* methods of induction; 1) oxytocin, 2) misoprostol 25-50 micrograms every 4 hours for 3 doses augmented with oxytocin, 3) dinoprostone 12 hours then oxytocin | NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population |
|---|---|---|---|
| Videla<br>1995[187]<br><br>POOR | USA | 1988-91<br><br>To determine if cervical ripening with PGE2 gel is safe and effective in TOL compared to nulliparous women | One prior CD and requiring induction for OB or medical reason with an unfavorable cervix<br><br>I- 94<br>IC- 866<br>A- 77/94 (82%)800/899 ( 89%)<br><br>Age: reported as %< 20 yrs = 4(PGE2)<br>Parity: NR<br>Race: 45% white<br>20% Black,<br>30% Hispanic (PGE2)<br>Insurance: NR |
| ***Prospective Cohort*** | | | |
| Sakala<br>1990[188]<br><br>POOR | England | 1984-86<br><br>To answer questions about oxytocin in TOL (adverse effects, success, and factors associated with failure). | >/= 1 prior low-transverse CD, and patient request for TOL<br><br>I- 48<br>A- 25<br>SL- 164<br><br>Age: Mean 28<br>Parity: Mean 1.7 (oxy), 1.3 (SL)<br>Race: NR<br>Insurance: NR |
| ***Retrospective Cohorts*** | | | |
| Asaad<br>1994[189]<br><br>POOR | | NR<br><br>Not stated | PROM >/= 37 wks, one prior CD with lower segment incision and non-recurrent cause, with doubt of healing of uterine scar<br><br>I- 5<br>IC- 12<br><br>Age: NR<br>Parity: NR<br>Race: NR<br>Insurance: NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Intervention<br>Control<br>Other Procedures | Reasons for Induction |
|---|---|---|---|
| Videla 1995[187]<br><br>POOR | Classical incision, a nonreactive nonstress test, or regular uterine contractions | *Intervention:* PGE2 gel (pharmacy compounded); 2mg to external cervical os and posterior vaginal vault, repeated q4-6 hrs; max 4 doses<br><br>*Control:* nulliparous women<br><br>*Other procedures, interventions:* FHR and uterine activity monitored for all patients, amniotomy and internal monitoring used at OB discretion, oxytocin augmentation used if needed | NR |
| ***Prospective Cohort*** | | | |
| Sakala 1990[188]<br><br>POOR | • Breech presentation<br>• Multiple gestation<br>• OB contraindications to TOL. | *Intervention:* NR<br>*Control:* Spontaneous labor or elective CD.<br>*Other procedures, interventions:* NR | NR |
| ***Retrospective Cohorts*** | | | |
| Asaad 1994[189]<br><br>POOR | • Multiple pregnancies<br>• Malpresentations | Intervention: oxytocin 2mU/min increased at 'intervals' up to 32mU/min until regular contractions.<br>Control: SL<br>Other procedures, interventions: maternal pulse, temp and fetal HR checked regularly | NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population |
|---|---|---|---|
| Blanchette 1999[67]<br><br>POOR | USA | Misoprostol: 1997-98<br>PGE2: 1996-97<br><br>To compare PGE1 (misoprostol) to PGE2 (dinoprostone) for cervical ripening and induction in a community hospital. | Singleton pregnancy at term, cephalic presentation, reassuring FHR, Bishop score <5<br><br>IA-16<br>IC-9<br><br>Age: Mean 29.8 (misoprostol)<br>29.5 (PGE2)<br>Parity: NR<br>Race: NR<br>Insurance: NR |
| Choy-Hee 2001[195]<br><br>POOR | USA | 1996-98<br><br>To evaluate the safety and efficacy of cervical ripening with misoprostol in women with prior CD compared to those without prior CD. | Singleton pregnancy, Bishop score <6, cephalic presentation, and reassuring FHR<br><br>I- 48<br>IC- 377<br><br>Age: NR<br>Parity: NR<br>Race: NR<br>Insurance: NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Intervention<br>Control<br>Other Procedures | Reasons for Induction |
|---|---|---|---|
| Blanchette 1999[67]<br><br>POOR | • Known hypersensitivity to prostaglandins<br>• History of CD with vertical incision<br>• Major uterine surgery<br>• Placenta previa<br>• Grand multiparity (>/= 6 prior deliveries)<br>• History of asthma, glaucoma, or heart disease. | *Intervention:* Misoprostol 25mcg inserted into posterior vaginal fornix, with 25-50mcg q 4hrs to max 6 doses. If tachysystole (>/= 6 contractions/10 min) or contraction pattern of >/= 3/ 10 min, next dose withheld. Oxytocin was started 4 hrs after last dose of misoprostol, started at 1-2 mU/min and increased by </= 6mU/min q15-30 min until adequate pattern of contractions.<br><br>*Control:* 1) PGE2 gel (Prepidil(r)) 0.5mg intracervically q 6hrs to max 3 doses. Oxytocin if needed 6 hrs after last dose of PGE2.<br>OR<br>2) PGE2 slow-release pessary (Cervidil(r)) 10mg placed in vaginal posterior fornix for up to 12 hrs, removed when adequate uterine contraction pattern appeared. | NR |
| Choy-Hee 2001[195]<br><br>POOR | None stated, but apparently vertical and classical incisions excluded (reported that 73% had low-transverse incision, 27% had unknown incision). | Intervention: 50mcg misoprostol placed in posterior vaginal fornix q 4hrs up to 24 hrs (6 doses) until cervix dilated 2 cm or regular contraction pattern seen or rupture of membranes and regular contractions. Oxytocin augmentation used when labor failed to progress or 4 hrs after the max 6 doses of misoprostol if active labor not achieved.<br>Control: women without prior CD<br>Other procedures, interventions: none specified | |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population |
|---|---|---|---|
| Chua 1989[196]<br><br>POOR | Singapore | 1985-1988 | Prior low segment CD<br><br>SL/IA- 207<br>oxytocin used 97 (used for induction in 22, 75 augmented)<br>ERCD- 98 indications incl, CPD,2 prior, malpresentation, IUGR, previa, porr fetal testing<br><br>Age: NR<br>Parity: NR<br>Race: NR<br>Insurance: NR |
| Chuck 1995[197]<br><br>POOR | USA | 1993 - 94<br><br>To compare misoprostol tablets to dinoprostone gel in induction of labor | 35 to 42 weeks gestation admitted for labor induction<br><br>I- 5<br>IC- 10<br><br>Age: mean 29.3 (miso), 28.7 (PGE2)<br>Parity: mean 0.8<br>Race: NR<br>Insurance: NR |
| Coltart 1990[198]<br><br>POOR | UK | 1980-1987 | One prior CD, having second baby >26 weeks<br><br>SL/IA- 195<br>117 not augmented<br>20 augmented<br>58 induced<br>2 AROM<br>6 AROM + oxytocin<br>32 = PG pessary<br>18 PG pessary + oxytocin<br>ERCD- 158<br><br>Age: NR<br>Parity: NR<br>Race: NR<br>Insurance: NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Intervention<br>Control<br>Other Procedures | Reasons for Induction |
|---|---|---|---|
| Chua 1989[196]<br><br>POOR | NR | | |
| Chuck 1995[197]<br><br>POOR | nonvettex presentation, uterine scar other than prior low-transverse CD, ominous FHR tracing, multiple gestation, and complete vervical effacement | Intervention: misorprostol 50mcg intravaginally q 4hrs x max 5 doses<br>Control: PGE2 gel (Prepidil (r)) 0.5mg intracervically q 4hrs x max 5 doses<br>Other procedures, interventions: continuous FHR and tocodynomometery in all patients, cervical exam q 4hrs (more often if indicated) | NR |
| Coltart 1990[198]<br><br>POOR | • Failed induction<br>• Missing records | NR | NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population |
|---|---|---|---|
| Del Valle 1994[199]<br><br>POOR | USA | 1988-92<br><br>To evaluate the safety and efficacy of cervical ripening in women with prior low transverse CD undergoing induction of labor with an unfavorable cervix | >/=1 prior low-transverse CD<br><br>I- 89 (PGE2 only: 36, Dilapan only: 41, Both: 12)<br>IC- 61 (PGE2 only: 28, Dilapan only: 25, Both: 8)<br><br>Age: Mean 27<br>Parity: Mean 1.6<br>Race: NR<br>Insurance: NR |
| Lydon-Rochelle 2001[4]<br><br>POOR | USA | 1980-83<br><br>Report experiences with induction of labor in women with prior CS | One prior lower segment CS<br>I- 137 (102 (a/o), 35 (a)<br>SL- 529<br>Age: NR<br>Parity: NR<br>Race: NR<br>Insurance: NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Intervention<br>Control<br>Other Procedures | Reasons for Induction |
|---|---|---|---|
| Del Valle 1994[199]<br><br>POOR | None stated | Intervention: PGE2 gel (pharmacy compounded) intracervically 0.5mg q4-6 hrs or an osmotic dilator (Dilapan (r)) or both. Induction with oxytocin following ACOG guidelines (0.5-1 mU/min increased by 1-2 mU/min q30-60 min)<br>Control: Women receiving dilation and induction agents, no prior CD<br>Other procedures, interventions: NR | NR |
| Lydon-Rochelle 2001[4]<br><br>POOR | Recurring cause of prior CS, non-cephalic presentation, X-ray pelvimetry showing obstetric conjugate of <10cm and transverse diameter of <11.5cm | Intervention: Bishop score > 6: amniotomy alone<br>Bishop score 4-6: amniotomy + oxytocin<br>Bishop score <4: 3mg PGE2 tablets + amniotomy + oxytocin<br>Control: NR<br>Other procedures, interventions: NR | NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population |
|---|---|---|---|
| MacKenzie 1984[200]<br><br>POOR | England | 1992<br><br>To identify predictors of unsuccessful TOL | All women with prior CD attempting TOL<br><br>I- 170<br>IC-<br>SL- 5<br>ERCD-<br>A- 170<br><br>Age: mean 26.8 VBAC, 30.3 FTOL<br>Parity: 2.0 VBAC, 1.5 FTOL<br>Race: NR<br>Insurance: NR |
| McNally 1999[107]<br><br>FAIR | Ireland | 199-1994<br><br>To review management of women with 1 prior CD to see predictors for success | One prior CD<br><br>SL/IA- 244 (73.3%)<br>38 induced<br>50 oxytocin for augmentation<br>ERCD- 89<br><br>Age: SL/IA- 28.7 + 4.9 successful<br>31.2 + 3.7 failed<br>ERCD- 30.6 + 4.1<br>Parity: NR<br>Race: NR<br>Insurance: NR |
| Norman 1993[201]<br><br>POOR | Canada Toronto | 1980<br><br>To assess the safety of having most patients with prior cesarean attempt TOL | All TOL, 1st 6 of each month with elective repeat and one prior CS<br><br>SL- 207<br>ERCD- 62<br><br>Age: NR<br>Parity: NR<br>Race: NR<br>Insurance: NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Intervention<br>Control<br>Other Procedures | Reasons for Induction |
|---|---|---|---|
| MacKenzie 1984[200]<br><br>POOR | Vertical scar, placenta previa, breech or inappropriate size, head attitude or pelvimetry; active genital herpes infection; severe preeclampsia with rapid deterioration; signs of fetal distress with inability for fetal scalp pH, or fetal anomaly precluding safe vaginal delivery | Intervention: Aggressive use of PGE2 gel for cervical ripening, oxytocin and early amniotomy for induction or augmentation<br>Control: SL<br>Other procedures, interventions: none specified | NR |
| McNally 1999[107]<br><br>FAIR | NR | 38 induced with oxytocin | NR |
| Norman 1993<br><br>POOR | Recurrent indication for cesarean, no obvious CPD, | All monitored with IUPC and FSE, oxytocin used for augmentation and induction when indicated, more than 1 cesarean not excluded | NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population |
|---|---|---|---|
| Plaut 1999[202]<br><br>POOR | USA | 1983-1992 | Subject Eligibility: all women with prior CD eligible for VBAC<br><br>SL/IA: 10,880<br><br>Age: NR<br>Parity: NR<br>Race: NR<br>Insurance: NR |
| Plaut 1999[15]<br><br>POOR | USA | 1996-98<br><br>To report 4 cases of uterine rupture with misoprostol, to conduct a literature review, purpose of retrospective cohort study not clearly stated | Subject Eligibility: not clear, those attempting TOL<br><br>I- misoprostol: 89<br>IC- 423<br><br>Age: NR<br>Parity: NR<br>Race: NR<br>Insurance: NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Intervention<br>Control<br>Other Procedures | Reasons for Induction |
|---|---|---|---|
| Plaut 1999[202]<br><br>POOR | Classical, prior UR, contraindication to labor, from 1983-1985 unknown excluded | Twins, breech allowed, manual exploration on all VD | NR |
| Plaut 1999[15]<br><br>POOR | None stated | Intervention: misoprostol , doses not stated<br>Control: unclear - combines those induced with oxytocin and SL<br>Other procedures, interventions: none specified | NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population |
|---|---|---|---|
| Ravasia 2000[214]<br><br>POOR | Canada | 1992-98<br><br>To determine and compare uterine rupture rates and VD rates among TOLs induced and SL | All patients with prior CD<br><br>I- 575: 172 PGE2 (95 PGE2 alone, 77 PGE2/oxy)<br>129 Foley (11 Foley alone, 118 Foley/oxy)<br>274 cervical ripening (26 amniotomy, 214 oxy, 34 amnio/oxy)<br>SL- 1544<br><br>Age: NR<br>Parity: median 1 for PGE2 gel, Foley, and SL. 2 for Induction without cervical ripening<br>Race: NR<br>Insurance: NR |
| Segal 1995[51]<br><br>POOR | Israel | 1988-93<br><br>To assess rates of VBAC and complications in a rural community setting | Prior CD, known transverse or unknown scar, breech presentation<br><br>I- 25 (I and/or a)<br>SL- 26<br>ERCD- 16<br><br>Age: NR<br>Parity: 57% = 1; 43% = >1<br>Race: 28% white<br>72% black<br>Insurance: NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Intervention<br>Control<br>Other Procedures | Reasons for Induction |
|---|---|---|---|
| Ravasia 2000[214]<br><br>POOR | None stated | Intervention: 1) Cervical ripening with: PGE2 gel intravaginally ; 1-2mg q6-12 hrs to max 3 doses, OR<br>2) intracervical extra-amniotic placement of an 18-guage Foley catheter, inflated to 30-40ml with or without gentle traction and removed when the bulb was expelled through the cervical os; both followed by oxytocin if necessary<br>3) Induction without cervical ripening with oxytocin or amniotomy or a combination of both.<br>Control: Spontaneous labor<br>Other procedures, interventions: Oxytocin doses: 1-2 mU/min and increased by 1-2 mU q 30min. Oxytocin dose reduced or stopped when non-reassuring FHR occurred and restarted if appropriate. The use of oxytocin as augmentation was not | NR |
| Segal 1995[51]<br><br>POOR | Other malpresentations, classical scar | Intervention: oxytocin for induction or augmentation<br>Control: SL<br>Other procedures, interventions: none specified | |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population |
|---|---|---|---|
| Zelop 2000[193]<br><br>POOR | USA<br>Brigham | 1988-93<br><br>To examine the effect of a disciplined approach to labor management in TOL | Rupture of membranes without contractions after 2 to 6 hrs, or slow progress of labor<br><br>I- 142 (I),<br>SL- 446, of these 198 (a)<br>ERCD- 125<br><br>Age: NR<br>Parity: NR<br>Race: 71% white<br>15% Black2% Hispanic<br>Insurance: NR |
| Zelop 1999[194]<br>(3 pubs)<br><br>POOR | USA | 1984-96<br><br>To examine the effect of labor induction on the risk of uterine rupture | Term pregnancy with one prior lower segment (vertical, transverse or unknown) CD, no other deliveries<br><br>I- 560 (I or a) (458 oxy alone, 35 PGE2 alone, 67 both)<br>SL-2214<br>A- 1089<br><br>Age: NR<br>Parity: NR<br>Race: NR<br>Insurance: NR |
| ***Case Control*** | | | |
| Leung 1993[54]<br><br>POOR | USA | 1994-1998<br><br>To identify risk factors for scar dehiscence | Cases: cases = dehiscence with 1 prior LSCD who underwent TOL<br><br>Controls: Controls = one prior LSCD who underwent TOL without dehiscence<br><br>Cases: 13<br>Controls: 13<br><br>Age: NR<br>Parity: NR<br>Race: NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Intervention<br>Control<br>Other Procedures | Reasons for Induction |
|---|---|---|---|
| Zelop 2000[193]<br><br>POOR | Prior classical incision, OB or medical contraindication to labor, or declined TOL | Intervention: oxytocin for induction or augmentation<br>Control: SL, elective repeat CD<br>Other procedures, interventions: FHR for all patients, internal uterine pressure sensors and internal fetal scalp electrodes when active labor started | NR |
| Zelop 1999[194]<br>(3 pubs)<br><br>POOR | None stated | Intervention: PGE2 gel (pharmacy compounded) 4mg intravaginally q 4hrs max 3 doses; or oxytocin induction or augmentation (1-2 mU/min increased by 1-2mU/min q15-20 min to max 20 mU/min<br>Control: Spontaneous labor<br>Other procedures, interventions: none specified | NR |
| ***Case Control*** | | | |
| Leung 1993[54]<br><br>POOR | NA | NA | NA |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population |
|---|---|---|---|
| Miles 2000[203]<br><br>POOR | UK | 1983-90<br><br>To thoroughly investigate the risk factors of UR in patients undergoing TOL after CD | Prior CD attempting VBAC (including twin and breech)<br><br>Cases: patients with prior CD and UR while undergoing subsequent TOL<br>Controls: patients with prior CD and subsequent TOL and no UR during same time, randomly selected, grouped by year<br><br>Cases: 70<br><br>Controls: 70<br><br>Age: NR<br>Parity: NR<br>Race: NR |
| Paterson 1991[165]<br><br>POOR | | 1990-1997<br>Database | Database Description: hospital D/C data<br>36,727 singleton birth, >37 weeks, cephalic, history of at least one prior cesarean and no prior VD<br><br>Age: TOL 29.0 (s.d. 4.8)<br>ERCD 30.5 (s.d.5.0)<br>Parity: primiparas 14,722<br>multiparas 16,5818<br>Race: NR<br>Insurance: NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Intervention<br>Control<br>Other Procedures | Reasons for Induction |
|---|---|---|---|
| Miles 2000[203]<br><br>POOR | • Prior classic incision<br>• Placenta previa<br>• Transverse lie<br>• Conditions requiring immediate delivery and refusal of TOL | NR | NR |
| Paterson 1991[165]<br><br>POOR | NR | NR | NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population |
|---|---|---|---|
| ***Randomized Controlled Trials*** | | | |
| Xenakis<br>1995[175]<br><br>POOR | USA | 1993<br><br>To compare efficacy and safety of low-dose versus high-dose oxytocin augmentation | IA: 22<br>IC: 26<br><br>All nulliparous or multiparous women admitted >/= 37 wks gestation in active labor (including those with prior low transverse CD attempting TOL).<br><br>Age: mean age 24 yrs<br>Parity: NR<br>Race:<br>White: 10% (LD), 11% (HD)<br>Black: 4.5% (LD), 2.6% (HD)<br>Hispanic: 83% (LD), 86% (HD)<br>Other: 2% (LD), 1% (HD)<br>Insurance: NR |
| Wing<br>1998[176]<br><br>POOR | USA | NR<br><br>To compare the safety and efficacy of vaginally administered misoprostol with IV oxytocin for cervical ripening and labor induction in women with Prior CD | IA: 17<br>IC: 21<br><br>Requiring induction of labor for medical or OB indications with a history of one immediate prior CD without subsequent VD<br><br>Age: NR<br>Parity: NR<br>Race: NR<br>Insurance: NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Intervention<br>Control<br>Other Procedures | Reasons for Induction |
|---|---|---|---|
| ***Randomized Controlled Trials*** | | | |
| Xenakis 1995[175]<br><br>POOR | • Malpresentation<br>• Placenta previa<br>• Previous classic CD<br>• Multiple gestation | *Intervention:* Low-dose: oxytocin 1mU/min increased by 1mU/min q30min up to max 4mU/min x 2 hrs. If no adequate contractions after 2hrs, dose increased by 1mU/min every 30 min until adequate contractions.<br><br>*Control:* High dose: oxytocin 4mU/min and increased by 4mU/min every 15min until adequate contractions.<br><br>*Other Procedures, Interventions:* Protocols for labor management, criteria for diagnosis of labor abnormalities, and indications for operative delivery were the same for both groups. | Augmentation started if: arrest of dilation or descent defined as no cervical change for 2hrs after latent phase with cervix >/=4cm, or no change in station of presenting part at full dilation for >1hr. |
| Wing 1998[176]<br><br>POOR | NR | *Intervention:* Misprostol 25mcg intravaginally q6 hrs to max 4 doses.<br><br>*Control:* Oxytocin by standard protocol (doses not stated).<br><br>*Other Procedures, Interventions:* use of continuous FHR, uterine activity monitoring, and amniotomy in all patients. | NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population |
|---|---|---|---|
| Lyndon-Rochelle 2001[72]<br><br>POOR | USA<br>Washington state | 1987-1996<br><br>To examine the risk of uterine rupture associated with VBAC (spont, induced) and repeat C/S<br><br>Database Description: Retrospective. Washington state birth certificates,hospital discharge data (Comprehensive Hospital Discharge Reporting System). | Primiparous women who gave birth to singleton infants by CD and delivered a second child.<br>Age: 14-48<br>SL: n=10,789<br>IA: n=1,960 induced with PGs; 366 without PGs<br>ERCD: n=6,980<br>Parity: Overall- P2<br>Race: SL- White = 8949 (82.9%)<br>Black = 318 (2.9%)<br>Hispanic = 621 (5.8%)<br>Other = 901 (8.4%)<br>*ERCD:*<br>White = 6056 (86.8%)<br>Black = 164 (2.3%)<br>Hispanic = 281 (4.0%)<br>Other = 479 (6.9%)<br>*Insurance:*<br>SL:<br>Commercial = 5659 (52.5%)<br>Medicaid/uninsured = 2730 (25.3%)<br>Managed care = 1992 (18.5%)<br>Other = 408 (3.8%)<br>*IA:*<br>Without PG:<br>Commercial = 1081 (55.2%)<br>Medicaid/uninsured = 473 (24.7%)<br>Managed care = 384 (19.6%)<br>Other = 22 (1.1%)<br>IA: White =1999<br>Black = 318<br>*With PG:*<br>Commercial=206 (56.3%)<br>Medicaid/uninsured = 90 (24.6%)<br>Managed care = 64 (17.5%)<br>Other = 6 (1.6%)<br>*ERCD:*<br>Commercial= 3936 (56.4%)<br>Medicaid/uninsured = 1741 (24.9%)<br>Managed care = 1119 (16.0%)<br>Other = 184 (2.6%) |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Intervention<br>Control<br>Other Procedures | Reasons for Induction |
|---|---|---|---|
| Lyndon-Rochelle 2001[72]<br><br>POOR | Women who delivered before 1989 b/c "repeat cesarean no labor" was not specified in birth cert until 1989 | *Other Procedures, Interventions:* SL, induction of labor with or without prostaglandins on hospital discharge | Reasons not specified, health conditions such as diabetes, chronic hypertension, breech presentation, herpes, previa, preeclampsia reported |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population |
|---|---|---|---|
| Stone 2000[177]<br><br>POOR | Australia | 1995<br><br>To describe the population-based delivery outcomes for women giving birth in 1995 whose penultimate delivery was a cesarean<br><br>Database Description: Perinatal Morbidity Statistics maintained by Victoria Perinatal Data Collection Unit, mandatory reporting of all births in Victoria represents 99.6% of all births | Women who gave birth in 1995 and whose penultimate delivery within a 5-year period was a cesarean<br><br>SL/IA- 1482<br>Repeat CD-4663<br><br>Age: NR<br>Parity: one - 3079<br>2 or more - 1584<br><br>Race: aboriginal - 32<br>non-aboriginal 3579<br><br>Insurance: NR |
| Gregory 1999[164]<br><br>POOR | USA<br>California | 1995<br><br>To describe attempted and successful VBAC rates and rupture rates for women with and without prior cesareans and compare outcomes in hospitals with difference attempted VBAC rates<br><br>Database Description: California Office of Statewide Health Planning and Development | All hospital deliveries in the state of CA (DRG 370-375) classified as prior cesarean if ICD9=654.2<br><br>No Prior CD- 469,929<br>SL/IA- 39,096 TOL<br>15,072 failed VBAC<br>24,024 VBAC<br>ERCD- 27760<br><br>*Age:*<br>>35 = 71,815 (13.4%)<br><35 = 464,970<br>Parity: NR<br>Race: NR<br>Insurance: NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Intervention<br>Control<br>Other Procedures | Reasons for Induction |
|---|---|---|---|
| Stone 2000[177]<br><br>POOR | Multiple getation in current or previous delivery | NR | |
| Gregory 1999[164]<br><br>POOR | NR | NR | NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population |
|---|---|---|---|
| Rageth 1999[60]<br><br>POOR | Switzerland | 1983-1996<br><br>To examine risk of VBAC<br><br>Database Description: containing 40% of Switzerland's deliveries | Prior cesarean<br><br>NPCS- 226407<br>SL- 15154<br>IA- 2459<br>ERCD- 11433<br><br>Age: SL/IA- <30 = 8640 (49.05%)<br>Parity: NR<br>Race: NR<br>Insurance: SL/IA- private = 6293 (35.73%)<br>ERCD- private = 4862 (42.53%) |
| Holt 1997[59]<br><br>POOR | USA Washington state | 1987-1993<br><br>To examine relationships between prior obstetric complications and VBAC success | Primiparous women with prior cesarean<br><br>SL- 6491<br>ERCD- 3619<br><br>Age: <20 - >35<br>Parity: Primiparous<br>Race:<br>White = 8784 (88.5%)<br>Black = 253 (2.5%)<br>Asian = 285 (2.9%)<br>Hispanic = 452 (4.6%)<br>Other = 153 (1.5%)<br>Unknown = 183<br>Insurance:<br>Private = 5281 (56.6%)<br>HMO = 1338 (14.3%)<br>Medicaid = 2013 (21.6%)<br>Self = 501 (5.4%)<br>Other = 202 (2.2%)<br>Unknown = 775 |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Intervention<br>Control<br>Other Procedures | Reasons for Induction |
|---|---|---|---|
| Rageth 1999[60]<br><br>POOR | Twin pregnancies | Other Procedures, Interventions: Methods of Augmentation and Induction NR | NR |
| Holt 1997[59]<br><br>POOR | • Second births prior to 1989 (when TOL added to birth certificate)<br>• Unknown delivery method with second delivery | NA | NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population |
|---|---|---|---|
| Stalnaker 1997[178]<br><br>POOR | USA<br>Florida | 1989 - 95<br><br>To summarize demographic information and characteristics of antepartum care, intrapartum events and neonatal outcomes from the successful claims to the Florida Neurological Injury Compensation Fund | IA- 7<br>SL- 2<br><br>Age: NR (27 for whole group)<br>Parity: NR (0.8 for whole group)<br>Race: NR<br>Insurance: NR<br><br>Successful claim: Injury to the brain or spinal cord of a live infant weighing at least 2500gm at birth caused by oxygen deprivation or mechanical injury occurring in the course of labor deliver, or resuscitation in the immediate post-delivery period in a hospital which renders the infant permanently and substantially mentally and physically impaired. |
| ***Prospective Cohort*** | | | |
| Arulkumaran 1989[179]<br><br>POOR | Singapore | Not clear<br><br>To examine the characteristics, and success of TOL in patients requiring augmentation with oxytocin. | Prior lower segment CD attempting TOL, with fetus in cephalic presentation and abnormal progress of labor<br><br>IA- 63<br><br>Age: 31 (FTOL), and 29 (VBAC)<br>Parity: NR<br>Race: NR<br>Insurance: NR |
| Bais 2001[180]<br><br>POOR | Netherlands | 1990-1994<br><br>To determine clinical outcomes of VBAC in population with low overall cesarean rate | Prior CS<br>• 20 breeches<br>• 36 >1 prior CS<br>• 30=forceps<br>• 4=vacuum<br><br>SL/IA- 184<br>142 VBAC<br>42 failed VBAC<br>ERCD- 68/252 (27%)<br><br>Age: NR<br>Parity: NR<br>Race: NR<br>Insurance: NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Intervention<br>Control<br>Other Procedures | Reasons for Induction |
|---|---|---|---|
| Stalnaker 1997[178]<br><br>POOR | Delivering physician not participating in the fund, infant not meeting inclusion criteria and a determination by the board that the infant was not injured or that the injury was not birth-related. | NR | NR |
| ***Prospective Cohort*** | | | |
| Arulkumaran 1989[179]<br><br>POOR | Required CD for reasons other than failure to progress (e.g. fetal distress or prolapse). | *Intervention:* Oxytocin 2mU/min increased q30 min (by 2 units up to 12, then by 4 units up to max 24mU/min)<br><br>*Control:* None<br><br>*Other procedures, interventions:* None stated | NR |
| Bais 2001[180]<br><br>POOR | NR | NR | NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population |
|---|---|---|---|
| Gherman 2001[181]<br><br>POOR | USA | NR<br><br>To evaluate the efficacy and safety of oral misoprostol for preinduction cervical ripening among patients with prior CD. | Gravidas with at least 36 weeks gestation, and one documented low transverse delivery. Bishop score <6 with medical or OB indication for labor induction<br><br>IA- 10<br><br>Age: NR<br>Parity: NR<br>Race: NR<br>Insurance: |
| Goldberger 1989[182]<br><br>POOR | Israel | 1987-1988<br><br>To compare effectiveness of PGE2 vaginal to expectant management. | One prior uncomplicated transverse lower uterine scar, with fully documented uneventful current term pregnancy<br><br>IA: 19<br>SL: 155<br>ERCD:43<br><br>Age: NR<br>Parity: NR<br>Race: NR<br>Insurance: NR |
| Goldman 1998[183]<br><br>POOR | Israel | 1991-1996<br><br>To report experience with oxytocin and PGE2 in TOL. | Prior CD<br><br>IA- 208 oxytocin, 146 PGE2<br>SL- 166<br><br>Age: "Similar"<br>Parity: "Similar"<br>Race: NR<br>Insurance: NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Intervention<br>Control<br>Other Procedures | Reasons for Induction |
|---|---|---|---|
| Gherman 2001[181]<br><br>POOR | NR | *Intervention:* 50mcg dose. If cervical ripening or active labor did not ensue, repeat 50 mcg dose q 4 hr x max 6 doses. Oxytocin was subsequently administered.<br><br>*Control:* None<br><br>*Other procedures, interventions:* None stated | NR |
| Goldberger 1989[182]<br><br>POOR | • Recurring cause of prior CD<br>• Non-cephalic presentation<br>• Estimated fetal weight > 4000g<br>• Reactive NST<br>• Pelvis deemed inadequate for vaginal delivery | *Intervention:* 1.5mg PGE2 pessary to posterior fornix, repeated after 6 hrs if no contractions.<br><br>*Control:* Retrospective controls: 155 women with prior CD allowed spontaneous TOL (1985-6) and 43 women with no prior CD induced in similar way.<br><br>*Other procedures, interventions:* Continuous recording of uterine activity and fetal HR, maternal BP, HR, UOP/color every 30min, epidural anesth. Encouraged, oxytocin augmentation if indicated | NR |
| Goldman 1998[183]<br><br>POOR | •Prior classic or low vertical incision<br>• Unknown scar<br>• Prior hysterectomy or conservative myomectomy<br>• Multiple gestation<br>• Breech presentation<br>• >1 prior CD. | *Intervention:* Oxytocin dosing not stated, PGE2 vaginal gel (Prostin E2(r))<br><br>*Control:* Spontaneous labor<br><br>*Other procedures, interventions:* If vaginal delivery did not occur within 12 hours, CD performed. | NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population |
|---|---|---|---|
| Norman 1992[184]<br><br>POOR | Sweden | NR<br><br>To investigate if preinductive cervical ripening with PGE2 in women with 1 prior CD was safe. | Unripe cervix (cervical score </= 5) with one prior CD<br><br>IA- 30<br><br>Age: Mean 30 (of those with prior VD) and 33 (those with no prior VD)<br>Parity: NR<br>Race: NR<br>Insurance: NR |
| Silver 1987[185]<br><br>POOR | USA | 1983-85<br><br>To evaluate if oxytocin is effective for induction or augmentation in TOL. | Singleton pregnancy, one prior low-transverse CD requiring oxytocin for induction or augmentation.<br>Induction criteria: an OB indication for delivery, absence of regular contractions, pretreatment dilation <3cm.<br>Augmentation criteria: dilation >/= 4cm, regular uterine activity, no change in cervix x 1 hr<br><br>I- 34<br>A-64<br><br>Age: NR<br>Parity: Stated as not significantly different between success/failure groups<br>Race: NR<br>Insurance: NR |
| Sims 2001[186]<br><br>POOR | USA | 1997-99<br><br>To determine the impact of labor induction on success and safety of TOL. | Consecutive deliveries by women with prior CD<br><br>IA- 57<br>SL- 179<br>ERCD- 269<br><br>Age, Parity: Reported as similar<br>Race: Reported as a significantly higher proportion of African American women in SL group |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author Year Quality | Exclusion criteria | Intervention Control Other Procedures | Reasons for Induction |
|---|---|---|---|
| Norman 1992[184]<br><br>POOR | Not defined | *Intervention:* 0.5mg PGE2 gel (Cerviprost (r)) intracervically, repeated at 24 hrs if cervix not changed. If cervix ripe, but no active labor at 5 and 24 hrs after gel, oxytocin started (dose not stated).<br><br>*Control:* None<br><br>*Other procedures, interventions:* External cardiotocography 30 min prior and 1 hr after gel application. After ROM, internal scalp electrodes placed on fetus. | NR |
| Silver 1987[185]<br><br>POOR | Requiring oxytocin in 2nd stage only | *Intervention:* NR<br><br>*Control:* NR<br><br>*Other procedures, interventions:* NR | NR |
| Sims 2001[186]<br><br>POOR | • Deliveries < 24 weeks<br>• Intrauterine fetal death. | *Intervention:* NR<br>*Control:* NR<br><br>*Other procedures, interventions:* methods of induction; 1) oxytocin, 2) misoprostol 25-50 micrograms every 4 hours for 3 doses augmented with oxytocin, 3) dinoprostone 12 hours then oxytocin | NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population |
|---|---|---|---|
| Videla<br>1995[187]<br><br>POOR | USA | 1988-91<br><br>To determine if cervical ripening with PGE2 gel is safe and effective in TOL compared to nulliparous women | One prior CD and requiring induction for OB or medical reason with an unfavorable cervix<br><br>I- 94<br>IC- 866<br>A- 77/94 (82%)800/899 ( 89%)<br><br>Age: reported as %< 20 yrs = 4(PGE2)<br>Parity: NR<br>Race: 45% white<br>20% Black,<br>30% Hispanic (PGE2)<br>Insurance: NR |
| ***Prospective Cohort*** | | | |
| Sakala<br>1990[188]<br><br>POOR | England | 1984-86<br><br>To answer questions about oxytocin in TOL (adverse effects, success, and factors associated with failure). | >/= 1 prior low-transverse CD, and patient request for TOL<br><br>I- 48<br>A- 25<br>SL- 164<br><br>Age: Mean 28<br>Parity: Mean 1.7 (oxy), 1.3 (SL)<br>Race: NR<br>Insurance: NR |
| ***Retrospective Cohorts*** | | | |
| Asaad<br>1994[189]<br><br>POOR | | NR<br><br>Not stated | PROM >/= 37 wks, one prior CD with lower segment incision and non-recurrent cause, with doubt of healing of uterine scar<br><br>I- 5<br>IC- 12<br><br>Age: NR<br>Parity: NR<br>Race: NR<br>Insurance: NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Intervention<br>Control<br>Other Procedures | Reasons for Induction |
|---|---|---|---|
| Videla 1995[187]<br><br>POOR | Classical incision, a nonreactive nonstress test, or regular uterine contractions | *Intervention:* PGE2 gel (pharmacy compounded); 2mg to external cervical os and posterior vaginal vault, repeated q4-6 hrs; max 4 doses<br><br>*Control:* nulliparous women<br><br>*Other procedures, interventions:* FHR and uterine activity monitored for all patients, amniotomy and internal monitoring used at OB discretion, oxytocin augmentation used if needed | NR |
| ***Prospective Cohort*** | | | |
| Sakala 1990[188]<br><br>POOR | • Breech presentation<br>• Multiple gestation<br>• OB contraindications to TOL. | *Intervention:* NR<br>*Control:* Spontaneous labor or elective CD.<br>*Other procedures, interventions:* NR | NR |
| ***Retrospective Cohorts*** | | | |
| Asaad 1994[189]<br><br>POOR | • Multiple pregnancies<br>• Malpresentations | Intervention: oxytocin 2mU/min increased at 'intervals' up to 32mU/min until regular contractions.<br>Control: SL<br>Other procedures, interventions: maternal pulse, temp and fetal HR checked regularly | NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population |
|---|---|---|---|
| Blanchette 1999[67]<br><br>POOR | USA | Misoprostol: 1997-98<br>PGE2: 1996-97<br><br>To compare PGE1 (misoprostol) to PGE2 (dinoprostone) for cervical ripening and induction in a community hospital. | Singleton pregnancy at term, cephalic presentation, reassuring FHR, Bishop score <5<br><br>IA-16<br>IC-9<br><br>Age: Mean 29.8 (misoprostol)<br>29.5 (PGE2)<br>Parity: NR<br>Race: NR<br>Insurance: NR |
| Choy-Hee 2001[195]<br><br>POOR | USA | 1996-98<br><br>To evaluate the safety and efficacy of cervical ripening with misoprostol in women with prior CD compared to those without prior CD. | Singleton pregnancy, Bishop score <6, cephalic presentation, and reassuring FHR<br><br>I- 48<br>IC- 377<br><br>Age: NR<br>Parity: NR<br>Race: NR<br>Insurance: NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Intervention<br>Control<br>Other Procedures | Reasons for Induction |
|---|---|---|---|
| Blanchette 1999[67]<br><br>POOR | • Known hypersensitivity to prostaglandins<br>• History of CD with vertical incision<br>• Major uterine surgery<br>• Placenta previa<br>• Grand multiparity (>/= 6 prior deliveries)<br>• History of asthma, glaucoma, or heart disease. | *Intervention:* Misoprostol 25mcg inserted into posterior vaginal fornix, with 25-50mcg q 4hrs to max 6 doses. If tachysystole (>/= 6 contractions/10 min) or contraction pattern of >/= 3/ 10 min, next dose withheld. Oxytocin was started 4 hrs after last dose of misoprostol, started at 1-2 mU/min and increased by </= 6mU/min q15-30 min until adequate pattern of contractions.<br><br>*Control:* 1) PGE2 gel (Prepidil(r)) 0.5mg intracervically q 6hrs to max 3 doses. Oxytocin if needed 6 hrs after last dose of PGE2.<br>OR<br>2) PGE2 slow-release pessary (Cervidil(r)) 10mg placed in vaginal posterior fornix for up to 12 hrs, removed when adequate uterine contraction pattern appeared. | NR |
| Choy-Hee 2001[195]<br><br>POOR | None stated, but apparently vertical and classical incisions excluded (reported that 73% had low-transverse incision, 27% had unknown incision). | Intervention: 50mcg misoprostol placed in posterior vaginal fornix q 4hrs up to 24 hrs (6 doses) until cervix dilated 2 cm or regular contraction pattern seen or rupture of membranes and regular contractions. Oxytocin augmentation used when labor failed to progress or 4 hrs after the max 6 doses of misoprostol if active labor not achieved.<br>Control: women without prior CD<br>Other procedures, interventions: none specified | |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population |
|---|---|---|---|
| Chua 1989[196]<br><br>POOR | Singapore | 1985-1988 | Prior low segment CD<br><br>SL/IA- 207<br>oxytocin used 97 (used for induction in 22, 75 augmented)<br>ERCD- 98 indications incl, CPD,2 prior, malpresentation, IUGR, previa, porr fetal testing<br><br>Age: NR<br>Parity: NR<br>Race: NR<br>Insurance: NR |
| Chuck 1995[197]<br><br>POOR | USA | 1993 - 94<br><br>To compare misoprostol tablets to dinoprostone gel in induction of labor | 35 to 42 weeks gestation admitted for labor induction<br><br>I- 5<br>IC- 10<br><br>Age: mean 29.3 (miso), 28.7 (PGE2)<br>Parity: mean 0.8<br>Race: NR<br>Insurance: NR |
| Coltart 1990[198]<br><br>POOR | UK | 1980-1987 | One prior CD, having second baby >26 weeks<br><br>SL/IA- 195<br>117 not augmented<br>20 augmented<br>58 induced<br>2 AROM<br>6 AROM + oxytocin<br>32 = PG pessary<br>18 PG pessary + oxytocin<br>ERCD- 158<br><br>Age: NR<br>Parity: NR<br>Race: NR<br>Insurance: NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Intervention<br>Control<br>Other Procedures | Reasons for Induction |
|---|---|---|---|
| Chua 1989[196]<br><br>POOR | NR | | |
| Chuck 1995[197]<br><br>POOR | nonvettex presentation, uterine scar other than prior low-transverse CD, ominous FHR tracing, multiple gestation, and complete vervical effacement | Intervention: misorprostol 50mcg intravaginally q 4hrs x max 5 doses<br>Control: PGE2 gel (Prepidil (r)) 0.5mg intracervically q 4hrs x max 5 doses<br>Other procedures, interventions: continuous FHR and tocodynomometery in all patients, cervical exam q 4hrs (more often if indicated) | NR |
| Coltart 1990[198]<br><br>POOR | • Failed induction<br>• Missing records | NR | NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population |
|---|---|---|---|
| Del Valle 1994[199]<br><br>POOR | USA | 1988-92<br><br>To evaluate the safety and efficacy of cervical ripening in women with prior low transverse CD undergoing induction of labor with an unfavorable cervix | >/=1 prior low-transverse CD<br><br>I- 89 (PGE2 only: 36, Dilapan only: 41, Both: 12)<br>IC- 61 (PGE2 only: 28, Dilapan only: 25, Both: 8)<br><br>Age: Mean 27<br>Parity: Mean 1.6<br>Race: NR<br>Insurance: NR |
| Lydon-Rochelle 2001[4]<br><br>POOR | USA | 1980-83<br><br>Report experiences with induction of labor in women with prior CS | One prior lower segment CS<br>I- 137 (102 (a/o), 35 (a)<br>SL- 529<br>Age: NR<br>Parity: NR<br>Race: NR<br>Insurance: NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Intervention<br>Control<br>Other Procedures | Reasons for Induction |
|---|---|---|---|
| Del Valle 1994[199]<br><br>POOR | None stated | Intervention: PGE2 gel (pharmacy compounded) intracervically 0.5mg q4-6 hrs or an osmotic dilator (Dilapan (r)) or both. Induction with oxytocin following ACOG guidelines (0.5-1 mU/min increased by 1-2 mU/min q30-60 min)<br>Control: Women receiving dilation and induction agents, no prior CD<br>Other procedures, interventions: NR | NR |
| Lydon-Rochelle 2001[4]<br><br>POOR | Recurring cause of prior CS, non-cephalic presentation, X-ray pelvimetry showing obstetric conjugate of <10cm and transverse diameter of <11.5cm | Intervention: Bishop score > 6: amniotomy alone<br>Bishop score 4-6: amniotomy + oxytocin<br>Bishop score <4: 3mg PGE2 tablets + amniotomy + oxytocin<br>Control: NR<br>Other procedures, interventions: NR | NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population |
|---|---|---|---|
| MacKenzie 1984[200]<br><br>POOR | England | 1992<br><br>To identify predictors of unsuccessful TOL | All women with prior CD attempting TOL<br><br>I- 170<br>IC-<br>SL- 5<br>ERCD-<br>A- 170<br><br>Age: mean 26.8 VBAC, 30.3 FTOL<br>Parity: 2.0 VBAC, 1.5 FTOL<br>Race: NR<br>Insurance: NR |
| McNally 1999[107]<br><br>FAIR | Ireland | 199-1994<br><br>To review management of women with 1 prior CD to see predictors for success | One prior CD<br><br>SL/IA- 244 (73.3%)<br>38 induced<br>50 oxytocin for augmentation<br>ERCD- 89<br><br>Age: SL/IA- 28.7 + 4.9 successful<br>31.2 + 3.7 failed<br>ERCD- 30.6 + 4.1<br>Parity: NR<br>Race: NR<br>Insurance: NR |
| Norman 1993[201]<br><br>POOR | Canada Toronto | 1980<br><br>To assess the safety of having most patients with prior cesarean attempt TOL | All TOL, 1st 6 of each month with elective repeat and one prior CS<br><br>SL- 207<br>ERCD- 62<br><br>Age: NR<br>Parity: NR<br>Race: NR<br>Insurance: NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Intervention<br>Control<br>Other Procedures | Reasons for Induction |
|---|---|---|---|
| MacKenzie 1984[200]<br><br>POOR | Vertical scar, placenta previa, breech or inappropriate size, head attitude or pelvimetry; active genital herpes infection; severe preeclampsia with rapid deterioration; signs of fetal distress with inability for fetal scalp pH, or fetal anomaly precluding safe vaginal delivery | Intervention: Aggressive use of PGE2 gel for cervical ripening, oxytocin and early amniotomy for induction or augmentation<br>Control: SL<br>Other procedures, interventions: none specified | NR |
| McNally 1999[107]<br><br>FAIR | NR | 38 induced with oxytocin | NR |
| Norman 1993<br><br>POOR | Recurrent indication for cesarean, no obvious CPD, | All monitored with IUPC and FSE, oxytocin used for augmentation and induction when indicated, more than 1 cesarean not excluded | NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population |
|---|---|---|---|
| Plaut 1999[202]<br><br>POOR | USA | 1983-1992 | Subject Eligibility: all women with prior CD eligible for VBAC<br><br>SL/IA: 10,880<br><br>Age: NR<br>Parity: NR<br>Race: NR<br>Insurance: NR |
| Plaut 1999[15]<br><br>POOR | USA | 1996-98<br><br>To report 4 cases of uterine rupture with misoprostol, to conduct a literature review, purpose of retrospective cohort study not clearly stated | Subject Eligibility: not clear, those attempting TOL<br><br>I- misoprostol: 89<br>IC- 423<br><br>Age: NR<br>Parity: NR<br>Race: NR<br>Insurance: NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Intervention<br>Control<br>Other Procedures | Reasons for Induction |
|---|---|---|---|
| Plaut 1999[202]<br><br>POOR | Classical, prior UR, contraindication to labor, from 1983-1985 unknown excluded | Twins, breech allowed, manual exploration on all VD | NR |
| Plaut 1999[15]<br><br>POOR | None stated | Intervention: misoprostol , doses not stated<br>Control: unclear - combines those induced with oxytocin and SL<br>Other procedures, interventions: none specified | NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population |
|---|---|---|---|
| Ravasia 2000[214]<br><br>POOR | Canada | 1992-98<br><br>To determine and compare uterine rupture rates and VD rates among TOLs induced and SL | All patients with prior CD<br><br>I- 575: 172 PGE2 (95 PGE2 alone, 77 PGE2/oxy)<br>129 Foley (11 Foley alone, 118 Foley/oxy)<br>274 cervical ripening (26 amniotomy, 214 oxy, 34 amnio/oxy)<br>SL- 1544<br><br>Age: NR<br>Parity: median 1 for PGE2 gel, Foley, and SL. 2 for Induction without cervical ripening<br>Race: NR<br>Insurance: NR |
| Segal 1995[51]<br><br>POOR | Israel | 1988-93<br><br>To assess rates of VBAC and complications in a rural community setting | Prior CD, known transverse or unknown scar, breech presentation<br><br>I- 25 (I and/or a)<br>SL- 26<br>ERCD- 16<br><br>Age: NR<br>Parity: 57% = 1; 43% = >1<br>Race: 28% white<br>72% black<br>Insurance: NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Intervention<br>Control<br>Other Procedures | Reasons for Induction |
|---|---|---|---|
| Ravasia 2000[214]<br><br>POOR | None stated | Intervention: 1) Cervical ripening with: PGE2 gel intravaginally ; 1-2mg q6-12 hrs to max 3 doses, OR<br>2) intracervical extra-amniotic placement of an 18-guage Foley catheter, inflated to 30-40ml with or without gentle traction and removed when the bulb was expelled through the cervical os; both followed by oxytocin if necessary<br>3) Induction without cervical ripening with oxytocin or amniotomy or a combination of both.<br>Control: Spontaneous labor<br>Other procedures, interventions: Oxytocin doses: 1-2 mU/min and increased by 1-2 mU q 30min. Oxytocin dose reduced or stopped when non-reassuring FHR occurred and restarted if appropriate. The use of oxytocin as augmentation was not | NR |
| Segal 1995[51]<br><br>POOR | Other malpresentations, classical scar | Intervention: oxytocin for induction or augmentation<br>Control: SL<br>Other procedures, interventions: none specified | |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population |
|---|---|---|---|
| Zelop 2000[193]<br><br>POOR | USA<br>Brigham | 1988-93<br><br>To examine the effect of a disciplined approach to labor management in TOL | Rupture of membranes without contractions after 2 to 6 hrs, or slow progress of labor<br><br>I- 142 (I),<br>SL- 446, of these 198 (a)<br>ERCD- 125<br><br>Age: NR<br>Parity: NR<br>Race: 71% white<br>15% Black2% Hispanic<br>Insurance: NR |
| Zelop 1999[194]<br>(3 pubs)<br><br>POOR | USA | 1984-96<br><br>To examine the effect of labor induction on the risk of uterine rupture | Term pregnancy with one prior lower segment (vertical, transverse or unknown) CD, no other deliveries<br><br>I- 560 (I or a) (458 oxy alone, 35 PGE2 alone, 67 both)<br>SL-2214<br>A- 1089<br><br>Age: NR<br>Parity: NR<br>Race: NR<br>Insurance: NR |
| ***Case Control*** | | | |
| Leung 1993[54]<br><br>POOR | USA | 1994-1998<br><br>To identify risk factors for scar dehiscence | Cases: cases = dehiscence with 1 prior LSCD who underwent TOL<br><br>Controls: Controls = one prior LSCD who underwent TOL without dehiscence<br><br>Cases: 13<br>Controls: 13<br><br>Age: NR<br>Parity: NR<br>Race: NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Intervention<br>Control<br>Other Procedures | Reasons for Induction |
|---|---|---|---|
| Zelop 2000[193]<br><br>POOR | Prior classical incision, OB or medical contraindication to labor, or declined TOL | Intervention: oxytocin for induction or augmentation<br>Control: SL, elective repeat CD<br>Other procedures, interventions: FHR for all patients, internal uterine pressure sensors and internal fetal scalp electrodes when active labor started | NR |
| Zelop 1999[194]<br>(3 pubs)<br><br>POOR | None stated | Intervention: PGE2 gel (pharmacy compounded) 4mg intravaginally q 4hrs max 3 doses; or oxytocin induction or augmentation (1-2 mU/min increased by 1-2mU/min q15-20 min to max 20 mU/min<br>Control: Spontaneous labor<br>Other procedures, interventions: none specified | NR |
| ***Case Control*** | | | |
| Leung 1993[54]<br><br>POOR | NA | NA | NA |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population |
|---|---|---|---|
| Miles 2000[203]<br><br>POOR | UK | 1983-90<br><br>To thoroughly investigate the risk factors of UR in patients undergoing TOL after CD | Prior CD attempting VBAC (including twin and breech)<br><br>Cases: patients with prior CD and UR while undergoing subsequent TOL<br>Controls: patients with prior CD and subsequent TOL and no UR during same time, randomly selected, grouped by year<br><br>Cases: 70<br><br>Controls: 70<br><br>Age: NR<br>Parity: NR<br>Race: NR |
| Paterson 1991[165]<br><br>POOR | | 1990-1997<br>Database | Database Description: hospital D/C data<br>36,727 singleton birth, >37 weeks, cephalic, history of at least one prior cesarean and no prior VD<br><br>Age: TOL 29.0 (s.d. 4.8)<br>ERCD 30.5 (s.d.5.0)<br>Parity: primiparas 14,722<br>multiparas 16,5818<br>Race: NR<br>Insurance: NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 1b. Study descriptions for vaginal delivery, maternal and infant outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Intervention<br>Control<br>Other Procedures | Reasons for Induction |
|---|---|---|---|
| Miles 2000[203]<br><br>POOR | • Prior classic incision<br>• Placenta previa<br>• Transverse lie<br>• Conditions requiring immediate delivery and refusal of TOL | NR | NR |
| Paterson 1991[165]<br><br>POOR | NR | NR | NR |

IA=induced or augmented; TOL=trial of labor; CD=cesarean delivery; NR=not reported; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; HR=heart rate; CPD= cephalopelvic disproportion; PGE= prostaglandin E2; IUGR=intrauterine growth restriction; GA=gestational age; EM=electronic monitoring

**Evidence Table 2. Vaginal delivery- good or fair quality studies**

| Author<br>Year<br>Quality | Population |
|---|---|
| ***Large population-based studies*** | |
| McMahon<br>1996[5]<br>FAIR | One LTCD, not clear what was done with unknown |
| ***Prospective Cohort*** | |
| Duff<br>1988[26]<br>GOOD | One prior LTCD, unknown not allowed |
| Flamm<br>1988[21]<br>GOOD | LTCD and unknown and more than 1 prior |
| Blanco<br>1992[34]<br>FAIR | One prior LTCD, PGE2 (up to 3x) Gel induction of labor vs spontaneous onset of labor (oxy as needed in either group) |
| Flamm<br>1997[33]<br>FAIR | Prior LTCD, unknown allowed, more than 1 allowed |
| Flamm<br>1994[20]<br>FAIR | All verticals excluded, unknown allowed, more than 1 allowed |
| Flamm<br>1990[22]<br>FAIR | LTCD, unknown, more than 1 prior |
| Flamm<br>1987[28]<br>FAIR | LTCD, unknown, more than 1 prior |

LTCD=low transverse cesarean delivery; PGE2=prostaglandin E2; SL=spontaneou

**Vaginal Delivery Rate**

Overall: 1962/3249
(60.4%)

Overall: 167/227 (74% 95% CI 66-78%)

Overall- 1315/1776 (74%)
SL (non-Medicated)- 3151/4047 (78%)
Any Oxtocin- 1140/1686 (68%)

Induced- PG gel
18/25
(74%)

Induced- PG gel
233/453 (51%)

Overall- 3746/5022 (75%)

Overall: 2977/3957 (75%) 1986-1988
SL - 2146/2756 (78%)
Any Oxtocin- 831/1201 (69%)

Overall: 1314/1776 (74%)
SL (non-Medicated)-1005/1291 (78%)
Any Oxtocin- 309/485 (64%)

s labor

**Evidence Table 2. Vaginal delivery- good or fair quality studies**

| Author<br>Year<br>Quality | Population |
|---|---|
| Stovall<br>1987[27]<br>FAIR | LTCD or LTVS allowed more than 1 allowed<br>not clear what was done with unknown |
| Phelan<br>1987[23]<br>FAIR | Low vertical, unknown, LTCD allowed during<br>2nd year more than 1 allowed |
| Paul<br>1985[30]<br>FAIR<br>overlapping data with<br>Phelan 87 | Not more than 1, low vertical, unknown and<br>LTCD allowed |
| Martin<br>1983[24]<br>FAIR | One or more, includes low-vertical, no<br>rupture occurred in the 76 with prior vertical |
| Cowan<br>1994[25]<br>FAIR | More than 1 prior, LTCD and unknown<br>included, known vertical excluded (2vertical<br>entered) |
| ***Retrospective Cohorts*** | |
| Raynor<br>1993[29]<br>FAIR | LTCD,unknown, more than 1 allowed, (2<br>verticals allowed) |

LTCD=low transverse cesarean delivery; PGE2=prostaglandin E2; SL=spontaneou

**(continued)**

| Vaginal Delivery Rate |
| --- |
| Overall: 214/272 (79%)<br>SL (non-Medicated)- 116/139 (83%)<br>Any Oxtocin- 98/133 (74%) |
| Overall: 1465/1796 (82%) |
| Overall: 614/751 (82%)<br>SL (non-Medicated)- 395/443 (89%)<br>Augmented (Oxytocin)- 177/257 (69%)<br>Induced- 23/ 32 (72%) |
| Overall: 101/162 (62%) |
| Overall: 478/593 (81%)<br>SL- 315/359 (88%)<br>Augmented (Oxytocin)- 117/167 (70%)<br>Induced- 46/67 (69%) |
| Overall- 61%<br>SL - 17/16 (65%)<br>Any Oxtocin- 14/25 (56%) |

s labor

**Evidence Table 3a. Predictive tools- good or fair quality studies**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population | Exclusion criteria |
|---|---|---|---|---|
| ***Scoring Tools*** | | | | |
| Flamm 1997[33] GOOD | USA Southern California Kaiser Permanente | Prospective cohort 1990-1992 To develop a scoring system to predict the likelihood of vaginal birth in patients undergoing a TOL after previous cesarean delivery using factors known *at the time of hospital admission*. | All women with a previous cesarean delivery | Elective repeat cesarean, incomplete chart data. |
| Vinueza 2000[41] FAIR | USA Spartanburg Regional Medical Center, South Carolina | Retrospective cohort 1992-1997 To determine the applicability of a simple scoring system, by Troyer and Parisi, in predicting the success of a trial of labor among parturients with prior cesarean delivery. | Women with a documented previous LTCS | ERCD, suspected fetal distress within one hour of admission |
| Weinstein 1996[42] FAIR | Israel Hebrew University | Retrospective cohort 1981-1990 To evaluate the relative weight of the different variables that may influence the chances of vaginal birth after one cesarean delivery, with the aim of developing a predictive score for success of such a trial. | Women with one prior abdominal delivery | ERCD, incomplete records, classic or unknown scar, hx of rupture, absolute CPD, previa, fetal malpresentation incompatible with a safe VD |

TOL=trial of labor; RCT=randomized controlled trial; NR= not reported; VBAC=vaginal birth after cesarean; FTP=failure to progress; CD=cesarean delivery; LTCD=low transverse cesarean delivery; PCD=prior cesarean delivery; ERCD=elective repeat cesarean delivery; VD=vaginal delivery; CPD=cephalopelvic disproportion; XRP=x-ray pelvimetry;

**Evidence Table 3a. Predictive tools- good or fair quality studies**

| Author Year Quality | Methods | Number Eligible/ Attempting TOL |
|---|---|---|
| ***Scoring Tools*** | | |
| Flamm 1997[33] GOOD | • Each patient attempting a TOL given a computer-generated random number; then sorted in ascending order; first 2502 assigned to score development group and last 2501 to score testing group.<br>• Very few patients will achieve the highest score category (6%).<br>• Even the lowest score group had nearly 50% vaginal delivery rate.<br>• This scoring system is only valid for use at the time of the admission. | 5022/5003 |
| Vinueza 2000[41] FAIR | • Inter-group comparisons revealed significant differences in gestational age (p=0.004), cervical dilation on admission (p<0.0001), birth weight (p=0.034)<br>• distribution of population according to score: 0 - 21%, 1 - 41%, 2 - 28%, 3 to 4 - 10%.<br>• confirmed the inverse relationship between score and successful VD. | 263/636 |
| Weinstein 1996[42] FAIR | • Past indication categories<br>*Grade A:* malpresentation, PIH, twins<br>*Grade B:* placenta previa/abruptio, prematurity, PROM<br>*Grade C:* fetal distress, CPD, FTP, cord accident<br>*Grade D:* macrosomia, IUGR | 572/471 |

TOL=trial of labor; RCT=randomized controlled trial; NR= not reported; VBAC=va
progress; CD=cesarean delivery; LTCD=low transverse cesarean delivery; PCD=pr
ERCD=elective repeat cesarean delivery; VD=vaginal delivery; CPD=cephalopelv

**(continued)** **Evidence Tab**

| Score development | Author Year Quality |
|---|---|
| | ***Scoring Tool*** |
| Chi Square and Student t-test analysis for all predictors. Those significant at a p<0.05 were included in one of three logistic regression models: historic, intrapartum, and perinatal factors. Those predictors significant at a p<0.05 were entered into the final logistic regression model. Points were then assigned to each predictor according to their Beta Coefficient, where higher scores were given to those predictors associated with a successful TOL. Final range: 0-10. | Flamm 1997[33] GOOD |
| Applied the scoring system proposed by Troyer and Parisi (1992). | Vinueza 2000[41] FAIR |
| Multiple variables were examined and were entered into a logistic regression model to control for confounding and to evaluate the effect of these variables on labor outcome. The score was then developed on the basis of the relative weights (odds ratios). | Weinstein 1996[42] FAIR |

aginal birth after cesarean; FTP=failure to TOL=trial of lab
ior cesarean delivery; progress; CD=ce
ic disproportion; XRP=x-ray pelvimetry; ERCD=elective

**ɔle 3a. Predictive tools- good or fair quality studies (continued)**

| Predictors included | Performance |
|---|---|
| **'s** | |
| *Age under 40:* (2 points) | Score / % with VD |
| *Vaginal birth history:* | 0 to 2: 49.1 |
| before and after (4) | 3: 59.9 |
| after CD (2) | 4: 66.7 |
| before CD (1) | 5: 77.0 |
| none (0) | 6: 88.6 |
| *Reason other than FTP for CD:* (1) | 7: 92.6 |
| *Cervical effacement at admission:* | 8 to 10: 94.9 |
| >75% (2) | |
| 25-75% (1) | *Overall VBAC rate: 74.9%* |
| <25% (0) | |
| *Cervical dilation 4cm or more at admission:* (1) | |
| • Previous dysfunctional labor<br>• No prior VD<br>• Nonreassuring fetal heart tracing on admission<br>• Labor induction | Score / % with VD<br>0 98%<br>1 69%<br>2 40%<br>3 to 4 33%<br><br>*Overall VBAC rate*: 63% (167/263) |
| Bishop score ≥4 (if yes, 4 points); VD before CD (2) Past indication - Grade A (6), Grade B (5), Grade C (4), Grade D (3) | Score / % with VD<br>≥4 ≥58%<br>≥6 ≥67%<br>≥8 ≥78%<br>≥10 ≥85%<br>≥12 ≥88%<br><br>• Sensitivity: 85.6% (of predicting VD)<br>• Specificity: 67.7% (of predicting CD)<br>• Overall accuracy: 80.0%<br><br>*Overall VBAC rate*: 78.1% (368/471) |

or; RCT=randomized controlled trial; NR= not reported; VBAC=vaginal birth after cesarean; FTP=failure to
sarean delivery; LTCD=low transverse cesarean delivery; PCD=prior cesarean delivery;
repeat cesarean delivery; VD=vaginal delivery; CPD=cephalopelvic disproportion; XRP=x-ray pelvimetry;

**Evidence Table 3a. Predictive tools- good or fair quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population | Exclusion criteria |
|---|---|---|---|---|
| Jakobi 1993[37]<br>FAIR | Israel<br>Rambam Medical Center | Retrospective cohort<br>Dates NR<br>To examine 15 identified prognostic factors, in order to evaluate the predictive value or a better selection of patients for VBAC. | Women with one previous cesarean delivery, who attempted a TOL without using oxytocin | Unknown scar type or other than low transverse incision, nonvertex presentation, multiple gestation, ruptured membranes and no contractions for more than 16 hours or at >42 weeks gestation |
| Troyer 1992[40]<br>FAIR | USA<br>Hermann Hospital, University of Texas | Retrospective cohort<br>1990-1991<br>To characterize risk factors in patients undergoing trial of labor after previous cesarean section. | Women with a documented previous lower transverse CD, gestational age >36 weeks, singleton pregnancy, vertex presentation. | ERCD, undocumented incision, low vertical incision, classic incision, multiple gestation, malpresentation, <36 weeks gestation. |
| Macones 2001[38]<br>FAIR | USA<br>University of Pennsylvania | Case-control<br>1994-1998<br>To assess the effectiveness of a neural network for predicting the likelihood of success of a TOL | Women with a PCS.<br><br>*Cases:* failed TOL<br>*Controls:* VBAC | Unknown scar type, previous vertical cesarean delivery. |

TOL=trial of labor; RCT=randomized controlled trial; NR= not reported; VBAC=vaginal birth after cesarean; FTP=failure to progress; CD=cesarean delivery; LTCD=low transverse cesarean delivery; PCD=prior cesarean delivery; ERCD=elective repeat cesarean delivery; VD=vaginal delivery; CPD=cephalopelvic disproportion; XRP=x-ray pelvimetry;

**Evidence Table 3a. Predictive tools- good or fair quality studies**

| Author Year Quality | Methods | Number Eligible/ Attempting TOL |
|---|---|---|
| Jakobi 1993[37] FAIR | It was hospital policy that no elective cesareans were done at the patients' request; the model was tested retrospectively on the same population that it was derived from. Only 8 futile TOLs took place; 76 unjustified CDs were performed. | 261/261 |
| Troyer 1992[40] FAIR | • The lowest group still had a VD rate of 46.1%<br>• Distribution of population according to score: 0 - 22%, 1 - 35%, 2 - 33%, 3 to 4 - 10% | 567/264 |
| Macones 2001[38] FAIR | Cases: n=100<br>Controls: n=300 | 400/400 |

TOL=trial of labor; RCT=randomized controlled trial; NR= not reported; VBAC=va
progress; CD=cesarean delivery; LTCD=low transverse cesarean delivery; PCD=pr
ERCD=elective repeat cesarean delivery; VD=vaginal delivery; CPD=cephalopelv

**(continued)** **Evidence Tab**

| Score development | Author Year Quality |
|---|---|
| Chi Square tests were used to calculate success rates associated with different factors. To address the issue of confounding, a multivariate analysis with discriminant analysis was performed. The six most significant prognostic factors were used to create a predictive model. | Jakobi 1993[37] FAIR |
| Multiple variables were examined and four were found to be significantly associated with TOL outcome included: previous dysfunctional labor, no prior VD, nonreassuring fetal heart tracing on admission, labor induction. Each variable was assigned a point value of one. After summing the values, the higher scores were more likely to fail a TOL. | Troyer 1992[40] FAIR |
| Over 70 predictive factors were reviewed and analyzed using unpaired t-tests and the Mann-Whitney U test. Significant associations were entered into a model that would ensure a high sensitivity (in order to detect those women who would fail a TOL). | Macones 2001[38] FAIR |

aginal birth after cesarean; FTP=failure to TOL=trial of lab
ior cesarean delivery; progress; CD=ce
ic disproportion; XRP=x-ray pelvimetry; ERCD=elective

**ɔle 3a. Predictive tools- good or fair quality studies (continued)**

| Predictors included | Performance |
|---|---|
| Previous breech (0.516 - standardized function coefficient); Previous successful VBAC (0.353); Station at admission (0.302); Admission without rupture of membranes (0.296); Dilation at admission (0.281); Previous failure to progress (-0.265) | • Predictive value for successful VBAC: 94.5% (139/147)<br>• Predictive value for failed VBAC: 33.3% (38/114).<br>• Overall predictive value: 68%.<br><br>*Overall VBAC rate: 82.3%* |
| Previous dysfunctional labor; No prior VD; Nonreassuring fetal heart tracing on admission; Labor induction | Score / % with VD<br>0 / 91.5%<br>1 / 73.9%<br>2 / 66.7%<br>3 to 4 / 46.1%<br><br>*Overall VBAC rate: 72.7%* (192/264) |
| A history of substance abuse; Prior successful VBAC; Admission cervical dilation; Need for labor augmentation. | • Sensitivity: 77% (of predicting CD)<br>• Specificity: 65% (of predicting VD)<br>• Overall accuracy: 69%<br>• Area under ROC curve: 0.77 |

or; RCT=randomized controlled trial; NR= not reported; VBAC=vaginal birth after cesarean; FTP=failure to
sarean delivery; LTCD=low transverse cesarean delivery; PCD=prior cesarean delivery;
repeat cesarean delivery; VD=vaginal delivery; CPD=cephalopelvic disproportion; XRP=x-ray pelvimetry;

**Evidence Table 3a. Predictive tools- good or fair quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population | Exclusion criteria |
|---|---|---|---|---|
| Pickhardt<br>1992[39]<br>FAIR | USA<br>Mississippi Medical Center - Jackson Mississippi | Case-control<br>1989<br>To determine if there are valid predictors before parturition, of vaginal birth after previous cesarean birth success that could be used to enhance the obstetric care of a patient | Women with a PCS.<br><br>*Cases:* failed TOL<br>*Controls:* VBAC | Incomplete data or unobtainable charts |
| ***Imaging Modalities*** | | | | |
| Thubisi<br>1993[47]<br>GOOD | South Africa<br>King Edward VIII Hospital-Durbin | RCT<br>1990<br>To determine whether antepartum XRP reliably identified women suitable for a trial of labor or repeat elective cesarean section after one previous section. | Women with one previous LTCS.<br><br>*Group 1*: antepartum XRP<br>*Group 2*: postpartum XRP | ERCD, abnormal fetal lie or presentation, obstetric complications requiring planned delivery, maternal medical disorders contraindicating a TOL, multiple pregnancy, preterm labor, grossly contracted pelvis on examination, intrauterine death |

TOL=trial of labor; RCT=randomized controlled trial; NR= not reported; VBAC=vaginal birth after cesarean; FTP=failure to progress; CD=cesarean delivery; LTCD=low transverse cesarean delivery; PCD=prior cesarean delivery; ERCD=elective repeat cesarean delivery; VD=vaginal delivery; CPD=cephalopelvic disproportion; XRP=x-ray pelvimetry;

**Evidence Table 3a. Predictive tools- good or fair quality studies**

| Author Year Quality | Methods | Number Eligible/ Attempting TOL |
|---|---|---|
| Pickhardt 1992[39] FAIR | • R squared for Equation 2 (0.1552) was slightly larger than the R squared for Equation 1 (0.1018), indicating that Equation 2 is slightly better than Equation 1; however neither of these indicates a clear superiority.<br>• Pickhardt recommended that it was appropriate to encourage a TOL in almost all patients with a prior LTCS. | 336/312 |
| ***Imaging Modalities*** | | |
| Thubisi 1993[47] GOOD | • Patients randomly assigned (alternately) to one of two groups: 1) antepartum XRP group - XRP at 36 weeks before the mode of delivery was decided upon (n=144), 2) control group - no antepartum XRP, but they did receive a postpartum XRP (n=144).<br>• 60 of the 144 in the antepartum XRP group were considered to have an inadequate pelvis, leaving 84 attempting a TOL in the intervention group. | 306/228 |

TOL=trial of labor; RCT=randomized controlled trial; NR= not reported; VBAC=va
progress; CD=cesarean delivery; LTCD=low transverse cesarean delivery; PCD=pr
ERCD=elective repeat cesarean delivery; VD=vaginal delivery; CPD=cephalopelv

**(continued)** **Evidence Tab**

| Score development | Author Year Quality |
|---|---|
| Nineteen specific obstetric variables were examined and analyzed using t-tests and chi-square tests for univariate analysis. The factors were then entered into a logistic stepwise regression (p to enter 0.05), which resulted in two different regression equations (based upon the number of subjects used to formulate the model). | Pickhardt 1992[39] FAIR |
| | ***Imaging Mod*** |
| Measurements of the pelvis saggittal inlet (<11cm), saggittal outlet (<10cm), transverse inlet (<11.5cm), transverse outlet (bispinous <9cm), were considered inadequate, as defined by Russel and Richards (1971). | Thubisi 1993[47] GOOD |

aginal birth after cesarean; FTP=failure to TOL=trial of lab
ior cesarean delivery; progress; CD=ce
ic disproportion; XRP=x-ray pelvimetry; ERCD=elective

**ɔle 3a. Predictive tools- good or fair quality studies (continued)**

| Predictors included | Performance |
|---|---|
| • Equation 1 (n=101): constant (-4.4183), estimated fetal weight (0.0010), number of previous CD (0.7719).<br>• Equation 2 (n=306): constant (-8.6165), number of previous CD (0.8326), cervical dilation in cm (-0.4803), estimated gestational age (0.2160) | • Equation 1:<br>Sensitivity: 60.4% (of predicting CD)<br>Specificity: 66.0% (of predicting VD)<br>Accuracy: 63.4%<br>• Equation 2:<br>Sensitivity: 38.4%<br>Specificity: 87.9%<br>Accuracy: 71.9%<br>*Overall VBAC rate*: 63.1% |
| ***alities*** | |
| Pelvic dimensions: adequate or inadequate | • Sensitivity: 26.2% (of predicting CD)<br>• Specificity: 45.0% (of predicting VD)<br>• Positive Predictive Value: 40.0%<br>• Negative Predictive Value: 30.3%<br><br>• 27.7% (23/84) in the antepartum XRP group who were considered to have an adequate pelvis had a VD, which was significantly less than the 41.6% (60/144) in the control group (**p<0.05**).<br>• Postpartum XRP of the control group revealed that a greater proportion of those considered to have an inadequate pelvis delivered vaginally (60% - 33/55), compared to those considered to have an adequate pelvis (30% - 27/89).<br>• 30.3% (27/89) of those in the control group considered to have an adequate pelvis by postpartum XRP had a VD. |

or; RCT=randomized controlled trial; NR= not reported; VBAC=vaginal birth after cesarean; FTP=failure to
sarean delivery; LTCD=low transverse cesarean delivery; PCD=prior cesarean delivery;
repeat cesarean delivery; VD=vaginal delivery; CPD=cephalopelvic disproportion; XRP=x-ray pelvimetry;

**Evidence Table 3b. Predictive tools - poor quality studies**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population | Exclusion criteria |
|---|---|---|---|---|
| ***Imaging Modalities*** | | | | |
| Abitbol 1991[205]<br>POOR | USA<br>New York: Jamaica Hospital and State University at Stony Brook | Prospective cohort<br>Dates NR<br>To evaluate the efficacy of the cephalopelvic disproportion index (CPDI) in predicting the outcome of a TOL in those with and without a PCS. | VBAC candidates per ACOG recs: without diabetes, without hypertension, with estimated fetal weight <4000gm, and a known previous lower segment scar (subset of subjects in a larger study). | Patient consent, noncephalic presentation, complications during the course of labor. |
| Thurnau 1991[48]<br>POOR | USA<br>University of Oklahoma Oklahoma City, Oklahoma | Prospective cohort<br>1988-1990<br>To evaluate the efficacy of the fetal pelvic index (FPI) as a predictor of fetal-pelvic disproportion in gravid women attempting VBAC. Also to compare the FPI findings with those of x-ray pelvimetry and ultrasonographical derived estimated fetal weight > 4000gm. | Women between 35 and 43 weeks' gestation with a desire for VBAC. | No XRP performed, no ultrasonographic measurements performed, inadequate labor trial before CD (cervical dilation <5cm). |

VBAC=vaginal birth after cesarean; ACOG=American College of Obstetricians and Gynecologists; TOL=trial of labor; CD=cesarean delivery; CPDI= cephalopelvic disproportion index; PCD=prior cesarean delivery; VD=vaginal delivery; BPD=biparietal diameter; SPD= smallest pelvic diameter; PPV= positive predictive value;
NPV= negative predictive value; FTOL=failed trial of labor; APD= anteroposterior diameter; TD= transverse diameter; EFW=estimated fetal weight; XRP=x-ray pelvimetry; FPI=fetal-pelvic index; AP=anterior-posterior;

**Evidence Table 3b. Predictive tools - poor quality studies (continued)**

| Author Year Quality | Methods | Number eligible/ attempting TOL | Score development |
|---|---|---|---|
| ***Imaging Modalities*** | | | |
| Abitbol 1991[205] POOR | • The overall study included 100 patients, from which a subset of 34 were patients attempting a TOL following a previous CD.<br>• Results provided are a combination of two groups:<br>1) those attempting VBAC<br>2) primigravids at full term, with an unengaged fetal head.<br>• >12mm CPDI does not guarantee a VD; this may be due to variations in joint mobility, intensity of contractions, position of cephalic presentation, fetal abdomen, and other obstetric factors. | 34/34 | Considered three measurements:<br>1) biparietal diameter of the fetal head<br>2) anteroposterior diameter of the pelvic inlet<br>3) the bispinal diameter of the midpelvis. The BPD of the fetal head was then matched to the smaller of the two pelvic dimensions (SPD). The difference between the two was termed the CPDI (=SPD-BPD). |
| Thurnau 1991[48] POOR | • 64 patients with cephalic presentation, 1 with breech.<br>• 58 patients with spontaneous labor, 7 requiring induction or augmentation.<br>• Compared FPI with Ultrasonography based EFW and XRP. Both had low sensitivities of 0.11 and 0.17, respectively). | 74/65 | Measured the anteroposterior (APD) and transverse diameters (TD) to calculate the circumference (C=(TD+APD)x0.5pi) of the fetal cranium (HC), fetal abdomen (AC), maternal pelvic inlet (IC), and maternal midpelvis (MC). The differences between the four circumferences (HC-IC, HC-MC, AC-IC, AC-MC) were calculated and the two most positive values were summed to equal the fetal-pelvic index (FPI). A positive FPI identifies a fetus that is larger than the pelvis (fetal-pelvic disproportion); a negative FPI identifies a fetus that is smaller than the pelvis (no fetal-pelvic disproportion). |

VBAC=vaginal birth after cesarean; ACOG=American College of Obstetricians and Gynecologists; TOL=trial of labor; CD=cesarean delivery; CPDI= cephalopelvic disproportion index; PCD=prior cesarean delivery; VD=vaginal delivery; BPD=biparietal diameter; SPD= smallest pelvic diameter; PPV= positive predictive value;
NPV= negative predictive value; FTOL=failed trial of labor; APD= anteroposterior diameter; TD= transverse diameter; EFW=estimated fetal weight; XRP=x-ray pelvimetry; FPI=fetal-pelvic index; AP=anterior-posterior;

**Evidence Table 3b. Predictive tools - poor quality studies (continued)**

| Author<br>Year<br>Quality | Predictors included | Performance |
|---|---|---|
| ***Imaging Modalities*** | | |
| Abitbol<br>1991[205]<br>POOR | • Biparietal diameter of the fetal head<br>• Anteroposterior diameter of the pelvic inlet<br>• Bispinal diameter of the midpelvis | CPDI / % with VD<br><9mm / 0 (0/13)<br>9-12mm / 21.1 (4/19)<br>>12mm / 73.5 (50/68) |
| Thurnau<br>1991[48]<br>POOR | Fetal-pelvic index: positive or negative | • *Sensitivity:* 72% (positive test in those with CD)<br>• *Specificity:* 100% (negative test in those with VD)<br>• *PPV:* 100% (13/13 with positive FPI, required CD)<br>• *NPV:* 90% (47/52 with negative FPI, had VD)<br>• *Overall accuracy:* 92.3% (60/65)<br>• *Fischer's exact test:* **p<0.00001** |

VBAC=vaginal birth after cesarean; ACOG=American College of Obstetricians and Gynecologists; TOL=trial of labor; CD=cesarean delivery; CPDI= cephalopelvic disproportion index; PCD=prior cesarean delivery; VD=vaginal delivery; BPD=biparietal diameter; SPD= smallest pelvic diameter; PPV= positive predictive value; NPV= negative predictive value; FTOL=failed trial of labor; APD= anteroposterior diameter; TD= transverse diameter; EFW=estimated fetal weight; XRP=x-ray pelvimetry; FPI=fetal-pelvic index; AP=anterior-posterior;

**Evidence Table 3b. Predictive tools - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population | Exclusion criteria |
|---|---|---|---|---|
| Morgan 1988[206] POOR | USA<br>University of Oklahoma<br>Oklahoma City, Oklahoma | Prospective cohort<br>To compare the efficacy of three methods used to identify fetal-pelvic disproportion (FPI, XRP, EFW>4000g) in patients delivering neonates weighing >4000gm after an adequate TOL. | Women with PCS, who required the use of oxytocin in labor, had suspected fetal-pelvic disproportion, and suspected fetal macrosomia. | <37 weeks gestation, neonates <4000gm. |
| Lao 1987[31] POOR | Hong Kong<br>Princess Margaret Hospital<br>Hong Kong | Retrospective cohort<br>1980 - 1983<br>To determine if X-ray pelvimetry (XRP) is useful in a TOL after PCS. | Women with one previous lower segment CD who attempted a TOL. | no XRP performed |
| Mahmood 1987[45] POOR | Scotland<br>Bellshill Maternity Hospital<br>Lanarkshire | Retrospective cohort<br>1982-1983<br>To assess the role of radiological pelvimetry in the management of patients who have had a PCS. | Women with a PCS. | More than one PCS, previous classical scar, no XRP |

VBAC=vaginal birth after cesarean; ACOG=American College of Obstetricians and Gynecologists; TOL=trial of labor; CD=cesarean delivery; CPDI= cephalopelvic disproportion index; PCD=prior cesarean delivery; VD=vaginal delivery; BPD=biparietal diameter; SPD= smallest pelvic diameter; PPV= positive predictive value;
NPV= negative predictive value; FTOL=failed trial of labor; APD= anteroposterior diameter; TD= transverse diameter; EFW=estimated fetal weight; XRP=x-ray pelvimetry; FPI=fetal-pelvic index; AP=anterior-posterior;

**Evidence Table 3b. Predictive tools - poor quality studies (continued)**

| Author Year Quality | Methods | Number eligible/ attempting TOL | Score development |
|---|---|---|---|
| Morgan 1988[206] POOR | • FPI has a relatively high predictive accuracy.<br>• XRP and ultrasound, when used alone, do not predict fetal-pelvic disproportion accurately. | 101/34 | Measured the anteroposterior (APD) and transverse diameters (TD) to calculate the circumference (C=(TD+APD)x0.5pi) of the fetal cranium (HC), fetal abdomen (AC), maternal pelvic inlet (IC), and maternal midpelvis (MC). The differences between the four circumferences (HC-IC, HC-MC, AC-IC, AC-MC) were calculated and the two most positive values were summed to equal the fetal-pelvic index (FPI). A positive FPI identifies a fetus that is larger than the pelvis (fetal-pelvic disproportion); a negative FPI identifies a fetus that is smaller than the pelvis (no fetal-pelvic disproportion). |
| Lao 1987[31] POOR | No information was provided for a summary of adequate pelvises, but only for each measurement separately (OC, TC, APO). | 666/445 | Considered three measurements: 1) obstetric conjugate (OC) inlet, 2) transverse diameter (TD) inlet, and 3) antero-posterior outlet (APO) diameter. Adequate: OC >11cm, TD >12cm, and an APO >11cm. Inadequate: OC <11cm, TD<12cm, or APO <11cm. |
| Mahmood 1987[45] POOR | No uniformity among obstetricians about category of patients in whom an XRP should be performed or when it should be done; or what constituted a contracted pelvis - some considered a AP diameter of inlet <11.5cm, whereas others used a figure of <11.0cm; at other times pelvic shape determined the category of pelvis. | 239/89 | No consistent criteria for classification of contracted. Some used an AP diameter of inlet <11.5cm, while others used a cutoff of <11.0cm. Others ignored diameters and based their decision on pelvis shape. |

VBAC=vaginal birth after cesarean; ACOG=American College of Obstetricians and Gynecologists; TOL=trial of labor; CD=cesarean delivery; CPDI= cephalopelvic disproportion index; PCD=prior cesarean delivery; VD=vaginal delivery; BPD=biparietal diameter; SPD= smallest pelvic diameter; PPV= positive predictive value;
NPV= negative predictive value; FTOL=failed trial of labor; APD= anteroposterior diameter; TD= transverse diameter; EFW=estimated fetal weight; XRP=x-ray pelvimetry; FPI=fetal-pelvic index; AP=anterior-posterior;

**Evidence Table 3b. Predictive tools - poor quality studies (continued)**

| Author<br>Year<br>Quality | Predictors included | Performance |
|---|---|---|
| Morgan<br>1988[206]<br>POOR | Fetal-pelvic index: positive or negative | • Sensitivity: 92% (positive test in those with CD)<br>• Specificity: 71% (negative test in those with VD)<br>• Positive Predictive Value: 67% (12/18 with a positive FPI, required a CD)<br>• Negative Predictive Value: 94% (15/16 with a negative FPI, had a VD)<br>• Overall accuracy: 79.4% (27/34)<br>• Fischer's exact test: **p<0.001** |
| Lao<br>1987[31]<br>POOR | Pelvic dimensions: adequate or inadequate | • OC>11cm: VBAC: 84.5% (321/380)<br>• TD>12cm: VBAC: 84.5% (324/383)<br>• APO>11cm: VBAC: 84.1% (286/340)<br>Similar proportions of adequate measurements in the FTOL group (NS difference). |
| Mahmood<br>1987[45]<br>POOR | Pelvic dimensions - measurements | No statistically significant difference in pelvic dimensions between those who failed a TOL and those with VBAC.<br>AP Inlet:<br>*VBAC:* 12.3±1.0cm<br>*FTOL:* 12.1±0.8cm<br>AP Outlet:<br>*VBAC:* 12.2±1.0cm<br>*FTOL:* 11.8±1.0cm |

VBAC=vaginal birth after cesarean; ACOG=American College of Obstetricians and Gynecologists; TOL=trial of labor; CD=cesarean delivery; CPDI= cephalopelvic disproportion index; PCD=prior cesarean delivery; VD=vaginal delivery; BPD=biparietal diameter; SPD= smallest pelvic diameter; PPV= positive predictive value;
NPV= negative predictive value; FTOL=failed trial of labor; APD= anteroposterior diameter; TD= transverse diameter; EFW=estimated fetal weight; XRP=x-ray pelvimetry; FPI=fetal-pelvic index; AP=anterior-posterior;

**Evidence Table 3b. Predictive tools - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population | Exclusion criteria |
|---|---|---|---|---|
| Wright 1985[49]<br>POOR | S. Africa<br>Peninsula Maternity Hospital | Retrospective cohort<br>Dates NR<br>To assess the value of XRP in those undergoing a TOL following a previous CD. | Women with one prior LTCS, with no other viable pregnancy | Inadequate antenatal assessment (specifics NR) |

VBAC=vaginal birth after cesarean; ACOG=American College of Obstetricians and Gynecologists; TOL=trial of labor; CD=cesarean delivery; CPDI= cephalopelvic disproportion index; PCD=prior cesarean delivery; VD=vaginal delivery; BPD=biparietal diameter; SPD= smallest pelvic diameter; PPV= positive predictive value;
NPV= negative predictive value; FTOL=failed trial of labor; APD= anteroposterior diameter; TD= transverse diameter; EFW=estimated fetal weight; XRP=x-ray pelvimetry; FPI=fetal-pelvic index; AP=anterior-posterior;

**Evidence Table 3b. Predictive tools - poor quality studies (continued)**

| Author Year Quality | Methods | Number eligible/ attempting TOL | Score development |
|---|---|---|---|
| Wright 1985[49] POOR | • Due to the lack of a concise definition regarding the decision of who should be given a ERCD, the interpretation of this data must be done cautiously.<br>• A pelvic brim inlet >11cm demonstrated a high success of VD, while one <11cm still demonstrated a 50% chance of VD.<br>• Sacrum dimensions/shape appeared to be of little value.<br>• Head engagement demonstrated a high PPV, while the lack of head engagement showed a fairly high specificity for CD. | 100/59 | At the 36th and 38th week of pregnancy patients had an erect lateral pelvimetry performed, where the following dimensions were considered:<br>1) anteroposterior diameter of pelvic brim<br>2) curvature of the sacrum<br>3) engagement of the fetal head |

VBAC=vaginal birth after cesarean; ACOG=American College of Obstetricians and Gynecologists; TOL=trial of labor; CD=cesarean delivery; CPDI= cephalopelvic disproportion index; PCD=prior cesarean delivery; VD=vaginal delivery; BPD=biparietal diameter; SPD= smallest pelvic diameter; PPV= positive predictive value;
NPV= negative predictive value; FTOL=failed trial of labor; APD= anteroposterior diameter; TD= transverse diameter; EFW=estimated fetal weight; XRP=x-ray pelvimetry; FPI=fetal-pelvic index; AP=anterior-posterior;

**Evidence Table 3b. Predictive tools - poor quality studies (continued)**

| Author<br>Year<br>Quality | Predictors included | Performance |
|---|---|---|
| Wright<br>1985[49]<br>POOR | Pelvic dimensions: adequate or inadequate | Pelvic AP brim inlet:<br>• *Sensitivity:* 84% of those with a VD had >11cm inlet.<br>• *Specificity:* 50% of those with CD had <11cm inlet.<br>• *PPV:* 84% (38/45) with >11cm had a VD.<br>• *NPV:* 50% (7/14) with <11cm had a failed TOL.<br>Sacrum:<br>• *Sensitivity:* 71% with a VD had a curved sacrum.<br>• *Specificity:* 40% with a CD had a flat sacrum.<br>• *PPV:* 80% with a curved sacrum had a VD.<br>• *NPV:* 24% with a flat sacrum had a CD.<br>Head engagement:<br>• *Sensitivity:* 66% with a VD had head engagement.<br>• *Specificity:* 79% with a CD had no head engagement.<br>• *PPV:* 91% with head engagement had a VD.<br>• *NPV:* 42% without head engagement had a CD. |

VBAC=vaginal birth after cesarean; ACOG=American College of Obstetricians and Gynecologists; TOL=trial of labor; CD=cesarean delivery; CPDI= cephalopelvic disproportion index; PCD=prior cesarean delivery; VD=vaginal delivery; BPD=biparietal diameter; SPD= smallest pelvic diameter; PPV= positive predictive value;
NPV= negative predictive value; FTOL=failed trial of labor; APD= anteroposterior diameter; TD= transverse diameter; EFW=estimated fetal weight; XRP=x-ray pelvimetry; FPI=fetal-pelvic index; AP=anterior-posterior;

**Evidence Table 4a. Maternal outcomes - good or fair quality studies**

| Author Year Quality | Number in study | Uterine Rupture |
|---|---|---|
| ***Randomized Controlled Trials*** | | |
| Lelaidier 1994[35] FAIR | 32 | Measured: Yes<br>Definition: Not defined<br>Results: *I*- 1 case of scar separation reported (found during C-section).<br>*Control*- 1 case of scar separation reported (found during C-section) |
| Rayburn 1999[32] FAIR | 294 | Measured: Yes<br>Definition: Not defined<br>Results: *I*- 0<br>*SL*- 0 |
| ***Population Based Studies*** | | |
| McMahon 1996[5] GOOD | 6,138 | Measured: Yes<br>Definition: A defect that involved the entire wall of the uterus, that was symptomatic or required operative intervention.<br>Results: *SL/IA*- 10 (0.3%)<br>*ERCD*- 1 (0.0%) |
| ***Prospective Cohort*** | | |
| Blanchette 2001[52] FAIR | 25 | Measured: Yes<br>Definition: Uterine separation requiring an emergency laparotomy for a nonreassuring fetal heart rate tracing or maternal hemorrhage.<br>Results: *IA*- 11; 7 inductions (1-miso, 4-oxytocin, 2-miso/oxy) and 4 augmentations (oxy).<br>*SL*- 1 |
| Blanco 1992[34] FAIR | 81 | Measured: Yes<br>Definition: NR<br>Results: *IA*- 0<br>*SL*- 0 |

NR=not reported; IA= induces or augmented; SL=spontaneous labor; PRBC=packed red blood cells; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery; PGE2=prostaglandin E2 LTCD=low transverse cesarean delivery

**Evidence Table 4a. Maternal outcomes - good or fair quality studies (continued)**

| Author<br>Year<br>Quality | Major Bleeding<br>(req hyst, tx) | Maternal Infection<br>(metritis, wound infection) | Maternal Death |
|---|---|---|---|
| ***Randomized Controlled Trials*** | | | |
| Lelaidier<br>1994[35]<br><br>FAIR | Measured:<br>Definition: Not defined<br>Results: | Measured: Yes<br>Definition: Not defined<br>Results: *I*- 1 infected wound<br>*IC*- 1 infected wound | Measured: Yes<br>Results: *I*- 0<br>*IC*- 0 |
| Rayburn<br>1999[32]<br><br>FAIR | Measured:<br>Definition: Not defined<br>Results: *I*- 0<br>*SL*- 0 | Measured:<br>Definition: Not defined<br>Results: *I*- 8 (5.6%)<br>*SL*- 7 (4.6%) | Measured: Yes<br>Results: *I*- 0<br>*SL*- 0 |
| ***Population Based Studies*** | | | |
| McMahon<br>1996[5]<br><br>GOOD | Measured: Yes<br>Definition: Hysterectomy, transfusion<br>Results: SL/IA- hyst = 5 (0.2%) - 2 due to UR<br>TX= 36 (1.1%)<br>ERCD- hyst = 6 (0.2%)<br>TX = 39 (1.3%) | Measured: Yes<br>Definition: temperature >38.0 included uterine, urinary, pulmonary, wound infection or sepsis<br>Results: SL/IA- fever= 171 (5.3%)<br>abd-wound inf= 43 (1.3%)<br>ERCD- fever = 185 (6.4%)<br>abd wound inf = 63 (2.2%) | Measured: Yes<br>Results: SL/IA- 0<br>ERCD- 0 |
| ***Prospective Cohort*** | | | |
| Blanchette<br>2001[52]<br><br>FAIR | NR | NR | Measured: Yes<br>Results: 0 |
| Blanco<br>1992[34]<br><br>FAIR | NR | Measured: Yes<br>Definition: Endometritis<br>Results: *SL*- 3 | Measured: Yes<br>Results: *I*- 0<br>*SL*- 0 |

NR=not reported; IA= induces or augmented; SL=spontaneous labor; PRBC=packed red blood cells; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery; PGE2=prostaglandin E2 LTCD=low transverse cesarean delivery

**Evidence Table 4a. Maternal outcomes - good or fair quality studies (continued)**

| Author Year Quality | Number in study | Uterine Rupture |
|---|---|---|
| Cowan 1994[25] FAIR | 593 | Measured: Yes<br>Definition: Scott's definition - "a complete separation of the wall of the pregnant uterus, with or without expulsion of the fetus, endangering the life of the mother or fetus"<br>bloodless uterine scar dehiscence = any defect in the preexisting scar with no fetal or maternal compromise.<br>Results: *SL*-3<br>*IA*- 2 |
| Duff 1988[26] GOOD | 227 | Measured: Yes<br>Definition: Dehiscence = disruption of any portion of the lower segment incision.<br>Results: *SL/IA*-1 received oxytocin in labor VB, decreased uterine tone, fetal bradycardia, 60% of scar disrupted, repaired). |
| Flamm 1997[33] FAIR | 5,022 | Measured: Yes<br>Definition: NR. Exam of uterus postpartum at discretion of birth attendant.<br>Results: *IA*- 6/453 (1.3%) (all also received oxytocin)<br>*SL*- 33/4569 (0.7%) |
| Flamm 1990[22] FAIR | 3,957 | Measured: Y<br>Definition: any defect that involved the entire uterine wall or was symptomatic or required operative intervention<br>Results: *IA*- 6/1201 (0.5%)<br>*IC*- 4/2756 (0.15%) |

NR=not reported; IA= induces or augmented; SL=spontaneous labor; PRBC=packed red blood cells; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery; PGE2=prostaglandin E2 LTCD=low transverse cesarean delivery; EBL=estimated blood loss

**Evidence Table 4a. Maternal outcomes - good or fair quality studies (continued)**

| Author<br>Year<br>Quality | Major Bleeding<br>(req hyst, tx) | Maternal Infection<br>(metritis, wound infection) | Maternal Death |
|---|---|---|---|
| Cowan<br>1994[25]<br><br>FAIR | Measured: Yes<br>Definition: Amount<br>Results: *SL/IA*-successful VBAC:<br>453 (95%) EBL<500<br>14 EBL 501-700<br>10 EBL 701-1000<br>1 EBL >1000<br>UR ave EBL >1500cc<br>3/5 UR symptomatic blood loss | NR | NR |
| Duff<br>1988[26]<br><br>GOOD | Measured: Yes<br>Definition: PP Hemorrhage classified as atony cervical or vag lacerations.<br>Results: *SL/IA*-"no differences between succesful and not". | Measured: Yes<br>Definition: Chorioamnionitis or endomyometritis=intrapartum fever in association with uterine tenderness, fetal tachycardia and no other localizing signs of infection, endo=pp maternal temp >38, uterine and adnexal tenderness.<br>Results: *SL/IA*-12/167 with successful VBAC<br>11/60 with failed VBAC | NR |
| Flamm<br>1997[33]<br><br>FAIR | NR | NR | NR |
| Flamm<br>1990[22]<br><br>FAIR | NR | NR | NR |

NR=not reported; IA= induces or augmented; SL=spontaneous labor; PRBC=packed red blood cells; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery; PGE2=prostaglandin E2 LTCD=low transverse cesarean delivery

**Evidence Table 4a. Maternal outcomes - good or fair quality studies (continued)**

| Author Year Quality | Number in study | Uterine Rupture |
|---|---|---|
| Flamm 1987[28]<br><br>GOOD | 1,776 | Measured: Yes<br>Definition:<br>Results: *IA*- 2<br>*IC*- 1 |
| Flamm 1988[21]<br><br>GOOD | 1,776 | Measured: Yes<br>Definition: Asymptomatic uterine windows - small defects visualized at CS or palpated at VD.<br>True uterine rupture - defect involving entire uterine wall that was symptomatic or requiring operative intervention.<br>Results: SL/IA-0 - successful VD, 3 failed TOL (1 required hysterectomy) 2 oxytocin augmented (1 total expulsion of infant at 1cm dilation Apgars 1,2,8 hysterectomy), 2nd pushing oxytocin and epidural pain btwn ctx thin layer of peritoneum over infant head Apgars 1,8,9<br>no uterine ruptures in patients with multiple cesareans or unknown scar<br>11 noted to have asymtpomatic uterine windows |
| Flamm 1994[20]<br><br>FAIR | 7,229 | Measured: Yes<br>Definition: Uterine rupture was defined as any defect that involved the entire uterine wall or was symptomatic or required operative intervention.<br>Results: *SL/IA*- 39/5022 |
| Flamm 1990[22]<br><br>FAIR | 3,957 | Measured: Yes<br>Definition: Uterine rupture was defined as any defect that involved the entire uterine wall, was symptomatic or required operative intervention.<br>Results: *SL/IA*- 3 cases in 1984-5 see 1988 flamm<br>7/3957 1986-8 (1.8/1000) |

NR=not reported; IA= induces or augmented; SL=spontaneous labor; PRBC=packed red blood cells; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery; PGE2=prostaglandin E2 LTCD=low transverse cesarean delivery

**Evidence Table 4a. Maternal outcomes - good or fair quality studies (continued)**

| Author Year Quality | Major Bleeding (req hyst, tx) | Maternal Infection (metritis, wound infection) | Maternal Death |
|---|---|---|---|
| Flamm 1987[28]<br><br>GOOD | Measured: Yes<br>Definition: Not defined (hysterectomies reported).<br>Results: *IA*- 1<br>*IC*- 1 | Measured: Yes<br>Definition: Febrile morbidity<br>Results: *IA*- 18/485 (3.7%)<br>*IC*- 35/1291 (2.7%) | Measured: Yes<br>Results: *I*- 0<br>*IC*- 0 |
| Flamm 1988[21]<br><br>GOOD | Measured:Yes<br>Definition: hysterectomy<br>Results: 1 successful VBAC, 1 failed TOL | NR | Measured: Yes<br>Results: *SL/IA*-0 (none) |
| Flamm 1994[20]<br><br>FAIR | Measured: Yes hyst due to UR measured unsure if all hyst measured transfusion.<br>Definition:<br>Results: *SL/IA*- hyst due to UR = 3/5022 (0.12%) Transfusion = 0.72%<br>*ERCD*- hyst 0.27% (p=.2053) transfusion = 1.72% (p=.0001) | Measured: Yes<br>Definition: NR<br>Results: *SL/IA*- 12.7%<br>*ERCD*-16.4% | Measured: Y<br>Results: *SL/IA*-1 (aspiration pnemonitis - TOL pt emergent CS for fetal distress) |
| Flamm 1990[22]<br><br>FAIR | NR | NR | Measured: Yes<br>Results: *SL*- None<br>*ERCD*- 2 |

NR=not reported; IA= induces or augmented; SL=spontaneous labor; PRBC=packed red blood cells; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery; PGE2=prostaglandin E2 LTCD=low transverse cesarean delivery

**Evidence Table 4a. Maternal outcomes - good or fair quality studies (continued)**

| Author Year Quality | Number in study | Uterine Rupture |
|---|---|---|
| Meier 1982[57]<br><br>FAIR | 269 | Measured: Yes<br>Definition: uterine scar separation<br>Results: *SL/IA*- successful VBAC 0/175<br>failed VBAC = 1/32<br>*ERCD*- 1 (1.6%) |
| Meehan 1989[50]<br><br>FAIR | 344 | Measured: Yes<br>Definition: Rupture of scar accompanied by intra-abdominal or vaginal bleeding or bloodless dehiscence.<br>Results: *IA*- A+O+P : 1/23 (4.3%)<br>*SL*- 0<br>*ERCD*- 0 |
| Paul 1985[30] (see also Phelan 1987)<br><br>FAIR | 889 | Measured: Yes<br>Definition: Dehiscence "scar separation"<br>rupture = scar separation requiring operative intervention.<br>Results: *SL/IA*- 11/614 successful VBAC<br>5/137 failed VBAC<br>*ERCD*- 4/157 |
| Phelan 1987[23] (see Paul 1985)<br><br>FAIR | 2,110 | Measured: Yes<br>Definition: Dehischence = scar separation not requiring operative intervention.<br>rupture = separation requiring operative intervention.<br>Results: *SL/IA*- dehiscence = 34/1796 (1.9%)<br>rupture = 5/1796 (0.3%)<br>rupture rate oxytocin 3% vs no oxytocin 2%<br>*ERCD*- 7/314 dehischence or rupture |
| Stovall 1987[27]<br><br>FAIR | 272 | Measured: Yes<br>Definition: Dehiscence= palpable or visualized defect in previous uterine scar.<br>uterine window= dehiscence not requiring surgical intervention.<br>rupture= dehiscence requiring surgical intervention.<br>Results: *SL/IA*- 1, oxytocin augmentation, epidural |

NR=not reported; IA= induces or augmented; SL=spontaneous labor; PRBC=packed red blood cells; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery; PGE2=prostaglandin E2 LTCD=low transverse cesarean delivery

**Evidence Table 4a. Maternal outcomes - good or fair quality studies (continued)**

| Author<br>Year<br>Quality | Major Bleeding<br>(req hyst, tx) | Maternal Infection<br>(metritis, wound infection) | Maternal Death |
|---|---|---|---|
| Meier<br>1982[57]<br><br>FAIR | Measured: Yes<br>Definition: Blood transfusion<br>Results: *SL/IA*- NR<br>*ERCD*- 1 (1.6%) | Measured: Yes<br>Definition: febrile morbidity, not defined<br>Results: 2/32 (6.3%) failed TOL, 11/62 ERCD (17.7%) | Measured: Yes<br>Results: *SL/IA*- None<br>*ERCD*- None |
| Meehan<br>1989[50]<br>FAIR | NR | NR | Measured: Yes<br>Results: *I*- 0<br>*SL*- 0<br>*ERCD*- 0 |
| Paul<br>1985[30] (see also Phelan 1987)<br><br>FAIR | Measured: Yes<br>Definition: Hysterectomy<br>Results: *SL/IA*- 0 in successful VBAC<br>2 failed VBAC intact scar, pphem, atony<br>*ERCD*- 5 (1 complete scar separation and percreta, 1 laceration extension into vagina, 1 accreta, 2 hem and atony | Measured: Yes<br>Definition: "febrile morbidity"<br>Results: *SL/IA*-14/614 (2.3%) successful VBAC<br>37/137 (27%) failed VBAC<br>*ERCD*- 23/157 (25%) | Measured: Yes<br>Results: 0 |
| Phelan<br>1987[23] (see Paul 1985)<br><br>FAIR | Measured: Yes<br>Definition: hysterectomy<br>Results: *SL/IA*- 5/1796 (all for atony)<br>*ERCD*- NR | Measured: Yes<br>Definition: NR<br>Results: *SL/IA*- 159/1796<br>53/1465 (3.6%)successful VBAC<br>106/331 (32%) failed VBAC<br>*ERCD*- 56/314 (18%) | Measured: Yes<br>Results: 1 postpartum pulmonary embolus failed TOL for fetal distress |
| Stovall<br>1987[27]<br><br>FAIR | NR | NR | Measured: Yes<br>Results: SL/IA-0 |

NR=not reported; IA= induces or augmented; SL=spontaneous labor; PRBC=packed red blood cells; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery; PGE2=prostaglandin E2 LTCD=low transverse cesarean delivery

**Evidence Table 4a. Maternal outcomes - good or fair quality studies (continued)**

| Author Year Quality | Number in study | Uterine Rupture |
|---|---|---|
| ***Retrospective cohorts*** | | |
| Lao 1987[31] FAIR | 666 | |

NR=not reported; IA= induces or augmented; SL=spontaneous labor; PRBC=packed red blood cells; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery; PGE2=prostaglandin E2 LTCD=low transverse cesarean delivery

**Evidence Table 4a. Maternal outcomes - good or fair quality studies (continued)**

| Author<br>Year<br>Quality | Major Bleeding<br>(req hyst, tx) | Maternal Infection<br>(metritis, wound infection) | Maternal Death |
|---|---|---|---|
| ***Retrospective cohorts*** | | | |
| Lao<br>1987[31]<br><br>FAIR | Measured: Yes<br>Definition: not defined<br>Results: IA=6/102 (6%) | NR | Measured: Yes<br>Results: IA=0,<br>SL=NR |

NR=not reported; IA= induces or augmented; SL=spontaneous labor; PRBC=packed red blood cells; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery; PGE2=prostaglandin E2 LTCD=low transverse cesarean delivery

**Evidence Table 4b. Maternal outcomes - poor quality studies**

| Author<br>Year<br>Quality | Number in study | Uterine rupture |
|---|---|---|
| ***Randomized Controlled Trials*** | | |
| Taylor<br>1993[190]<br>POOR | NR | Measured:<br>Definition: Not defined<br>Results: *IA* - 1 (I + a)<br>*SL*- 0 |
| Xenakis<br>1995[175]<br>POOR | 48 | Measured:<br>Definition: Not defined.<br>Results: *IA :* 1 dehiscence; *Control:* 1 dehiscence |
| Wing<br>1998[176]<br>POOR | 38 | Measured:<br>Definition: Separation of the prior uterine incision that required emergency laparotomy usually diagnosed at the time of acute fetal distress requiring immediate operative intervention or acute maternal hemorrhage with hypotension and shock.<br>Results: *IA:* 1 (plus 1 dehiscence)<br>*Control:* 0 |
| ***Population Based Studies*** | | |
| Bais<br>2001[180]<br>POOR | 252 | Measured: Yes<br>Definition: NR<br>Results: *SL/IA*- 1/184 (in failed VBAC)<br>*ERCD*- 0/68 |
| Beall, M<br>1984[191]<br>POOR | 857 | Measured: Yes<br>Definition: Not defined<br>"scar rupture," scar dehiscence" used interchangeably<br>no "complete scar rupture".<br>Results: SL/IA- 1% of 97 unknown scar (figure 2 says 8%)<br>2% of 204 LTCD (figure 2 says 7.5%)<br>ERCD- 1% of 354 unknown<br>4% of 170 LTCD |

NR=not reported; IA= induces or augmented; SL=spontaneous labor; PRBC=packed red blood cells; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery; PGE2=prostaglandin E2 LTCD=low transverse cesarean delivery

**Evidence Table 4b. Maternal outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Major Bleeding<br>(required hysterectomy, treatment) | Maternal Infection<br>(metritis, wound infection) | Maternal Death |
|---|---|---|---|
| Taylor<br>1993[190]<br>POOR | Measured:<br>Definition: NR<br>Results: | Measured: NR<br>Definition:<br>Results: | Measured: Y<br>Results: *I-* 0<br>*IC-* 0 |
| Xenakis<br>1995[175]<br>POOR | Measured:<br>Definition: NR<br>Results: | Measured: NR<br>Definition:<br>Results: | Measured: Y<br>Results: *I-* 0<br>*IC-* 0 |
| Wing<br>1998[176]<br>POOR | Measured:<br>Definition: NR<br>Results: *I-* 1 patient required 4 units PRBCs<br>*IC-* NR | Measured: NR<br>Definition:<br>Results: | Measured: Y<br>Results: *I-* NR<br>*IC-* NR |
| ***Population Based Studies*** | | | |
| Bais<br>2001[180]<br>POOR | Measured: Yes<br>Definition: hemorrhage= >500cc, hemorrhage >1000cc<br>blood transfusion hysterectomy<br>Results: SL/IA- >500cc=31 (17%) [14 failed VBAC]<br>>1000cc = 9 (5%) [3 failed VBAC]<br>transfusion= 8 (4%) [4 failed VBAC]<br>hysterectomy=none<br>ERCD- >500cc=20 (29%)<br>>1000cc = 6 (9%)<br>transfusion= 4 (6%)<br>hysterectomy=none | Measured: Yes<br>Definition: NR pp fever<br>Results: SL/IA- 16/184 (9%)<br>ERCD- 7/68 (10%) | Measured: Y<br>Results: Overall- None |
| Beall, M<br>1984[191]<br>POOR | Measured: Yes<br>Definition: Hysterectomy<br>Results: Overall- none in any group | Measured: Yes<br>Definition: maternal fever<br>Results:<br>SL/IA- 56% unknown scar<br>34% LTCD<br>ERCD- NR | NR |

NR=not reported; IA= induces or augmented; SL=spontaneous labor; PRBC=packed red blood cells; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery; PGE2=prostaglandin E2 LTCD=low transverse cesarean delivery

**Evidence Table 4b. Maternal outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Number in study | Uterine rupture |
|---|---|---|
| Gregory<br>1999[61]<br>POOR | 469,929 | Measured: Yes<br>Definition: NR<br>Results: *NPCD-* 104/469,929<br>13/17,209 elective primary cesarean<br>64/51,333 failed labor (CD)<br>27/401,387 VD labor<br>*SL/IA-* 288/66,856 (0.43%)<br>174/15,072 failed VBAC<br>35/24,024 VBAC<br>*ERCD-* 79/27,760 |
| Holt<br>1997[59]<br>POOR | 10,110 | NR |
| Lyndon-Rochelle<br>2001[4]<br>POOR | 36,966 | Measured: Yes<br>Definition: ICD-9-CM code 665.0 or 665.1 recorded on hospital d/c form<br>Results: *SL-* 56<br>*I-* 24 (9 induced with PG, 15 without PG) |
| Stone<br>2000[177]<br>POOR | NR | Measured: Yes<br>Definition: ICD-9 coding 665.0 and 665.1<br>Results: |
| ***Prospective Cohort*** | | |
| Arulkumaran<br>1989[179]<br>POOR | 63 | NR |
| Asaad<br>1994[189]<br>POOR | NR | NR |
| Gherman<br>2001[181]<br>POOR | 10 | Measured: Yes<br>Definition: NR<br>Results: *IA-* 1/10 (10%) |

NR=not reported; IA= induces or augmented; SL=spontaneous labor; PRBC=packed red blood cells; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery; PGE2=prostaglandin E2 LTCD=low transverse cesarean delivery

**Evidence Table 4b. Maternal outcomes - poor quality studies (continued)**

| Author Year Quality | Major Bleeding (required hysterectomy, treatment) | Maternal Infection (metritis, wound infection) | Maternal Death |
|---|---|---|---|
| Gregory 1999[61] POOR | Measured: NR<br>Definition:<br>Results: | Measured: NR<br>Definition:<br>Results: | NR |
| Holt 1997[59] POOR | Measured: NR<br>Definition:<br>Results: | NR | NR |
| Lyndon-Rochelle 2001[4] POOR | Measured: Y<br>Definition: hysterectomy<br>Results: 12/20,004 without UR<br>4/91 with UR | Measured: Y<br>Definition: puerperal infection<br>Results: 243/20,004 without rupture<br>8/91 with rupture | NR |
| Stone 2000[177] POOR | Measured: NR<br>Definition:<br>Results: | NR | NR |
| ***Prospective Cohort*** | | | |
| Arulkumaran 1989[179] POOR | Measured: NR<br>Definition:<br>Results: | NR | NR |
| Asaad 1994[189] POOR | NR | | |
| Gherman 2001[181] POOR | Measured: NR<br>Definition:<br>Results: | NR | NR |

NR=not reported; IA= induces or augmented; SL=spontaneous labor; PRBC=packed red blood cells; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery; PGE2=prostaglandin E2 LTCD=low transverse cesarean delivery

**Evidence Table 4b. Maternal outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Number in study | Uterine rupture |
|---|---|---|
| Goldberger<br>1989[182]<br>POOR | 217 | Measured: Yes<br>Definition: Not defined; post-delivery check of uterine cavity.<br>Results: *IA-* 0<br>*SL-* 0 |
| Goldman<br>1998[183]<br>POOR | 520 | Measured: Yes<br>Definition: Not defined, but dehiscence reported separately.<br>Results: *IA-* 0 (1 dehis)<br>*IA-* 0 (1 dehis)<br>*SL-* 0 (0 dehis) |
| Miller<br>1992[173]<br>POOR | 318 | Measured: Yes<br>Definition: NR<br>Results: *SL/IA-* 1/125 (0.8%)<br>1 previous CD fetal distress, oxytocin augmentation + epidural delivered by emergent CS for "fetal distress". |
| Norman<br>1992[184]<br>POOR | 313 | Measured:NR<br>Definition:<br>Results: *IA-* 0 |
| Sakala<br>1990[188]<br>POOR | 237 | Measured: Yes<br>Definition: Symptomatic separation of prior scar, associated with perinatal morbidity.<br>Results: *IA-* 0<br>*SL-* 0 |
| Silver<br>1987[185]<br>POOR | 98 | NR |

NR=not reported; IA= induces or augmented; SL=spontaneous labor; PRBC=packed red blood cells; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery; PGE2=prostaglandin E2 LTCD=low transverse cesarean delivery

**Evidence Table 4b. Maternal outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Major Bleeding<br>(required hysterectomy, treatment) | Maternal Infection<br>(metritis, wound infection) | Maternal Death |
|---|---|---|---|
| Goldberger<br>1989[182]<br>POOR | Measured: Yes<br>Definition: Not Defined<br>Results: *IA*- 0<br>*IC*- 0<br>*SL*- 0 | Measured: Yes<br>Definition: Not defined<br>Results: *IA*- 0<br>*IC*- 0<br>*SL*- 0 | Measured: Yes<br>Results: *I*- 0<br>*IC*- 0<br>*SL*- 0 |
| Goldman<br>1998[183]<br>POOR | Measured: Yes<br>Definition: Not defined<br>Results: *IA*- 0 hyst/3 hemorrhage oxytocin<br>0 hyst/5 hemorrhage PGE2<br>*SL*- 0 hyst/6 hemorrhage | NR | Measured: Yes<br>Results: *I*- 0<br>*SL*- 0 |
| Miller<br>1992[173]<br>POOR | Measured: Yes<br>Definition: Blood transfusion<br>Results: *Overall*- No difference | Measured: Yes<br>Definition: Temp 38$^{o}$ C or more on 2 occasions more than 24 hours apart.<br>Results: *SL/IA*- 15/44 (34.9%) failed VBAC required postpartum antibiotics<br>*ERCD*- 26/193 (13.5%) NS | NR |
| Norman<br>1992[184]<br>POOR | Measured: NR<br>Definition:<br>Results: | NR | Measured: Yes<br>Results: *I*- 0 |
| Sakala<br>1990[188]<br>POOR | Measured: Yes<br>Definition: Blood transfusion<br>Results: *IA*- 1<br>*SL*- 4 | Measured: Yes<br>Definition: Endometritis<br>Results: *IA*- 6<br>*SL*- 7 | NR |
| Silver<br>1987[185]<br>POOR | Measured: Yes<br>Definition: Not defined<br>Results: *IA*- 2 CD patients required blood transfusion - group not described. | Measured: Yes<br>Definition: Described as endometritis<br>Results: *IA*- 11 cases - 9 in CD patients - group not described. | NR |

NR=not reported; IA= induces or augmented; SL=spontaneous labor; PRBC=packed red blood cells; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery; PGE2=prostaglandin E2 LTCD=low transverse cesarean delivery

**Evidence Table 4b. Maternal outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Number in study | Uterine rupture |
|---|---|---|
| Sims<br>2001[186]<br>POOR | 505 | Measured: Yes<br>Definition: Asymptomatic rupture<br>symptomatic rupture.<br>Results: *SL*- NR "states intermediate rate"<br>*IA*- 7.00%<br>*ERCD*- 1.50% |
| Videla<br>1995[187]<br>POOR | 1131 | Measured: Yes<br>Definition: "Overt rupture"<br>Results: *SL*- 3 [1 following VD, 2 failed VBAC] only 1 received oxytocin<br>*IA*- 1 |
| Zelop<br>1999[194]<br>POOR | 3303 | Measured: Yes<br>Definition: complete rupture of prior uterine scar in association with >= 1 of: laparotomy for hemorrhage or hemoperitoneum, excessive injury to the bladder or extrusion into the peritoneal cavity of any portion of the fetal-placental unit, CD for nonreassuring FHR or suspected rupture as evidenced by the acute onset of incisional pain<br><br>Results: Induction: Oxy alone: 9/459 (2%), PGE2 alone: 1/35 (2.9%), oxy plus PGE2: 3/67 (4.5%) |

NR=not reported; IA= induces or augmented; SL=spontaneous labor; PRBC=packed red blood cells; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery; PGE2=prostaglandin E2 LTCD=low transverse cesarean delivery

**Evidence Table 4b. Maternal outcomes - poor quality studies (continued)**

| Author<br>Year<br>Quality | Major Bleeding<br>(required hysterectomy, treatment) | Maternal Infection<br>(metritis, wound infection) | Maternal Death |
|---|---|---|---|
| Sims<br>2001[186]<br>POOR | Measured:NR<br>Definition:<br>Results: | NR | NR |
| Videla<br>1995[187]<br>POOR | Measured: NR<br>Definition:<br>Results: | Measured: Yes<br>Definition:<br>"Chorioamnionitis"<br>Results: 23 successful VBAC<br>14 failed VBAC | NR |
| Zelop<br>1999[194]<br>POOR | Measured:<br>Definition: hysterectomy<br>I=2 (0.4%)<br>SL=2 4 (0.2%) | NR | I=0<br>SL=0 |

NR=not reported; IA= induces or augmented; SL=spontaneous labor; PRBC=packed red blood cells; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery; PGE2=prostaglandin E2 LTCD=low transverse cesarean delivery

**Evidence Table 5a. Infant outcomes - good or fair quality studies**

| Author<br>Year<br>Quality | Number in study | Infant Sepsis | Infant Death | Other Infant Outcomes |
|---|---|---|---|---|
| ***Randomized Controlled Trials*** | | | | |
| Lelaidier<br>1994[35]<br>FAIR | 32 | NR | Measured: Yes<br>Results: I- 0<br>IC- 0 | NR |
| Rayburn<br>1999[32]<br>FAIR | 294 | NR | Measured: Yes<br>Results: I- 0<br>SL- 1 | NR |
| **Population-Based Database** | | | | |
| McMahon<br>1996[5]<br>GOOD | 6,138 | NR | Measured: Yes<br>Results: SL/IA- 9/1000<br>ERCD- 5/1000 | NR |
| Smith<br>2002[6]<br>FAIR | 24,529 | NR | Measured: Yes<br>Results:SL/IA- 20/15515<br>(12 emergent CD, 8 vaginal delivery)<br>RCD- 1/9014 | NR |
| ***Prospective Cohorts*** | | | | |
| Blanco<br>1992[34]<br>FAIR | 81 | NR | Measured:Yes<br>Results: I- 0<br>SL- 0 | NR |
| Cowan<br>1994[25]<br>FAIR | 660 | NR | Measured: NR<br>None reported<br>1 serious neurologic sequelae.<br>Results: | Measured: Y- Apgar<br>Definition:<br>Results: SL/IA- 5-min Apgar >7 = 463 (97%)<br><7=14 |
| Duff<br>1988[26]<br>GOOD | 281 | Measured: Yes<br>Definition: Positive culture blood, urine, CSF, CXR c/w pneumonia.<br>Results: SL/IA- "no differences between successful and not" | NR | NR |

NR=not reported; I=induced; SL=spontaneous labor; ERCD=elective repeat cesarean delivery;

CSF=cerebral spinal fluid; CXR=chest x-ray; IA=induced or augmented;

**Evidence Table 5a. Infant outcomes - good or fair quality studies (continued)**

| Author Year Quality | Number in study | Infant Sepsis | Infant Death | Other Infant Outcomes |
|---|---|---|---|---|
| Flamm 1997[33] FAIR | 5,022 | NR | Measured: Yes<br>Results: IA- 0<br>SL- 0 | NR |
| Flamm 1987[28] GOOD | 1,776 | NR | Measured: Yes<br>Results: IA- 0/485<br>SL- 1/1291 | NR |
| Flamm 1988[21] GOOD | 1,776 | NR | Measured: Yes<br>Results: SL/IA- 5 antepartum fetal deaths <36 weeks, no evidence of UR, "one would have been prevented by elective repeat at term", one intrapartum death involving silastic vacuum for fetal distress no evidence of rupture on uterine exam, one died due to prematurity total 6 fetal and 1 neonatal death for rate 4/1000 (vs 11/1000 in 9 participating hospitals). | NR |
| Flamm 1994[20] FAIR | 7,229 | NR | Measured: Yes<br>Results: rate of 7/1000 live births | Measured: Yes- Apgar<br>Definition:<br>Results: SL/IA- 5-min Apgar <7 = 1.48%<br>ERCD- 5-min Apgar <7 = 0.68% (p=.004) |
| Flamm 1990[22] FAIR | 3,957 | NR | Measured: Yes<br>Results: SL/IA-1 related to uterine rupture 2 previous cesareans unknown scar labored at home. | Measured: Y- Apgar<br>Definition:<br>Results: SL/IA- 5 min Apgar <7=9/1000 (when 20 cases of IUFD due to anencephaly, lethal malformations excluded). |

NR=not reported; I=induced; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; CSF=cerebral spinal fluid; CXR=chest x-ray; IA=induced or augmented;

**Evidence Table 5a. Infant outcomes - good or fair quality studies (continued)**

| Author Year Quality | Number in study | Infant Sepsis | Infant Death | Other Infant Outcomes |
|---|---|---|---|---|
| Martin 1983[24] FAIR | 717 | NR | Measured: Yes<br>Results: SL/IA- 3 fetal & 0 neonatal in successful VBAC<br>• 1 fetal and & neonatal in failed VBAC<br>• NO FETAL DEATHS OCCURRED IN UR OR DEHISC GROUP<br>• all fetal deaths occurred prior to labor with macerated fetuses.<br>ERCD- 3 fetal & 5 neonatal 4/5 neonatal deaths due to RDS prior to term 1/5 congenital malformation incompatible with life. | NR |
| Meehan 1989[50] FAIR | 344 | NR | Measured: Yes<br>Results**:** I- 0<br>SL- 0<br>ERCD- 0 | NR |
| Meier 1982[57] FAIR | 269 | NR | Measured: Yes<br>Results: SL/IA- 1/207 fetal death prior to labor 2 previous CS<br>ERCD- None | NR |
| Paul 1985[30] FAIR | 889 | NR | Measured: Yes<br>Results: NPCD?/SL/IA- 7 fetal - 6/7 antepartum, 1 intrapartum = (540 gm breech), 4/6 no uterine dehiscence 35-42 weeks, 2UR preterm TOL<br>7 neonatal - 2 TOL with anomalies, 5 <700gm<br>ERCD- 2 neonatal with anomalies. | NR |

NR=not reported; I=induced; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; CSF=cerebral spinal fluid; CXR=chest x-ray; IA=induced or augmented;

**Evidence Table 5a. Infant outcomes - good or fair quality studies (continued)**

| Author Year Quality | Number in study | Infant Sepsis | Infant Death | Other Infant Outcomes |
|---|---|---|---|---|
| Phelan 1987[23] (see Paul 1985) FAIR | 2,110 | NR | Measured: Yes<br>Results:17 fetal, 23 neonatal deaths; 11 <750gm, 14 congenital anomalies, 6 preterm | NR |
| Stovall 1987[27] FAIR | 272 | NR | Measured: Yes<br>Results: SL/IA- None | Measured: Y- Apgar<br>Definition:<br>Results: SL/IA- 1 rupture LTCD, 5-min Apgar = 7<br>oxytocin 5 (3.8%) had 5-min Apgar <7, vs no oxytocin 4 (2.9%). |
| ***Retrospective Cohorts*** | | | | |
| Lao 1987[31] FAIR | 666 | NR | Measured: Yes<br>Results: I- 0<br>IC- 1 | NR |
| Raynor 1993[29] FAIR | NR | NR | Measured: Yes<br>Results: SL- 1 28wks SROM polycystic kidneys | NR |

NR=not reported; I=induced; SL=spontaneous labor; ERCD=elective repeat cesarean delivery; CSF=cerebral spinal fluid; CXR=chest x-ray; IA=induced or augmented;

**Evidence Table 5b. Infant outcomes - poor quality studies**

| Author Year Quality | Number in study | Infant Sepsis | Infant Death | Other Infant Outcomes |
|---|---|---|---|---|
| ***Population Based*** | | | | |
| Bais 2001[180] POOR | 252 | NR | Measured: Y<br>Definition: SL/IA- 3/184 (1.2%) [ 1-rh dz,1 abruption,1-cord proplapse] | Measured: Y<br>Definition: Apgar<br>Results: SL/IA- 5-min Apgar <7 = 3/`84 (2%) - all in failed TOL<br>ERCD- 5-min Apgar <7 = 0/68 |
| Beall 1984[191] POOR | 857 | NR | Measured: Yes<br>Results:<br>SL/IA- total of 6 perinatal deaths:<br>1. Term still birth may have been avoided by CD<br>2. 920-gm premature may have been avoided by CD<br>3. 2 other premature infants<br>4. 1 premature delivered out of hospital<br>lethal anomaly<br>5/1,000 LTCD<br>11/1,000 unknown | NR |
| Holt 1997[59] POOR | 10,110 | NR | Measured: Yes<br>Results: SL/IA- 74/6491<br>ERCD- 52 | NR |
| Rageth 1999[60] POOR | 226,407 | NR | Measured: Yes<br>Results: I/IC/SL- 86/17613 (0.5%)<br>ERCD- 32/11433 (0.3%) | NR |
| Stone 2000[177] POOR | 6145 | NR | Measured: Y<br>Results:29 preterm, 3 term1 home deliver, 1 fetal hypoxia prior to cesarean, 1 UR | NR |
| ***Prospective Cohorts*** | | | | |
| Arulkumaran 1989[179] POOR | 63 | NR | NR | NR |

NR=not reported; IA= induces or augmented; SL=spontaneous labor; PRBC=packed red blood cells; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery; PGE2=prostaglandin E2 LTCD=low transverse cesarean delivery

**Evidence Table 5b. Infant outcomes - poor quality studies (continued)**

| Author Year Quality | Number in study | Infant Sepsis | Infant Death | Other Infant Outcomes |
|---|---|---|---|---|
| Blanchette 2001[52] POOR | NR | NR | Measured: Yes<br>Results: I- 2 (1-miso, 1-oxy)<br>SL- 0 | |
| Miller 1992[173] POOR | 318 | NR | Measured: Yes<br>Results: No prior CD?/SL/IA-<br>neonatal = 1/80 successful VBAC<br>perinatal = 1/80 successful VBAC<br>neonatal = 1/45 failed VBAC<br>prinatal = 0/45 failed VBAC<br>ERCD- neonatal = 1/193<br>perinatal = 0/193 | Measured: Y-Apgar<br>Results: SL/IA- 5-min Apgar <7 = 6/80 (7.5%) successful VBAC<br>0/45 failed VBAC<br>ERCD- 5-min Apgar <7 = 4/193 (2.1%) |
| Norman 1992[184] POOR | 313 | NR | Measured: Yes<br>Results: I- 0 | NR |
| Silver 1987[185] POOR | 98 | NR | Measured: I- all Apgars >/=7<br>Results: | NR |
| ***Retrospective Cohorts*** | | | | |
| Choy-Hee 2001[195] POOR | 425 | NR | Measured: Yes<br>Results: I- 0<br>IC- 0 | NR |
| Chua 1989[196] POOR | 207 | NR | Measured:<br>Results: | Measured: Yes<br>Definition: Apgar<br>Results: SL- 5-min Apgar <7 = 2 (1.8%)<br>I- 5-min Apgar <7 = 2<br>1= induced, 1 augmented<br>ERCD- 5-min Apgar <7 = 3/98 (3.1%) |

NR=not reported; IA= induces or augmented; SL=spontaneous labor; PRBC=packed red blood cells; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery; PGE2=prostaglandin E2 LTCD=low transverse cesarean delivery

**Evidence Table 5b. Infant outcomes - poor quality studies (continued)**

| Author Year Quality | Number in study | Infant Sepsis | Infant Death | Other Infant Outcomes |
|---|---|---|---|---|
| Chuck 1995[197] POOR | 15 | *Measured:* *Definition:* *Results:* | *Measured:* Yes *Results:* I- 0 IC- 0 | NR |
| Del Valle 1994[199] POOR | 150 | NR | *Measured:* Yes *Results:* I- 0 IC- 0 | NR |
| MacKenzie 1984[200] POOR | 170 | NR | *Measured:* Yes *Results:* I- 0 | NR |
| Segal 1995[51] Israel Poor | 67 | NR | *Measured:* Yes *Results:* I- 0 | NR |
| Stone 1994[204] POOR | NR | NR | *Measured:* Yes *Results:* I- 0 | NR |
| Videla 1995[187] Poor | 1,131 | NR | *Measured:* Yes *Results:* SL- | NR |
| Zelop 1999[194] (3 pubs) POOR | 3,303 | NR | *Measured:* Yes *Results:* I- 0 SL- 0 | NR |

NR=not reported; IA= induces or augmented; SL=spontaneous labor; PRBC=packed red blood cells; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery; PGE2=prostaglandin E2 LTCD=low transverse cesarean delivery

**Evidence Table 6. Uterine rup**

| Author<br>Year<br>Quality | Country<br>Setting |
|---|---|
| ***Population-based*** | |
| McMahon<br>1996[5]<br>GOOD | Canada<br>Nova Scotia |
| Smith<br>2002[6]<br>FAIR | Scotland |
| ***Prospective Cohort*** | |
| Duff<br>1988[26]<br>GOOD | USA<br>Madigan Army<br>Medical Center |
| Flamm<br>1988[21]<br>GOOD | USA<br>Southern<br>California<br>Kaiser |
| Cowan<br>1994[25]<br>FAIR | USA |
| Flamm<br>1994[20]<br>FAIR | |

NR=not reported; CD=cesarean delive

**ture: terms, definitions, and predictors** **Evidence Tal**

| Terms & definitions | Author Year Quality |
|---|---|
| *Term:* uterine rupture<br>*Definition:* a defect that involved the entire wall of the uterus, was symptomatic, and required operative intervention | McMahon 1996[5] GOOD |
| *Term:* uterine rupture<br>*Definition:* NR | Smith 2002[6] FAIR |
| *Term:* uterine scar dehiscence<br>*Definition:* disruption of any portion of the lower segment incision<br>*Use:* description of case reported patient with vaginal bleeding, fetal bradycardia, delivered by repeat CD apgars 4,8, 60% of scar disrupted | Duff 1988[26] GOOD |
| *Term:* asymptomatic uterine window<br>*Definition:* small defects visualized at CD or palpated at VD<br>*Term:* true uterine rupture<br>*Definition:* defect involving entire uterine wall - symptomatic or requiring operative intervention<br>*Use:* one CD performed for maternal pain classified as rupture had thin layer of peritoneum over scar; one with partial extrusion of fetus reported no sign of rupture, CD performed for failure to progress, both cases mother and infant did well. | Flamm 1988[21] GOOD |
| *Term:* bloodless uterine scar dehiscence<br>*Definition:* any defect in the preexisting cesarean scar with no maternal or fetal compromise<br>*Term:* true uterine rupture<br>*Definition:* Scott's definition - "a complete separation of the wall of the pregnant uterus, with or without expulsion of the fetus, endangering the life of the mother or fetus"<br>*Use:* one rupture occurred at fundus with an intact uterine scar | Cowan 1994[25] FAIR |
| *Term:* uterine rupture<br>*Definition:* any defect that involved the entire uterine wall or was symptomatic or required operative intervention | Flamm 1994[20] FAIR |

ry; VD=vaginal delivery; UR=uterine rupture; EFM=electro fetal monitor NR=not reported

**ble 6. Uterine rupture: terms, definitions, and predictors (continued)**

| Signs Symptoms | Labor factors | Patient factors |
|---|---|---|
| NR | NR | NR |
| NA | NA | NA |
| 1/1 vaginal bleeding and fetal bradycardia | NR | NR |
| *No sign:* 1/3 CD for failure to progress<br>*Fetal distress:* 1/3<br>*Abdominal pain:* 1/3 | NR | NR |
| Abnormal fetal tracing (immediate and prolonged fetal bradycardia): 5/5 | *Oxytocin:* 3/5 UR (1 vertical, 1 2 prior CD)<br>*Epidural:* 1/5 UR | NR |
| NR | NR | NR |

l; CD=cesarean delivery; VD=vaginal delivery; UR=uterine rupture; EFM=electro fetal monitor

**Evidence Table 6. Uterine rupt**

| Author<br>Year<br>Quality | Country<br>Setting |
|---|---|
| Flamm<br>1990[22]<br>FAIR | USA<br>Southern California, Kaiser |
| Martin<br>1983[24]<br>FAIR | USA<br>Universities in Mississippi and Alabama |
| Meehan<br>1989[50]<br>FAIR | Ireland |
| Meier<br>1982[57]<br>FAIR | USA<br>Kaiser SanDiego |
| Paul<br>1985[30]<br>FAIR | USA<br>USC |

**ture: terms, definitions, and predictors (continued)** **Evidence Tal**

| Terms & definitions | Author Year Quality |
|---|---|
| *Term:* uterine rupture<br>*Definition:* any defect that involved the entire uterine wall or was symptomatic or required operative intervention<br>*Use:* 2/10 UR occurred following VD | Flamm 1990[22] FAIR |
| *Term:* dehiscence<br>*Definition:* nontraumatic separation of the uterine scar without bleeding or extrusion of fetus into wound<br>*Term:* uterine rupture<br>*Definition:* scar separation with bleeding, hematoma formation, or extrusion of the fetus | Martin 1983[24] FAIR |
| *Term:* bloodless dehiscence<br>*Definition:* dehiscence of uterine scar not associated with bleeding. It includes small 'window' defects and larger defects in which bleeding was not a feature<br>*Term:* True Rupture<br>*Definition:* rupture of the uterine scar accompanied by intra-abdominal or vaginal bleeding | Meehan 1989[50] FAIR |
| *Term:* scar dehiscence<br>*Definition:* uterine scar separation<br>*Use:* incidentally noted at CD | Meier 1982[57] FAIR |
| *Term:* uterine dehiscence<br>*Definition:* any palpable and/or visualized uterine defect.<br>*Use:* Further sub grouped into dehiscences that required no intervention and those that did require intervention, which were termed uterine rupture | Paul 1985[30] FAIR |

**ble 6. Uterine rupture: terms, definitions, and predictors (continued)**

| Signs<br>Symptoms | Labor factors | Patient factors |
|---|---|---|
| "Variable or prolonged bradycardia most common warning sign" 7/10 had abnormal EFM | *Oxytocin:* 6/10 UR NS different from non-rupture | NR |
| NR | NR | NR |
| *Fetal distress:* 1/1 UR | *Oxytocin:* NS<br>*Epidural:* NS | NR |
| *No sign reported:* 2/2 dehiscences found at CD | NR | NR |
| *5 UR:*<br>• Abdominal Pain: 2/5<br>• Postpartum bleeding: 1/5<br>• No sign reported: arrest of dilation found<br>• Partial extrusion of fetus 1/5<br>• Abnormal fetal tracing: 1/5<br><br>Comment: 25 CD for "fetal distress" - 18/751 TOL vs. 7/458 repeat CD (7/18 TOL emergent CD, 2/7 ERCD emergent CD) | NR | NR |

| | |
|---|---|
| Phelan 1987[23] FAIR | USA USC |

NR=not reported; CD=cesarean deliver

| | |
|---|---|
| *Term:* uterine dehiscence<br>*Definition:* scar separation not requiring operative intervention<br>*Term:* Rupture<br>*Definition:* separation requiring operative intervention | Phelan 1987[23]<br>FAIR |

ry; VD=vaginal delivery; UR=uterine rupture; EFM=electro fetal monitor NR=not reported

| | | |
|---|---|---|
| Fetal distress such as severe variable decelerations or prolonged fetal bradycardia most frequent sign | NR | NR |
| No cases of UR with maternal pain and changes in uterine tone | | |

l; CD=cesarean delivery; VD=vaginal delivery; UR=uterine rupture; EFM=electro fetal monitor

**Evidence Table 6. Uterine rupt**

| Author<br>Year<br>Quality | Country<br>Setting |
|---|---|
| Stovall<br>1987[27]<br>FAIR | USA<br>U of Tennessee |
| ***Case-control*** | |
| Connolly<br>2001[53]<br>FAIR | |
| Leung<br>1993[54]<br>FAIR | |

**ture: terms, definitions, and predictors (continued)** **Evidence Tal**

| Terms & definitions | Author Year Quality |
|---|---|
| *Term:* dehiscence<br>*Definition:* palpable or visualized defect in previous uterine scar<br>*Term:* Uterine window<br>*Definition:* dehiscence not requiring surgical intervention or blood component replacement<br>*Term:* Uterine rupture<br>*Definition:* dehiscence requiring intervention | Stovall 1987[27] FAIR |
| *Term:* scar dehiscence (further classified as partial and complete)<br>*Definition:* NR<br>*Use:* life threatening complication, "common symptoms include fetal distress, abdominal pain, scar tenderness, vaginal bleeding. Rarely massive hemorrhage and hypovolemic shock may be presenting symptom" | Connolly 2001[53] FAIR |
| *Term:* uterine rupture<br>*Definition:* uterine scar separation and emergent laparotomy, acute fetal distress necessitating operative intervention, or acute maternal bleeding manifested by hypotension or shock | Leung 1993[54] FAIR |

**ble 6. Uterine rupture: terms, definitions, and predictors (continued)**

| Signs<br>Symptoms | Labor factors | Patient factors |
|---|---|---|
| Pain, vaginal bleeding, loss of uterine tone in the one case of UR | NR difference between UR and Non-UR | NR |
| *Fetal distress:* 9/13 cases vs. 2/13 controls (OR 12.3 95% CI: 1.9-81)<br>*Scar tenderness:* 8/13 cases vs. 0/13 controls<br>*Vaginal bleeding:* 6/13 cases vs. 0/13 controls | *Oxytocin*<br>Induction: 0/13 cases vs. 2/13 controls<br>Augmentation: 10/13 cases vs. 3/13 controls (OR 4.5; 95% CI 0.9313-42.8)<br>*Epidural*<br>5/13 cases vs. 8/13 controls (OR 2.5; 95% CI 0.41-26.2) | *Maternal Age (mean):*<br>31.5 cases vs. 27.5 controls<br>(OR per 1 yr in age 1.35; 95% CI 1.03-2.19)<br>*Parity (Mean):*<br>3.15 cases vs. 2.85 controls<br>(OR per 1-unit 1.59; 95% CI 0.17-18.9)<br>*Prior VD (before or after CD):*<br>7/13 cases vs. 5/13 controls<br>(OR 1.29; 95% CI 0.2175-11.86)<br>*GA (Mean):*<br>39.3 cases vs. 40.3 controls NS |
| NR but included in case series data | *Any Oxytocin:* 54/70 cases vs. 39/70 controls (OR 2.7; 95% CI 1.2-6.0)<br>Induction = 11/70 cases vs. 10/70 controls<br>Augmentation = 43/70 cases vs. 29/70 controls<br>Epidural<br>29/70 cases vs. 19/70 controls<br>(OR 1.9; 95% CI 0.9-4.1) | *Age,Parity:* NR<br>*Prior VBAC:* 11/70 cases vs. 16/70 controls<br>(OR 0.5; 95% CI 0.1-1.6)<br>*CD for CPD:* 22/70 cases vs. 21/70 controls<br>(OR 0.9; 95%CI 0.4-2.0)<br>*Unknown scar:* 61/70 cases vs. 59/70<br>(OR 1.3; 95% CI 0.4-3.1)<br>*>1CD:* 23/70 cases vs. 11/70 controls<br>(OR 2.6; 95%CI 1.1 - 6.4) |

NR=not reported; CD=cesarean delivei

ry; VD=vaginal delivery; UR=uterine rupture; EFM=electro fetal monitor NR=not reported

l; CD=cesarean delivery; VD=vaginal delivery; UR=uterine rupture; EFM=electro fetal monitor

**Evidence Table 6. Uterine rupt**

| Author<br>Year<br>Quality | Country<br>Setting |
|---|---|
| ***Case series*** | |
| Bujold<br>2002[56]<br>FAIR | |
| Leung<br>1993[55]<br>FAIR | |

NR=not reported; CD=cesarean delivei

**ture: terms, definitions, and predictors (continued)** **Evidence Tal**

| Terms & definitions | Author Year Quality |
|---|---|
| *Term:* complete uterine rupture<br>*Definition:* "uterine scar separation with the overlying visceral peritoneum (uterine serosa) opened. All uterine ruptures had been confirmed at the time of emergency laparotomy. Records with uterine dehiscences (not defined) were excluded" | Bujold 2002[56] FAIR |
| *Term:* Uterine rupture<br>*Definition:* uterine scar separation and emergent laparotomy, acute fetal distress necessitating operative intervention, or acute maternal bleeding manifested by hypotension or shock | Leung 1993[55] FAIR |

ry; VD=vaginal delivery; UR=uterine rupture; EFM=electro fetal monitor NR=not reported

**ble 6. Uterine rupture: terms, definitions, and predictors (continued)**

| Signs Symptoms | Labor factors | Patient factors |
|---|---|---|
| *Fetal tracing abnormality:* 20/23 patients<br>*Abdominal Pain:* 1/23 first symptom (3 of abnormal tracings also reported pain)<br>*Vaginal Bleeding:* (1 of the patients with fetal tracing abnormality)<br>*Hematuria:* 2/23 first sign | *Oxytocin:* 5/9 metabolic acidosis vs. 9/14 without acidosis NS<br>*Induction of labor:* 3/9 with acidosis vs. 5/14 without NS<br>*Epidural:* 8/9 with acidosis vs. 12/14 without acidosis NS | *Maternal Age:* NS difference between those with and without metabolic acidosis nor extrusion |
| *Fetal tracing abnormality:* 91/99<br>*Pain:* 13/99<br>*Vaginal Bleeding:* 11/99 | *Oxytocin:* NS difference in extrusion<br>*Epidural:* NS difference in extrusion | *Maternal Age:* NS difference for extrusion<br>*Parity:* NS difference for extrusion<br>*Prior VBAC:* 16 patients with prior VBAC had rupture<br>*CD for CPD:* NS difference |

l; CD=cesarean delivery; VD=vaginal delivery; UR=uterine rupture; EFM=electro fetal monitor

**Evidence Table 7. Uterine rupture details**

| Author Year Quality | Population | Uterine exploration | Asymptomatic Uterine Rupture TOL | Symptomatic Uterine Rupture TOL |
|---|---|---|---|---|
| Cowan 1994[25] FAIR | All verticals excluded, unknown and more than 1 prior allowed | NR | NR | 5/593 (.008%) |
| Flamm 1994[20] GOOD | All verticals excluded, unknown allowed | Discretion | NR | 39/5022 (.007%) |
| Duff 1988[26] GOOD | One prior LTCD, unknown not allowed | Yes | NR | 1/227 (.0044%) called dehiscence but symptomatic |
| Flamm 1988[21] GOOD | LTCD and unknown and more than 1 prior | Yes (discretion?) | 11/1776 (0.6%) | 3/1776 (0.2%) (1/3 still had thin layer of peritoneum over scar) |
| Flamm 1990[22] FAIR | LTCD, unknown, more than 1 prior | Majority no longer did | NR | 7/3957 (.0018%) |

NR=not reported; LTCD=low transverse cesarean delivery; TOL=trial of labor; ERCD=elective repeat cesarean delivery; LVCD=low vertical cesarean delivery; CPD=cephalo pelvic disproportion;

**Evidence Table 7. Uterine rupture details (continued)**

| Author Year Quality | Major Morbidity associated with Symptomatic uterine rupture TOL | Extrusion TOL | Asymptomatic Uterine Rupture ERCD | Symptomatic Uterine Rupture ERCD |
|---|---|---|---|---|
| Cowan 1994[25] FAIR | 1 fetus with severe neurologic sequelae | NR | NR | NR |
| Flamm 1994[20] GOOD | 0 maternal death<br>3/39 hysterectomy<br>0 neonatal deaths | NR | NR | NR |
| Duff 1988[26] GOOD | 0 maternal or perinatal deaths | NR | NR | NR |
| Flamm 1988[21] GOOD | 0 maternal death<br>0 neonatal death<br>1 hysterectomy<br><br>*ERCD:* NR | 2 partial extrusions, both babies did well, 5-min Apgar >7, one mom required hysterectomy, 3rd peritoneum intact no maternal or neonatal sequelae | NR | NR |
| Flamm 1990[22] FAIR | 0 maternal death<br>1 hysterectomy<br>infant born vaginally Apgar 9<br>3 Apgar <7(one cerebral palsy at 15months)<br>1 perinatal death related to rupture | NR | NR | NR |

NR=not reported; LTCD=low transverse cesarean delivery; TOL=trial of labor; ERCD=elective repeat cesarean delivery; LVCD=low vertical cesarean delivery; CPD=cephalo pelvic disproportion;

| Major Morbidity associated with symptomatic uterine rupture ERCD |
| --- |
| NR |
| NR |
| NR |
| NR |
| NR |

IUPC=intrauterine pressure catheter

IUPC=intrauterine pressure catheter

**Evidence Table 7. Uterine rupture details (continued)**

| Author Year Quality | Population | Uterine exploration | Asymptomatic Uterine Rupture TOL | Symptomatic Uterine Rupture TOL |
|---|---|---|---|---|
| Phelan 1987[23] FAIR | Low vertical, unknown, LTCD allowed during 2nd year more than 1 allowed | Yes | 34/1796 (1.9%) | 5/1796 (0.3%) |
| Stoval 1987[27] FAIR | LTCD or LVCD allowed more than 1 allowed not clear what was done with unknown | Yes | 6/272 (.022%) | 1/272 (.0037%) |
| Paul 1985[30] FAIR | Not more than 1, low vertical, unknown and LTCD allowed | Yes | 11 (included in Phelan, 1987) | 5 (included in Phelan, 1987) |
| Martin 1983[24] FAIR | One or more, includes low-vertical, no rupture occurred in the 76 with prior vertical | Yes | 1/101 successful 3/61 failed (4/162=.024%) | 1/61 failed (1/162=.006%) |
| Meier 1982[57] FAIR | LTCD, no unknown, no "obvious CPD"more than 1allowed | NR | 1/207 (.004%) | NR |
| McMahon 1996[5] GOOD | 1 LTCD, not clear what was done with unknown | NR | NR | 10/3249 (0.3%) |

**Evidence Table 7. Uterine rupture details (continued)**

| Author Year Quality | Major Morbidity associated with Symptomatic uterine rupture | Extrusion TOL | Asymptomatic Uterine Rupture ERCD | Symptomatic Uterine Rupture ERCD |
|---|---|---|---|---|
| Phelan 1987[23] FAIR | 1 neonatal death, post rupture, scar intact, fetal Bradycardia = sign 4600g Apgar 0,0,3, none in transverse scar | NR | 7/314 (.022%) | NR |
| Stoval 1987[27] FAIR | 0 maternal or fetal deaths | 1 expulsion mentioned, signs = tearing, pain, IUPC changes delay in diagnosis 20 min, total expulsion, Apgars 4,7, mom and baby did well, no intubation | NR | NR |
| Paul 1985[30] FAIR | 2 fetal deaths (classical incision 3 prior CD, fundal incision)<br>0 maternal deaths<br>0 hysterectomy | 2 complete expulsions (one classical incision, one fundal incision) | see Phelan 1987 | NR |
| Martin 1983 FAIR | 0 fetal death<br>0 maternal death<br>no comment on hysterectomy | NR | 4/555 (.007%) | 2/555 (.0036%) |
| Meier 1982[57] FAIR | 0 maternal or fetal deaths | NR | 1/62 (.016%) | NR |
| McMahon 1996[5] GOOD | 2 perinatal deaths<br>2 hysterectomy<br>0 maternal deaths | NR | NR | 1/2889 (0.0%) |

| Major Morbidity associated with symptomatic uterine rupture ERCD |
| --- |
| NR |
| NR |
| NR |
| 0 maternal deaths<br>0 perinatal deaths in UR group<br>0 hysterectomy for UR |
| NR |
| 0 maternal deaths<br>0 perinatal deaths<br>0 hysterectomy for UR |

NR=not reported; LTCD=low transverse cesarean delivery; TOL=trial of labor; ERCD=elective repeat cesarean delivery; LVCD=low vertical cesarean delivery; CPD=cephalo pelvic disproportion; IUPC=intrauterine pressure catheter

NR=not reported; LTCD=low transverse cesarean delivery; TOL=trial of labor; ERCD=elective repeat cesarean delivery; LVCD=low vertical cesarean delivery; CPD=cephalo pelvic disproportion; IUPC=intrauterine pressure catheter

**Evidence Table 8a. Patient satisfaction - good or fair quality studies**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population | Parity and previous history |
|---|---|---|---|---|
| ***Cross-Sectional*** | | | | |
| Fawcett<br>1994[84]<br>FAIR | USA<br>General hospital in Pennsylvania small town | Cross-sectional<br><br>BEQ 12-48 hours after delivery<br><br>Inferred 1991-1992<br><br>Compare women' s reactions to their VBAC reactions to their previous CD experience | Women who completed a VBAC. Not clear if all eligible patients were recruited and number who refused.<br><br>*TOL:* Mean age 28.8 yrs (SD 5.5 yrs)<br><br>*ERCD:* Age, race NA | *TOL:*<br>29/32 (90.6%) had 1 prior delivery<br>3/32 (9.4%) 2 or more deliveries<br><br>*ECRD:*<br>NA |
| Erb<br>1983[83]<br>FAIR | Canada<br>Communities throughout Manitoba | Cross-sectional<br><br>Responders to media campaign.<br><br>1979-1982<br><br>Assess women's feelings after first and repeat CD,<br>1-18 months after delivery | Parents who had first or repeat CD who responded to a media campaign.<br><br>*TOL:* Age, race NA<br><br>*ECRD:* Parents mean age 29 yrs | *TOL:* NR<br><br>*ECRD:* NR |

TOL=trial of labor; CD=cesarean delivery; ERCD=elective repeat cesarean delivery; BEQ=Birth Experience Questionnaire; VBAC=vaginal birth after cesarean;

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population | Parity and previous history |
|---|---|---|---|---|

**Evidence Table 8a. Patient satisfaction - good or fair quality studies (**

| Author<br>Year<br>Quality | TOL resulting in vaginal delivery | TOL emergency CD |
|---|---|---|
| ***Cross-Sectional*** | | |
| Fawcett<br>1994[84]<br>FAIR | 70% would choose VBAC again<br>30% undecided<br><br>Greater proportion felt relieved/excited & in control during the vaginal delivery. Patients perceived they worried more about their infant with their prior CD. | NA |
| Erb<br>1983[83]<br>FAIR | NA | *For mothers with repeat CD:*<br>35% wanted help coping with feelings<br>90% felt relieved<br>90% joyous<br>35% frustrated<br>34% disappointed<br>20% angry<br>18% failure as women<br><br>*For fathers:*<br>94% felt joyous<br>90% relieved<br>52% felt fearful for baby and mother<br>32% left out |

TOL=trial of labor; CD=cesarean delivery; ERCD=elective repeat cesarean delivery; BEQ= Questionnaire; VBAC=vaginal birth after cesarean;

| Author<br>Year<br>Quality | TOL resulting in vaginal delivery | TOL emergency CD |
|---|---|---|

(continued)

| ERCD |
| --- |
| NA |
| *For repeat CD in general:*<br>35% wanted help coping with feelings<br>90% felt relieved<br>90% joyous<br>35% frustrated<br>34% disappointed<br>20% angry<br>18% failure as women |

**ERCD**

**Evidence Table 8b. Patient satisfaction- poor quality studies**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Years of study<br>Research objective | Population | Exclusion<br>Criteria |
|---|---|---|---|---|
| ***Cohort*** | | | | |
| Mould<br>1996[86]<br>POOR | University college hospital. CD rate of 18%. | Prospective cohort<br>Clinicians interviewed women 2-3 days after delivery and at their six week checks<br><br>1994<br><br>Assess the extent to which women contribute to the decision for a CD and their satisfaction. | Recruited 102 of 104 women who had an emergency CD. 26 of the 102 had prior CD. | NR |
| Abitbol<br>1993[85]<br>POOR | USA<br>VBAC program in NY hospital<br><br>62% service patients<br><br>38% private | Prospective cohort<br>Clinician and social worker interviewed women before and 2-3 days after delivery<br><br>18 month collection, no dates<br><br>Investigate reasons for TOL or ERCD | Recruited all pregnant patients with prior CD who met ACOG guidelines. Refused not reported.<br><br>Total group:<br>45% white<br>34% black<br>15% Latin American<br>6% other | Patients who didn't meet ACOG standards. 38/364 (10.4%) |

TOL=trial of labor; CD=cesarean delivery; ERCD=elective repeat cesarean delivery; ACOG=American College of Obstetricians and Gynecologists; VBAC=vaginal birth after cesarean

**Evidence Table 8b. Patient satisfaction- poor quality studies**

| Author Year Quality | Patients attempt TOL | TOL resulting in vaginal delivery | TOL Emergency CD | ERCD |
|---|---|---|---|---|
| ***Cohort*** | | | | |
| Mould 1996[86] POOR | NA | NA | INVALID: Emergency CD not just VBAC:<br><br>37/73 (51%) reported having medium or above say in decision<br><br>22/73 (30%) reported no say | INVALID: ERCD not just VBAC:<br><br>20/29 (69%) reported having medium or above say in decision<br><br>2/29 (7%) reported no say |
| Abitbol 1993[85] POOR | INVALID: 99/187 (53%) | INVALID: all VBACs: 88/122 (68%) satisfied<br><br>64/80 (80%) no complications<br><br>19/42 (45%) with complications | INVALID:<br><br>16/65 (25%) satisfied | INVALID:<br><br>116/125 (93%) satisfied |

TOL=trial of labor; CD=cesarean delivery; ERCD=elective repeat cesarean delivery; ACOG=American College of Obstetricians and Gynecologists; VBAC=vaginal birth after cesarean

**Evidence Table 9a. Economic evaluations- good or fair quality studies**

| Author Year Quality | Country Setting | Study type | Perspective | Comparisons | Primary outcomes |
|---|---|---|---|---|---|
| Chung 2001[87] GOOD | USA | Cost-utility study | Society | TOL and ERCD | Cost per QALY |
| Grobman 2000[88] FAIR | USA Illinois | Cost effectiveness | Payer or health care system | TOL and ERCD | Neonatal neurologic injury or death averted, maternal deaths, CD, costs |

TOL=trial of labor; ERCD=elective repeat cesarean delivery; QALY=quality adjusted life year; VBAC= vaginal birth after cesarean; CD=cesarean delivery

**Evidence Table 9a. Economic evaluations- good or fair quality studies (continiued)**

| Author<br>Year<br>Quality | Cost data sources<br>Cost unit<br>Discount rate (base) | Results | Sensitivity analyses |
|---|---|---|---|
| Chung<br>2001[87]<br>GOOD | Resources used at medical center, national costs, adverse event treatment costs<br><br>US dollar<br><br>3% | *If VBAC rate is*<br>• *<65%:*<br>ERCD costs less with more QALYs<br>• *65%-74%:*<br>ECRD more cost effective(<$50,000/QALY)<br>• *74%-76%:*<br>ECRD more QALYs but >$50,000/QALY<br>• *>76%:*<br>TOL costs less with more QALYs | Extensive one-way sensitivity analyses.<br>*Sensitive parameters:*<br>• infant mortality probability<br>• VBAC success probability<br>• moderate neonate morbidity costs<br>• urinary incontinence probability |
| Grobman<br>2000[88]<br>FAIR | Literature, expert opinion and hospital charges<br><br>US dollar<br><br>3% | To prevent 1 major adverse neonatal outcome (cerebral palsy or neonatal death) costs $2.4M, 0.1 maternal deaths, 74 maternal morbid events, and 1591 CD. | Costs to prevent 1 major neonatal adverse event > $1M for all parameter values. |

TOL=trial of l TOL=trial of labor; ERCD=elective repeat cesarean delivery; QALY=quality adjusted life year; VBAC= vaginal birth a vaginal birth after cesarean; CD=cesarean delivery

**Evidence Table 9a. Economic evaluations- good or fair quality studies (continiued)**

| Author Year Quality | Generalizability | Missing from analysis | Comments |
|---|---|---|---|
| Chung 2001[87] GOOD | High: most data based on national not local sources. | Cost for medical staff on standby for TOL, zero rates for fecal and urinary incontinence. | Extensive and carefully planned economic evaluation addressing societal perspective allowing comparisons to other resource demands. Including costs of standby staff for TOL would likely require higher VBAC rate for cost-effectiveness of TOL. Before cost-effectiveness recommendations are based solely on VBAC success probabilities, two-way sensitivity analyses should be performed. |
| Grobman 2000[88] FAIR | High | Many neonatal adverse events (low frequency or less severe), ICU time seems underestimated also. | No societal perspective. No pooled effectiveness (e.g. QALY). Broad range of included complications. 1999 US dollars. Included potential for multiple pregnancies. Assumptions about subsequent pregnancies not clear (appear to use same assumptions as for index pregnancy). Probabilities for subsequent pregnancies likely change although data for probabilities of subsequent pregnancies may be problematic. Other reasonable simplifications made to develop model. |

TOL=trial of l TOL=trial of labor; ERCD=elective repeat cesarean delivery; QALY=quality adjusted life year; VBAC= vaginal birth a vaginal birth after cesarean; CD=cesarean delivery

**Evidence Table 9b.Economic evaluations- poor quality studies**

| Author Year Quality | Country Setting | Study type | Perspective | Comparisons | Primary outcomes |
|---|---|---|---|---|---|
| DiMaio 2002[99] POOR | USA Florida | Cost analysis | Hospital (?) | TOL and ERCD | Total costs |
| Clark 2000[94] POOR | USA | Cost benefit analysis | Payer (?) | TOL and ERCD | Total provider costs |
| Chuang 1999[93] POOR | USA | Cost and expected utility model | NR | TOL and ERCD | Expected utility and costs |
| Shorten 1998[96] POOR | Australia | Cost analysis | Health care system | TOL and ERCD | Total average costs |
| Traynor 1998[95] POOR | USA Illinois | Cost accounting | Hospital | 50 consecutive women each with TOL, ERCD, women with prior vaginal birth only | Total hospital charges |

TOL=trial of labor; ERCD=elective repeat cesarean delivery; NA=not applicable; MD=medical doctor; RCD=repeat cesarean delivery; CD=cesarean delivery; UR=uterine rupture

**Evidence Table 9b. Economic evaluations- poor quality studies (continued)**

| Author<br>Year<br>Quality | Cost data sources<br>Cost unit<br>Discount rate (base) | Results | Sensitivity analyses |
|---|---|---|---|
| DiMaio 2002[99] POOR | Hospital cost accounting data<br><br>US dollar<br><br>NA | Lower costs for TOL than for ERCD for mother, neonate, and combined | None |
| Clark 2000[94] POOR | Cost (charges) from health plan<br><br>US dollar<br><br>? | Small savings for TOL (<$500). If include cerebral palsy as outcome, TOL costs more (<$220) | Only rate of long-term neonatal costs |
| Chuang 1999[93] POOR | Costs (charges?) from one hospital in Boston MA<br><br>US dollar<br><br>NA | ECRD had higher expected utility and lower expected cost for TOL rates < 70% | Model sensitive to utilities for ERCD, successful and failed TOL |
| Shorten 1998[96] POOR | Average DRG level costs<br><br>Australian dollar<br><br>NA | TOL reduced costs by ~30% compared to ERCD | Breakeven point (equal cost for TOL and ERCD) at 68% emergency RCD |
| Traynor 1998[95] POOR | Hospital charge data<br><br>US dollar<br><br>NA | Mean (SD) gross patient charges: TOL $5820 ($1609), ERCD $6785 ($771), $4685 ($966) | None |

TOL=trial of labor; ERCD=elective repeat cesarean delivery; NA=not applicable; MD=medical doctor; RCD=repeat cesarean delivery; CD=cesarean delivery; UR=uterine rupture

**Evidence Table 9b. Economic evaluations- poor quality studies (continued)**

| Author Year Quality | Generalizability | Missing from analysis | Comments |
|---|---|---|---|
| DiMaio 2002[99] POOR | Limited data based on 1 hospital for 1 year | Details on costs, rehospitalizations, MD costs. | No comparison of baseline risk. Number of emergency RCDs not stated. Study does not evaluate cost-effectiveness (no effectiveness measure as life year). Does use costs rather than charges. |
| Clark 2000[94] POOR | Limited by cost data from one health care system. | Complications from ERCD, MD costs. | Omitted complications from ERCD. Limited focus of analysis. Included only one long-term outcome. |
| Chuang 1999[93] POOR | Limited by cost data from one hospital. | Perinatal costs / outcomes, maternal death | Broad categories of complications only. No incremental analysis of cost and consequences. |
| Shorten 1998[96] POOR | Limited sample size; Australian costs may differ from USA | Societal costs, utilities, effectiveness measure | Results based on experience of 170 women with prior CD. Validated comparison to 2 other data sets (1 lacked infant outcome data). Reduction of routine admission to Special Care Neonatal Nursery would increase TOL advantage. Data set relatively small; few rare complications occurred (unclear for UR). |
| Traynor 1998[95] POOR | Limited | | Private insurance. Excluded women if newborn treated in special care nursery. VBAC rate 84%. Excluded perinatal costs. No complications observed. No MD fees. |

TOL=trial of labor; ERCD=elective repeat cesarean delivery; NA=not applicable; MD=medical doctor; RCD=repeat cesarean delivery; CD=cesarean delivery; UR=uterine rupture

**Evidence Table 9b. Economic evaluations- poor quality studies (continued)**

| Author Year Quality | Country Setting | Study type | Perspective | Comparisons | Primary outcomes |
|---|---|---|---|---|---|
| Finkler 1997[89] POOR | USA California | Correlation analysis | Hospital | Delivery mode with resource costs, case mix, maternal LOS, neonatal morbidity | Correlation coefficients |
| Keeler 1996[90] POOR | USA California | Retrospective Cohort | Insurer | Rate of CD before and after equalization of MD fees for Csx and VD | CD rates |
| Spellacy 1991[91] POOR | USA California | Economic model | Society (?) | Cost savings from reward / penalty system for VBAC | Net costs |
| Hadley 1986[97] POOR | USA Pennsylvania | Retrospective Cohort | Payer (?) | TOL and ERCD | Total charges |
| Flamm 1985[98] POOR | USA California | Cost analysis | Payer (?) | TOL and ERCD | Total costs |
| Shy 1981[92] POOR | USA | Cost model | Payer (?) | TOL and ERCD | Mortality and direct medical costs |

TOL=trial of labor; ERCD=elective repeat cesarean delivery; NA=not applicable; MD=medical doctor; RCD=repeat cesarean delivery; CD=cesarean delivery; UR=uterine rupture; ?=inferred, not stated

**Evidence Table 9b. Economic evaluations- poor quality studies (continued)**

| Author<br>Year<br>Quality | Cost data sources<br>Cost unit<br>Discount rate (base) | Results | Sensitivity analyses |
|---|---|---|---|
| Finkler 1997[89] POOR | Direct payroll and non-payroll expenses for obstetrics<br><br>US dollar<br><br>NA | As physicians lack incentive to choose mode of delivery, there were no significant correlations of Csx rates with cost per delivery | None |
| Keeler 1996[90] POOR | MD fees paid by insurer<br><br>US dollar<br><br>NA | No change in overall CD rate, 7% increase in rates of breech presentation | None |
| Spellacy 1991[91] POOR | Rough estimates<br><br>US dollar | Paying physicians 10% more for VBAC than repeat CD will save billions | None |
| Hadley 1986[97] POOR | Patient billing data<br><br>US dollar<br><br>NA | TOL lower average charges by $1960 | None |
| Flamm 1985[98] POOR | Approximation for national data<br><br>US dollar<br><br>NA | Assuming TOL saves $300 per patient, could save up to $600M / year | None |
| Shy 1981[92] POOR | Blue Shield charge estimates<br><br>US dollar<br><br>NA | Fewer deaths (25%) with planned TOL. Higher costs (26%) with ERCD | None for cost model. |

TOL=trial of labor; ERCD=elective repeat cesarean delivery; NA=not applicable; MD=medical doctor; RCD=repeat cesarean delivery; CD=cesarean delivery; UR=uterine rupture

**Evidence Table 9b. Economic evaluations- poor quality studies (continued)**

| Author Year Quality | Generalizability | Missing from analysis | Comments |
|---|---|---|---|
| Finkler 1997[89] POOR | May be unique to setting like Kaiser-Permanente (no incentive related to mode of delivery | None | Costs directly to levels and mix of staffing, case mix and operation scale. Risk adjustment included. Cost estimates excluded perinatal costs (e.g. nursery). Results may not apply in a fee-for service environment. Included midwives on staff and scheduled coverage of physicians and midwives. |
| Keeler 1996[90] POOR | Fee for service insurers | None | CD rates post fee equalization all within confidence limits of pre equalization period. No overall effect. A few MD's left plan following equalization. |
| Spellacy 1991[91] POOR | High | None | "Back-of-the-envelope" estimate of reward to MD for VBAC. Very simplistic. May need to increase by >10% as costs of VBAC to MD may exceed 10% |
| Hadley 1986[97] POOR | Limited data based on 1 hospital | Charge details, costs, insurance type, long term effects | Small cohort (40 TOL and 35 ERCD). No long-term effects included. Conservative TOL criteria. |
| Flamm 1985[98] POOR | Only crude approximation | Most details, adverse outcomes | Back of the envelope estimate of cost savings in US. Assumes TOL is appropriate for all prior CD patients. Ignores any complications. |
| Shy 1981[92] POOR | Limited by year of model. | All morbidity (including AE's) | No comparison of mortality and costs. Cost data very limited (only hospital, MD, anesthesiologist and neonatal ICU). Results dated. No sensitivity analyses on costs. |

TOL=trial of labor; ERCD=elective repeat cesarean delivery; NA=not applicable; MD=medical doctor; RCD=repeat cesarean delivery; CD=cesarean delivery; UR=uterine rupture

**Evidence Table 10. Health care resources- poor quality studies**

| Author<br>Year<br>Quality | Country<br>Setting | Years of study<br>Research objective | Subject eligibility: Included (I)/Excluded (E) | Study Group |
|---|---|---|---|---|
| ***Systematic Reviews*** | | | | |
| Roberts 1997[117]<br>POOR | USA | 1980-1996<br>Comparison of TOL and ERCD | (I) Article in Medline or in references/(E) Developing country | TOL<br>ERCD |
| ***Prospective Cohort Study Designs*** | | | | |
| Flamm 1994[20]<br>POOR | USA<br>CA | 1990<br>Evaluate outcomes in a cohort of women with prior CD | (I) Delivery at participating hospital, woman with prior CD/(E) Spontaneous or therapeutic abortion, left provider, incomplete records. | TOL<br>ERCD |
| Miller 1992[173]<br>POOR | Australia | 1989-1990<br>Assess outcomes in women with prior CD | (I) Women with at least 1 prior CD who delivered in hospital | ECD<br>Emergency CD<br>VBAC |
| Phelan 1987[23]<br>POOR | USA<br>CA | 1982-1984<br>Evaluation of risks associated with TOL | (I) 1 or 2 prior CD, unknown scar type/(E) Known classical scar, multiple gestation, malpresentation | Successful TOL<br>Failed TOL (RCD)<br>No TOL: VD<br>No TOL: ERCD<br>No TOL: indicated RCD |

TOL=trial of labor; ERCD=elective repeat cesarean delivery; CD=cesarean delivery;LOS=length of stay; VBAC= vaginal birth after cesarean; RCD=repeat cesarean delivery; SD=standard deviation; HMO=health maintenance organization; ROM=rupture of membranes

**Evidence Table 10. Health care resources- poor quality studies (continued)**

| Author Year Quality | Sample size (enrolled/ complete) | Measure | Estimate | Notes |
|---|---|---|---|---|
| ***Systematic Reviews*** | | | | |
| Roberts 1997[117] POOR | Maternal/neonatal: 10,428/379 | Maternal/ Neonatal LOS (days) | 2.94/2.99 | No risk adjustment, no standard errors |
| | 3,597/599 | | 4.11/4.96 | |
| ***Prospective Cohort Study Designs*** | | | | |
| Flamm 1994[20] POOR | 5,022 | Mean (SD) maternal LOS (hours) | 57.2 (31.1) | P-value<0.0001. Risk adjustment performed but no details provided. |
| | 2,207 | | 84.9 (26.3) | Predictors of LOS included medical center, TOL, prior scar type unknown, no post-partum fever, no transfusion, 5-miunte Apgar>6 and no tubal ligation |
| Miller 1992[173] POOR | 193 | Maternal (SD) LOS (days) | 7 (2.0) | No adjustment for baseline risk or other potential confounders |
| | 45 | | 7.0 (1.6) | |
| | 66 | | 4.9 (2.0) | |
| Phelan 1987[23] POOR | 1,465 | Mean maternal LOS (days) | 2.2 | No risk adjustment. No test of significance. |
| | 331 | | 4.2 | |
| | 69 | | 2.3 | |
| | 314 | | 4.2 | |
| | 464 | | 4.2 | |

TOL=trial of labor; ERCD=elective repeat cesarean delivery; CD=cesarean delivery;LOS=length of stay; VBAC= vaginal birth after cesarean; RCD=repeat cesarean delivery; SD=standard deviation; HMO=health maintenance organization; ROM=rupture of membranes

**Evidence Table 10. Health care resources- poor quality studies (continued)**

| Author Year Quality | Country Setting | Years of study Research objective | Subject eligibility: Included (I)/Excluded (E) | Study Group |
|---|---|---|---|---|
| Stovall 1987[27] POOR | USA TN | 1985-1986 Year-long prospective study of "liberalized" VBAC criteria | (I) Patients with prior CD (lower uterine segment transverse or vertical)/(E) Classical, previous low vertical in pre-term pregnancy, lower uterine transverse or vertical scar, or failed TOL after CD. | Vaginal delivery |
| | | | | CD |
| ***Retrospective Cohort Study Designs*** | | | | |
| Anonymous 1998[103] POOR | USA | 1996 Estimate LOS for insurance claims | (I) Metropolitan Life Insurance Co. Group Health enrollee | CD |
| Anonymous 1998[103] POOR | | | | Uncomplicated VD |
| | | | | VBAC |
| | | | | CD/Indemnity |
| | | | | CD/Preferred Provider |
| | | | | CD/Point of Service |
| | | | | CD/HMO |
| | | | | Uncomplicated VD/Indemnity |
| | | | | Uncomplicated VD/Preferred Provider |
| | | | | Uncomplicated VD/Point of |
| | | | | Uncomplicated VD/HMO |
| | | | | VBAC/Indemnity |
| | | | | VBAC/Preferred Provider |
| | | | | VBAC/Point of Service |
| | | | | VBAC/HMO |

TOL=trial of labor; ERCD=elective repeat cesarean delivery; CD=cesarean delivery;LOS=length of stay; VBAC= vaginal birth after cesarean; RCD=repeat cesarean delivery; SD=standard deviation; HMO=health maintenance organization; ROM=rupture of membranes

**Evidence Table 10. Health care resources- poor quality studies (continued)**

| Author Year Quality | Sample size (enrolled/ complete) | Measure | Estimate | Notes |
|---|---|---|---|---|
| Stovall 1987[27] POOR | 216 | Maternal LOS (days) | 2.1 | No summary stats beyond mean LOS. No baseline statistics |
| | 56 | | 5.3 | |
| ***Retrospective Cohort Study Designs*** | | | | |
| Anonymous 1998[103] POOR | 10,305 | Maternal LOS (days) | 3.01 | Based on insurance claims data |
| Anonymous 1998[103] POOR | 40,697 | | 1.71 | LOS may be impacted by insurance coverage |
| | 887 | | 1.76 | Based on insurance claims data |
| | | | 3.12 | LOS may be impacted by insurance coverage |
| | | | 3.07 | Sample size by insurance type and mode of delivery not provided |
| | | | 2.94 | |
| | | | 2.87 | |
| | | | 1.83 | |
| | | | 1.72 | |
| | | | 1.62 | |
| | | | 1.60 | |
| | | | 1.89 | |
| | | | 1.85 | |
| | | | 1.66 | |
| | | | 1.74 | |

TOL=trial of labor; ERCD=elective repeat cesarean delivery; CD=cesarean delivery;LOS=length of stay; VBAC= vaginal birth after cesarean; RCD=repeat cesarean delivery; SD=standard deviation; HMO=health maintenance organization; ROM=rupture of membranes

**Evidence Table 10. Health care resources- poor quality studies (continued)**

| Author Year Quality | Country Setting | Years of study Research objective | Subject eligibility: Included (I)/Excluded (E) | Study Group |
|---|---|---|---|---|
| Curtin 1997[167] POOR | USA | 1995 Summarize data from 1995 National Hospital Discharge Survey | (I) Pregnancy in non-federal short-stay hospital | 1988<br>1995 |
| Hook 1997[207] POOR | USA OH | 1992-1993 Compare neonatal outcomes for ERCD and TOL | (I) Women with prior CD, singleton delivery, >36 weeks gestation/(E) 18 neonates with congenital malformations | ERCD<br>TOL<br>VBAC after TOL<br>RCD after failed TOL |
| Hanley 1996[208] POOR | USA NJ | 1984 Describe contribu-tions of various factors to overall RCD rate | (I) Women with prior CD and either RCD or VBAC/(E) Missing record | ERCD<br>Failed VBAC<br>Indicated RCD |
| Taffel 1991[209] POOR | USA | 1989 Monitor annual trends in pregnancy outcomes | (I) Birth in non-federal general and special short-stay hospitals | RCD<br>Primary CD<br>VD (all) |

TOL=trial of labor; ERCD=elective repeat cesarean delivery; CD=cesarean delivery;LOS=length of stay; VBAC= vaginal birth after cesarean; RCD=repeat cesarean delivery; SD=standard deviation; HMO=health maintenance organization; ROM=rupture of membranes

**Evidence Table 10. Health care resources- poor quality studies (continued)**

| Author Year Quality | Sample size (enrolled/ complete) | Measure | Estimate | Notes |
|---|---|---|---|---|
| Curtin 1997[167] POOR | | Maternal LOS for RCD/% 4 days or more | 4.3/71.7% | Exact number of women with prior CD not reported. |
| | | | 3.3/21.0% | No adjustment for baseline risk or other potential confounders |
| Hook 1997[207] POOR | 497 | Mean (SD) LOS (days): maternal/ neonatal | 4.5(1)/4.5(2) | No adjustment for baseline risk or other potential confounders |
| | 492 | | 3.6(1)/3.7(2) | |
| | 336 | Mean (SD) neonatal LOS (days) | 3.1 (2) | P-value<0.01 for comparison of LOS between VBAC and failed TOL |
| | 156 | | 4.8 (2) | |
| Hanley 1996[208] POOR | 107 | Maternal median (min., max.) LOS (days) | 3 (2-6) | No risk adjustment |
| | 72 | | 4 (3-8) | Significant differences between elective and other 2 (p-value<0.05) |
| | 53 | | 4 (2-14) | |
| Taffel 1991[209] POOR | | Maternal LOS (days) | 4.2 | No risk adjustment, no standard errors |
| | | | 4.8<br>2.4 | |

TOL=trial of labor; ERCD=elective repeat cesarean delivery; CD=cesarean delivery;LOS=length of stay; VBAC= vaginal birth after cesarean; RCD=repeat cesarean delivery; SD=standard deviation; HMO=health maintenance organization; ROM=rupture of membranes

**Evidence Table 10. Health care resources- poor quality studies (continued)**

| Author Year Quality | Country Setting | Years of study Research objective | Subject eligibility: Included (I)/Excluded (E) | Study Group |
|---|---|---|---|---|
| Eriksen 1989[210] POOR | USA (military) | 1985-87 Evaluate outcomes in a cohort of women with prior CD | (II) Patients with prior CD (and age and parity-matched VD)/(E) Not eligible for TOL | VBAC |
| | | | | RCD |
| | | | | VD no prior CD |
| | | | | VBAC |
| | | | | RCD |
| | | | | VD no prior CD |
| Flamm 1988[21] POOR | USA CA | 1984-85 Evaluate outcomes in a cohort of women with prior CD | (I) Women with prior CD who volunteered for TOL | Success-ful TOL |
| | | | | Failed TOL |
| | | | | ERCD |
| Placek 1988[169] POOR | USA | 1980-85 Summarize national survey data on delivery methods | (I) Patients in non-federal general and special short-stay hospitals | Primary CD |
| | | | | RCD |
| | | | | VD (not VBAC) |
| | | | | VBAC |
| Placek 1988[211] POOR | USA | 1986 Summarize national survey data on delivery methods | (I) Patients in non-federal general and special short-stay hospitals | Primary CD |
| | | | | RCD |
| | | | | VD (not VBAC) |
| | | | | VBAC |

TOL=trial of labor; ERCD=elective repeat cesarean delivery; CD=cesarean delivery;LOS=length of stay; VBAC= vaginal birth after cesarean; RCD=repeat cesarean delivery; SD=standard deviation; HMO=health maintenance organization; ROM=rupture of membranes

**Evidence Table 10. Health care resources- poor quality studies (continued)**

| Author Year Quality | Sample size (enrolled/ complete) | Measure | Estimate | Notes |
|---|---|---|---|---|
| Eriksen 1989[210] POOR | 69 | Mean (SD) maternal LOS (days) | 3.1 (1.6) | VBAC differs form RCD (p<0.0001) and from VD (p=0.0004) |
| | 68 | | 5.4 (2.0) | |
| | 69 | | 2.4 (0.84) | |
| | | Mean (SD) neonatal LOS (days) | 2.73 (1.3) | VBAC differs form RCD (p<0.0001) |
| | | | 4.58 (2.23)<br>2.16 (0.66) | No risk adjustment |
| Flamm 1988[21] POOR | 1,314 | Mean (SD) maternal LOS (days) | 2.2 (0.81) | No risk adjustment |
| | 462 | | 4.6 (1.29)<br>4.3 (NR) | |
| Placek 1988[169] POOR | | Maternal LOS (days) | 6.0 | National data. No risk adjustment, no standard errors. VBAC significantly short LOS than either CD category (not other VD) |
| | | | 5.6 | RCD equals all repeat CD including indicated, elective, or failed TOL |
| | | | 3<br>3.2 | |
| Placek 1988[211] POOR | | Maternal LOS (days) | 5.2 | National data. No risk adjustment, no standard errors. VBAC significantly short LOS than either CD category (not other VD) |
| | | | 4.7<br>2.6<br>2.7 | |

TOL=trial of labor; ERCD=elective repeat cesarean delivery; CD=cesarean delivery;LOS=length of stay; VBAC= vaginal birth after cesarean; RCD=repeat cesarean delivery; SD=standard deviation; HMO=health maintenance organization; ROM=rupture of membranes

**Evidence Table 10. Health care resources- poor quality studies (continued)**

| Author Year Quality | Country Setting | Years of study Research objective | Subject eligibility: Included (I)/Excluded (E) | Study Group |
|---|---|---|---|---|
| Hadley 1986[212] POOR | USA PA | 1982-83 Compare TOL to ERCD | (I) Prior CD, eligible for TOL/(E) >1 Prior CD, Non-low transverse scar, twins, prior uterine surgery, no consent, fetal macrosomia | ERCD |
| | | | | Attempted TOL |
| | | | | Successful TOL |
| | | | | Failed TOL |
| Boucher 1984[213] POOR | USA CA | 1980 Evaluate outcomes in a cohort of women with prior CD | (I) Delivery at study hospital/(E) Chart lost | Overall TOL |
| | | | | Successful TOL |
| | | | | Failed TOL (RCD) |
| | | | | non-TOL |
| | | | | Elective CD |
| | | | | Labor&ROM |
| | | | | Labor&ROM: RCD |
| | | | | no TOL |
| | | | | Labor&ROM: VD |

TOL=trial of labor; ERCD=elective repeat cesarean delivery; CD=cesarean delivery;LOS=length of stay; VBAC= vaginal birth after cesarean; RCD=repeat cesarean delivery; SD=standard deviation; HMO=health maintenance organization; ROM=rupture of membranes

**Evidence Table 10. Health care resources- poor quality studies (continued)**

| Author Year Quality | Sample size (enrolled/ complete) | Measure | Estimate | Notes |
|---|---|---|---|---|
| Hadley 1986[212] POOR | 35 | LOS (days) mother/infant | 5.9/6.1 | Maternal readmissions 2 TOL and 1 ERCD, ER visits TOL 2 |
| | 40 | | 3.6/3.7 | |
| | 32 | | 3.1/3.4 | |
| | 8 | | 5.6/6.0 | |
| Boucher 1984[213] POOR | 308 | Operative time (min)/maternal LOS (days) | NA/NR | No risk adjustment |
| | 240 | | NA/NR | All groups not compared,only RCD LOS data only reported |
| | 68 | | 68.8 (23.9)/5.0 (1.4) | |
| | 544 | | NR/NR | |
| | 140 | | 78.2 (26.1)/5.0 (1.5) | |
| | 404 | | NA/NR | |
| | 371 | | 76.9 (46.5)/4.9 (1.6) | |
| | 33 | | NA/NR | |

TOL=trial of labor; ERCD=elective repeat cesarean delivery; CD=cesarean delivery;LOS=length of stay; VBAC= vaginal birth after cesarean; RCD=repeat cesarean delivery; SD=standard deviation; HMO=health maintenance organization; ROM=rupture of membranes

**Evidence Table 10. Health care resources- poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Years of study<br>Research objective | Subject eligibility: Included (I)/Excluded (E) | Study Group |
|---|---|---|---|---|
| ***Studies of Case Series*** | | | | |
| Iglesias 1991[161]<br>POOR | Canada (Alberta) | 1985-89<br>Success of TOL in rural hospital | (I) Pregnant mother with prior CD eligible for TOL | 1985<br>1986<br>1987<br>1988<br>1989 |
| ***Surveys*** | | | | |
| Mor-Yosef 1990[160]<br>POOR | Israel | 3 months in 1983-84<br>National survey to assess VBAC | (I) Singleton live delivery with previous CD/(E) Delivery before 26 weeks gestation, fetal malformations, home deliveries, multiple deliveries, >1 prior CD, incomplete data | VBAC<br>RCD |

TOL=trial of labor; ERCD=elective repeat cesarean delivery; CD=cesarean delivery;LOS=length of stay; VBAC= vaginal birth after cesarean; RCD=repeat cesarean delivery; SD=standard deviation; HMO=health maintenance organization; ROM=rupture of membranes

**Evidence Table 10. Health care resources- poor quality studies (continued)**

| Author Year Quality | Sample size (enrolled/ complete) | Measure | Estimate | Notes |
|---|---|---|---|---|
| ***Studies of Case Series*** | | | | |
| Iglesias 1991[161] POOR | 27 | Maternal LOS (days) successful TOL/failed TOL | 5.0/none | No risk adjustment or standard deviations. Small n's |
| | 28 | | 4.7/6.0 | |
| | 24 | | 5.6/5.0 | |
| | 25 | | 4.1/5.5 | |
| | 33 | | 3.3/6.2 | |
| ***Surveys*** | | | | |
| Mor-Yosef 1990[160] POOR | 596 | Mean (SD) maternal LOS (days) | 3.8 (1.8) | No risk adjustment. Difference not significant |
| | 484 | | 7.2 (1.8) | |

TOL=trial of labor; ERCD=elective repeat cesarean delivery; CD=cesarean delivery;LOS=length of stay; VBAC= vaginal birth after cesarean; RCD=repeat cesarean delivery; SD=standard deviation; HMO=health maintenance organization; ROM=rupture of membranes

**Evidence Table 11. Individual factors - good or fair quality studies**

| Author<br>Year<br>Quality | Country<br>Setting | Study category<br>Years of study<br>Research objective | Population |
|---|---|---|---|
| ***Randomized Controlled Trials*** | | | |
| Fraser<br>1997[106]<br>FAIR | Canada/USA<br>11 Canadian hospitals<br>1 US hospital | Nonclinical<br>1992-1994<br>To assess whether, for women with PCD, a prenatal education and support program promoting VBAC delivery increases the probability of VD. | Women with one PCD.<br><br>Stratified by motivational level (low or high), and then randomly assigned<br>Group 1: verbal<br>Group 2: document |
| ***Prospective Cohort*** | | | |
| Flamm<br>1997[36]<br>GOOD | USA<br>10 Southern California Kaiser Permanente hospitals | Predictive tool<br>1990-1992<br>To develop a scoring system to predict the likelihood of vaginal birth in patients undergoing a TOL after PCD using factors known at the time of hospital admission. | Women with a PCD. |
| Stronge<br>1996[109]<br>FAIR | Ireland<br>National Maternity Hospital Dublin | Characteristics<br>1992-1994<br>To determine if routine measured clinical factors were associated with mode of delivery. | Women with one PCD |
| ***Retrospective Cohort*** | | | |
| Caughey<br>1998[112]<br>GOOD | USA<br>Brigham and Women's Hospital Boston, MA | Characteristics<br>1984-1996<br>To examine the effects of order of previous modes of delivery on the rate of CD and duration of a TOL among women with a history of one PCD and one previous VD. | Women with exactly one PCD and one previous VD.<br><br>Compared:<br>Group 1: PCD followed by VD (VD last)<br>Group 2: VD followed by PCD (CD last) |

TOL=trial of labor; VBAC=vaginal birth after cesarean; CD=cesarean delivery; PCD=previous cesarean delivery; ERCD=elective repeat cesarean delivery; NR=not reported; RCT=randomized controlled trial

**Evidence Table 11. Individual factors - good or fair quality studies (continued)**

| Author Year Quality | Exclusion criteria | Eligible/ attempting TOL VB | Factors adjusted for through Multivariate Analysis |
|---|---|---|---|
| ***Randomized Controlled Trials*** | | | |
| Fraser 1997[106] FAIR | Previous VBAC, a classic CD or myomectomy scar, multiple gestation. | 1284/905<br><br>649 | RCT - assumed equal distribution of confounding factors |
| ***Prospective Cohort*** | | | |
| Flamm 1997[36] GOOD | ERCD, incomplete data | 7229/5003<br><br>3746 | Age, VD history, PCD indication, cervical effacement/dilation at admission |
| Stronge 1996[109] FAIR | ERCD, NR | 239/195<br><br>150 | Head engagement, dilation of cervix of more than 2cm, the use of oxytocin for augmentation |
| ***Retrospective Cohort*** | | | |
| Caughey 1998[112] GOOD | Unavailable chart information, no previous VD, more than one previous VD or CD. | NR/800<br><br>700 | Maternal age, epidural use, induction, birth weight, gestational age, and previous indication for CD |

TOL=trial of labor; VBAC=vaginal birth after cesarean; CD=cesarean delivery; PCD=previous cesarean delivery; ERCD=elective repeat cesarean delivery; NR=not reported; RCT=randomized controlled trial

**Evidence Table 11. Individual factors - good or fair quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study category<br>Years of study<br>Research objective | Population |
|---|---|---|---|
| Jakobi<br>1993[37]<br>FAIR | Israel<br>Rambam<br>Medical<br>Center<br>Hafia | Predictive tool<br>Years NR<br>To examine 15 previously identified prognostic factors, in order to evaluate the predictive value and relative importance of these factors and whether they could be used for a better selection of patients for VBAC. | Women with one PCD. |
| McNally<br>1999[107]<br>FAIR | Ireland<br>Coombe<br>Women's<br>Hospital<br>Dublin | Medications/ characteristics<br>1993-1994<br>The aim of this study was, after induction of labor in women with a PCD, to compare the outcome in women with a history of VD with women who had never had a VD. | Women with one previous lower segment CD who had been induced with oxytocin and amniotomy.<br><br>Compared:<br>Group 1: **previous VD**<br>Group 2: no previous VD |
| Weinstein<br>1996[42]<br>FAIR | Israel<br>Hebrew<br>University<br>Jerusalem | Predictive tool<br>1981-1990<br>To evaluate the relative weight of the different variables that may influence the chances of vaginal birth after one PCD, with the aim of developing a predictive score for success of such a trial. | Women with one PCD. |

TOL=trial of labor; VBAC=vaginal birth after cesarean; CD=cesarean delivery; PCD=previous cesarean delivery; ERCD=elective repeat cesarean delivery; NR=not reported; RCT=randomized controlled trial

**Evidence Table 11. Individual factors - good or fair quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Eligible/<br>attempting TOL<br>VB | Factors adjusted for through Multivariate Analysis |
|---|---|---|---|
| Jakobi<br>1993[37]<br>FAIR | Unknown scar, scar other than LTCS, nonvertex presentation, multiple gestation, ruptured membranes >16hrs and without contractions or >42wks. | NR/261<br><br>215 | Parity, VD history, PCD indication, cervical dilation/effacement/station at previous CD, cervical dilation/effacement/station at admission, rupture of membranes, birth weight |
| McNally<br>1999[107]<br>FAIR | Fetal distress upon induction | NR/103<br><br>82 | Age, parity, VD history, gestational age, cervical effacement/dilation, prostaglandin administration, epidural analgesia, certainty of dates, presence or absence of meconium at amniotomy, birth weight |
| Weinstein<br>1996[42]<br>FAIR | ERCD, incomplete records, classic or unknown scar, hx of rupture, absolute CPD, previa, fetal malpresentation incompatible with a safe VD | 572/471<br><br>368 | Maternal age, VD history, bishop score, fetal weight at CD, fetal weight, PCD indication |

TOL=trial of labor; VBAC=vaginal birth after cesarean; CD=cesarean delivery; PCD=previous cesarean delivery; ERCD=elective repeat cesarean delivery; NR=not reported; RCT=randomized controlled trial

**Evidence Table 11. Individual factors - good or fair quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study category<br>Years of study<br>Research objective | Population |
|---|---|---|---|
| Zelop (a)2001[110]<br>FAIR | USA<br>Brigham and Women's Hospital<br>Boston, MA | (a) characteristics<br>1984-1996<br>To compare the outcomes in women with PCD at or before 40 weeks' gestation with those delivering after weeks. | Women with one PCD<br><br>Compared:<br>Group 1: 37 to 40 weeks gestation.<br>Group 2: after 40 weeks gestation. |
| Zelop (b)2001[111]<br>FAIR | USA<br>Brigham and Women's Hospital<br>Boston, MA | (b) characteristics<br>1984-1996<br>To compare the outcomes at term of a TOL in women with PCD who delivered neonates weight >4000g versus women with those weighing <4000g. | Women with one PCD undergoing a TOL after 24 weeks.<br><br>Compared:<br>Group 1: >4000g<br>Group 2: <4000g |
| ***Case Control*** | | | |
| Macones 2001[38]<br>FAIR | USA<br>University of Pennsylvania<br>Philadelphia, PA | Predictive tools<br>1994-1998<br>To assess the utility and effectiveness of a neural network for predicting the likelihood of success of a TOL, relative to standard multivariate predictive models. | Women with PCD.<br><br>Compared:<br>Group 1: VBAC<br>Group 2: Failed TOL |
| Pickhardt 1992[39]<br>FAIR | USA<br>Mississippi Medical Center<br>Jackson, MS | predictive tools<br>1989<br>To determine if there useful and valid predictors before parturition, of successful or unsuccessful vaginal birth after previous cesarean birth that could be used to enhance the obstetric care of a patient and her pregnancy. | Women with a PCD.<br><br>Compared:<br>Group 1: VBAC<br>Group 2: Failed TOL |

TOL=trial of labor; VBAC=vaginal birth after cesarean; CD=cesarean delivery; PCD=previous cesarean delivery; ERCD=elective repeat cesarean delivery; NR=not reported; RCT=randomized controlled trial

**Evidence Table 11. Individual factors - good or fair quality studies (continued)**

| Author Year Quality | Exclusion criteria | Eligible/ attempting TOL VB | Factors adjusted for through Multivariate Analysis |
|---|---|---|---|
| Zelop (a)2001[110] FAIR | ERCD, preterm, multiple gestation, more than one PCD. | NR/2775<br><br>1923 | PCD indication, birth weight |
| Zelop (b)2001[111] FAIR | ERCD, preterm | NR/2749<br><br>1912 | Epidurals, maternal age, race, receiving public assistance, year of delivery, PCD indication, type of uterine hysterotomy |
| ***Case Control*** | | | |
| Macones 2001[38] FAIR | Unknown scar, vertical scar | NR/400<br><br>300 | Substance abuse, parity, prior VBAC, weight gain during pregnancy, prepreganancy BMI, years since last delivery, cervical dilation at admission, need for augmentation |
| Pickhardt 1992[39] FAIR | Incomplete data or unobtainable charts | NR/312<br><br>212 | Race, age, height, weight, gravidity, parity, estimated fetal weight, number of PCD, cervical dilation/effacement/station at admission, modified bishop score, estimated gestational age, number of previous VD, PCD indication, spontaneous rupture of membranes, placental grade, fluid status, spontaneous uterine activity |

TOL=trial of labor; VBAC=vaginal birth after cesarean; CD=cesarean delivery; PCD=previous cesarean delivery; ERCD=elective repeat cesarean delivery; NR=not reported; RCT=randomized controlled trial

**Evidence Table 11. Individual factors - good or fair quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study category<br>Years of study<br>Research objective | Population |
|---|---|---|---|
| ***Case series*** | | | |
| de Meeus<br>1998[104]<br>FAIR | France<br>Poitiers<br>University<br>Hospital | characteristics<br>1988-1995<br>To determine if external cephalic version (ECV) is a reasonable alternative to repeat CD in case of breech presentation. | 43 women with one PCD and current singleton pregnancy in breech presentation, attempting ecv. |
| Flamm<br>1991[105]<br>FAIR | USA<br>Kaiser<br>Permanente<br>Centers<br>(Los<br>Angeles,<br>Anaheim,<br>Riverside) | characteristics<br>1985-1990<br>To examine external cephalic version in those with breech presentation following one or more PCD. | Women undergoing external cephalic version for breech presentation.<br><br>Compared:<br>Group 1: with one or more PCD<br>Group 2: no PCD |
| Schacter<br>1994[108]<br>GOOD | Israel<br>Kaplan<br>Hospital<br>Jerusalem | characteristics<br>24 month period - Years NR<br>To describe our limited experience with external cephalic version (ECV) from breech to vertex presentation at term, with the use of ritodrine tocolysis, in women who had undergone a PCD. | Women with a PCD who at 36-37weeks gestation have malpresentation (breech or transverse lie), for which they undergo ECV. |

TOL=trial of labor; VBAC=vaginal birth after cesarean; CD=cesarean delivery; PCD=previous cesarean delivery; ERCD=elective repeat cesarean delivery; NR=not reported; RCT=randomized controlled trial

**Evidence Table 11. Individual factors - good or fair quality studies (continued)**

| Author<br>Year<br>Quality | Exclusion criteria | Eligible/<br>attempting TOL<br>VB | Factors adjusted for through Multivariate Analysis |
|---|---|---|---|
| ***Case series*** | | | |
| de Meeus 1998[104]<br>FAIR | ERCD, <36weeks, rupture membranes, suspected IUGR, third-trimester bleeding, vertical uterine scar, obvious macrosomia, abnormal placental insertion, uterine malformation, or abnormal FHT on admission. | 43/38<br><br>19 | |
| Flamm 1991[105]<br>FAIR | ERCD, ruptured membranes, labor, suspected IUGR, third-trimester bleeding, oligohydramnios, previous classical or vertical incision, or suspicious fetal monitoring pattern on admission. | NR/56<br><br>30 | |
| Schacter 1994[108]<br>GOOD | Previous metroplasty, low lying placenta, oligohydramnion, ruptured membranes | 20/11<br><br>6 | |

TOL=trial of labor; VBAC=vaginal birth after cesarean; CD=cesarean delivery; PCD=previous cesarean delivery; ERCD=elective repeat cesarean delivery; NR=not reported; RCT=randomized controlled trial

**Evidence Table 12a. Patient preferences - good or fair quality studie**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Intervention<br>Years of study<br>Research objective |
|---|---|---|
| ***Randomized Controlled Trial*** | | |
| Fraser<br>1997[106]<br>GOOD | CANADA & USA<br>11 Canadian hospitals<br>1 US hospital<br>VBAC rate 39.3%. | RCT<br>Randomized to receive pamphlet on VBAC benefits or prenatal education & support program. Questionnaire 1-3 days after delivery<br><br>1992-1994<br>Assess the effect of a prenatal education program on proportion of women attempting TOL |
| ***Cohort*** | | |
| Kirk<br>1990[118]<br>FAIR | USA<br>1 teaching hospital (a) (primary CD rate 14.8%, repeat 3%)<br><br>1 metropolitan hospital (b) (primary CD rate 13.6%, repeat 5.4%) | Nonrandomized trial<br>Questionnaire during postpartum stay. Mailed follow-up to nonresponders.<br><br>1988-1989<br>Determine who makes decisions for CD and why those decisions are made. |
| Kline<br>1993[119]<br>FAIR | USA<br>Private nonteaching hospital in MO<br>CD rate 28.5% (18.3% primary, 10.2% repeat) | Prospective cohort<br>Patients interviewed before delivery and delivery data collected afterward from records<br><br>1988-1990<br>Determine the reasons for the birth choice. |

BEQ=birth experience questionnaire; VBAC=vaginal birth after cesarean; TOL=trial of la
elective repeat cesarean delivery; DD=delivery decision; CD=cesarean delivery

**Evidence Table 12a. Patient preferences - good or fa**

| Eligibility Population | Author Year Quality | Education about VBAC? |
|---|---|---|
| | ***Randomized*** | ***Controlled Trial*** |
| All women with CD, single low transverse scar, gestational age >28 weeks. Read, write English or French.<br>Recruited 1275/1301<br>*TOL:* Average age 31 (SD 5 yrs)<br>*ERCD:* Average age 31 (SD 5 yrs) | Fraser 1997[106]<br>GOOD | Document group: VBAC pamphlet at 21 weeks. Verbal group: Research nurse assessed the patient's motivation for VBAC and the attitudes of her physician and of her social network (husband, friends etc.) at 21 weeks. Addressed questions about pain and sterilization. 4-8 wks later, resource person provided support, etc. |
| | ***Cohort*** | |
| NR<br>*TOL:* Mean age 27.6 yrs<br>Hospital a: 20% nonwhite<br>Hospital b: 2.4% nonwhite<br>*ERCD:* Mean age 30.6 years<br>Hospital a: 20% nonwhite<br>Hospital b: 2.4% nonwhite | Kirk 1990[118]<br>FAIR | NR but 55% of TOL patients knew about VBAC before current pregnancy; 49% of ERCD also knew. |
| Women with 1+ prior CD. Consecutive patients (when PI was chief resident on call) first then recruited elective repeat patients. Refused not reported.<br>*TOL:* Mean 30.2 yrs (SD 5.0) (n=121 successful TOL)<br>*ECRD:* Mean 30.1 years (SD 4.6) (n=120) | Kline 1993[119]<br>FAIR | NR |

abor; NR=not reported; ERCD=

BEQ=birth experience questionnaire; VBAC=vaginal birth after ces
elective repeat cesarean delivery; DD=delivery decision; CD=cesarea

air quality studies (continued) Evidence Table 1

| Delivery Decisions/ Attempt TOL/Eligible | VBAC/TOL | ERCD | Author Year Quality |
|---|---|---|---|
| | | | ***Randomized Co*** |
| Document Group: 440/634 (69.4%) Verbal Group: 465/641 (72.5%) | Document Group: 310/440 (70.5%) Verbal Group: 339/465 (72.8%) | Document Group (150/634 (23.7%) Verbal Group: 137/641 (21.4%) | Fraser 1997[106] GOOD |
| | | | ***Cohort*** |
| NR | NR | NR | Kirk 1990[118] FAIR |
| 205/584 (35.1%) | 153/205 (74.6%) | 873/1078 (80.9%) | Kline 1993[119] FAIR |

arean; TOL=trial of labor; NR=not reported; ERCD= BEQ=birth experience
an delivery elective repeat cesarea

**.2a. Patient preferences - good or fair quality studies (continued)**

| Reasons or factors for elective repeat CD | Information sources for elective repeat CD |
|---|---|
| ***ntrolled Trial*** | |
| No differences between treatment groups. Women with low motivation for VBAC at baseline (21 weeks) were 3 times more likely to have an ERCD than those with high motivation. Women with low motivation were more likely to have already experienced labor, were less likely to be planning future pregnancies, were more likely to be seeking a tubal ligation. | Collected but not reported. |
| Reasons: 12/48 (25%) danger of TOL to mother; 14/48 (29.2%) danger of TOL to baby; 19/48 (39.6%) avoid labor pain; 13/48 (27.1%) convenience; 25/48 (52.1%) low chance of vaginal delivery; 18/48 (37.5%) knew what to expect. 15% of patients selected ERCD in before pregnancy. Another 25% decided in first half of pregnancy. 20% of patients thought they had at least a 75% chance of a vaginal delivery with a TOL. | 52% of women made decision although most women (79%) rated the physician as a strong influence. Another 31% of women and physicians together made decision. 72% of women rated their husbands as a strong influence. |
| For 120 patients: 31.6% patient desire; 13.3% MD advice; 9.1% Patient & MD; 45.8% medical reason. | NR |

e questionnaire; VBAC=vaginal birth after cesarean; TOL=trial of labor; NR=not reported; ERCD=
n delivery; DD=delivery decision; CD=cesarean delivery

**Evidence Table 12a. Patient preferences - good or fair quality studie**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Intervention<br>Years of study<br>Research objective |
|---|---|---|
| McClain<br>1985;1987;<br>1990[120]<br>FAIR | USA<br>3 hospitals in San Francisco Bay area | Prospective cohort.<br>Tape recorded semi-structured interview with women at home during last month of pregnancy & about two months postpartum<br><br>1983-1986<br>Examine in depth the women's choice of ERCD or TOL. |
| Martin,<br>1983[24]<br>FAIR | USA<br>Two teaching hospitals in Mississippi and Alabama. | Prospective cohort<br>Interviewed women during pregnancy, reviewed medical charts after delivery<br><br>1981-1982<br>Examine choices, reasons, outcomes for women choosing TOL or ERCD. |
| Meier<br>1982[57]<br>FAIR | USA<br>Kaiser Hospital in CA<br>Before study primary CD rate 9.8%. Repeat CD 7.1%. | Prospective cohort<br>Patients and physicians completed questionnaires.<br><br>1980-1981<br>Report proportion of patients attempting and completing VBAC 1 |
| Melnikow<br>2001[121]<br>FAIR | USA<br>3 groups of nonfederal acute-care hospitals with high (30%), intermediate (21%), low (15%) CD rates. | Retrospective cohort<br>Chart review<br><br>1992-1993<br>Estimate rates at which women were offered and attempted TOL. |

BEQ=birth experience questionnaire; VBAC=vaginal birth after cesarean; TOL=trial of la
elective repeat cesarean delivery; DD=delivery decision; CD=cesarean delivery

| Eligibility Population | Author Year Quality | Education about VBAC? |
|---|---|---|
| Women with prior CD at one of three hospitals. Recruited 102 of 125 (80%)<br>23/43 nonwhite patients<br>42/50 white patients<br>*ERCD:*<br>20/43 nonwhite patients<br>8/50 white patients. | McClain 1985;1987; 1990[120]<br>FAIR | Education on TOL. |
| All women with one or more prior CD. Recruited 717/789<br>*TOL:* 22.0 yrs (SD .9 yrs)<br>*ERCD:* 23.3 years (SD .3 years) | Martin, 1983[24]<br>FAIR | NR |
| Women with single prior CD, low-transverse scar. Considered some patients with more than one prior CD<br>*TOL:* NR<br>*ERCD:* NR | Meier 1982[57]<br>FAIR | NR |
| Randomly selected 1662 charts of deliveries. 369 charts of women with prior CD at 51 hospitals<br>*TOL & ERCD:* Mean age 30.6 yrs. 47.4% nonwhite | Melnikow 2001[121]<br>FAIR | Abstracted any counseling notes from charts. No cases of VBAC without documentation of counseling. |

abor; NR=not reported; ERCD= BEQ=birth experience questionnaire; VBAC=vaginal birth after cesa
elective repeat cesarean delivery; DD=delivery decision; CD=cesarea

**air quality studies (continued)** **Evidence Table 1**

| Delivery Decisions/ Attempt TOL/Eligible | VBAC/TOL | ERCD | Author Year Quality |
|---|---|---|---|
| 65/100 (65%). Also, 4/100 (4%) undecided but who had TOL. | 39/69 (56.5%) | 28/100 (28%). Also 3/100 (3%) who were undecided but had elective repeat CD. | McClain 1985;1987; 1990[120] FAIR |
| 162/717 (22.6%) | 101/162 (62.4%) | 555/717 (77.4%) | Martin, 1983[24] FAIR |
| Inferred 207/658 (31.5%) | 175/207 (84.5%) | inferred 451/658 (68.5%) | Meier 1982[57] FAIR |
| Hospitals with high CD rate (42%); intermediate (56%); low (90%) | Hospital with high CD rate (73.8%); intermediate (69.6%); low (78.9%) | Hospitals with high CD rate (58%); intermediate (44%); low (10%) | Melnikow 2001[121] FAIR |

arean; TOL=trial of labor; NR=not reported; ERCD= BEQ=birth experience
an delivery elective repeat cesarea

**.2a. Patient preferences - good or fair quality studies (continued)**

| Reasons or factors for elective repeat CD | Information sources for elective repeat CD |
|---|---|
| 19/41 (46.3%) of nonwhite women didn't want to experience labor again. 10/45 (22.2%) of white women didn't want to experience labor again. 29/40 (72.5%) of nonwhite women had positive feelings about prior CD. 21/41 (51.2%) of white women had positive feelings. 22/56 (39%) of all women having CD had decided to have no more children and had their tubes tied at delivery time. Some women chose repeat CD to spare husband the long labor process. | For all patients: 36/100 (36%) patients influenced by friends. 15/92 (16.3%) patients influenced by relatives. Only 28/100 (28%) of women knew someone else who attempted a TOL after prior CD. |
| 245/547 (44.8%) wanted tubal sterilization (p<.001). | NR |
| 9/13 patients cited fear of difficult labor, fail to deliver and require a repeat CD. Convenience was second reason. | NR |
| Hospitals with high risk adjusted CD rates were more likely than hospitals with low CD rates to schedule ERCD without documentation of counseling for TOL (21% vs .3%, p<.01). Hospitals with high CD rates had higher proportion of women who were counseled and refused than hospitals with low CD rates (36% vs. 10%, p<.01). | NR |

e questionnaire; VBAC=vaginal birth after cesarean; TOL=trial of labor; NR=not reported; ERCD=
n delivery; DD=delivery decision; CD=cesarean delivery

**Evidence Table 12a. Patient preferences - good or fair quality studie**

| Author<br>Year<br>Quality | Country<br>Setting | Study design<br>Intervention<br>Years of study<br>Research objective |
|---|---|---|
| ***Cross-Sectional*** | | |
| Lau<br>1996[123]<br>GOOD | CHINA<br>Tertiary teaching hospital in Hong Kong<br>CD 21.4%. 30% of women with prior CD attempt TOL. 80% succeed | Cross-sectional<br>Structured interview during pregnancy or after first CD<br><br>1994<br>Investigate how much chance of vaginal delivery influences patient's acceptance or resistance to TOL. |
| Murphy<br>1989[124]<br>GOOD | USA<br>Two hospitals in Pacific Northwest | Cross-sectional<br>20 minute phone interview within 1 month of delivery<br><br>6 month period in the late 1980s.<br>Assess women's contribution to CD or TOL decision, determine reasons. |
| Gamble<br>2001[122]<br>FAIR | USA<br>Major metropolitan teaching hospital | Cross-sectional<br>Completed questionnaire during last month of pregnancy<br><br>1998-1999<br>Determine incidence of birth choice and reasons. |
| Fawcett<br>1994[84]<br>FAIR | USA<br>General hospital in small town in PA. | Cross-sectional<br>BEQ 12-48 hrs after delivery<br><br>Inferred 1991-1992<br>Compare women' s VBAC reactions to their previous CD experience. |

| Eligibility Population | Author Year Quality | Education about VBAC? |
|---|---|---|
| | ***Cross-Sectional*** | |
| *Group 1:* 50 patients who just had first CD interviewed during postnatal hospital stay<br>29.7 yrs (SD 3.6 yrs).<br>*Group 2:* 50 pregnant patients with history of CD<br>32.8 yrs (SD 4.1 yrs).<br>Recruited 100/101<br>*TOL & ERCD:* NR | Lau 1996[123]<br>GOOD | NR. But implied that some education occurs since all patients were asked what the lowest success rate of VBAC they would consider and still have a VBAC. |
| Recruited all women with a prior CD who had delivered a infant of at least 30 weeks gestation; had no psychiatric condition; could read and speak fluent English.<br>Recruited 50/53<br>TOL: Mean age 28 yrs.<br>ERCD: Mean age 29 yrs. | Murphy 1989[124]<br>GOOD | NR |
| Women between 36-40 weeks gestation, at least 18 years old. Read and write in English.<br>Recruited 301/310<br>*TOL & ERCD:* NR for women with prior CD. Whole group: 79.7% under age 3; 11.7% nonwhite. | Gamble 2001[122]<br>FAIR | NR |
| Women who completed a VBAC. Not clear if all eligible patients were recruited and number who refused<br>*TOL:* Mean age 28.8 yrs (SD 5.5 yrs)<br>*ERCD:* NA | Fawcett 1994[84]<br>FAIR | NR but 71% knew abut VBAC before current pregnancy; 48% had decided for a TOL before current pregnancy. Another 39% decided by 2nd trimester. |

**air quality studies (continued)** **Evidence Table 1**

| Delivery Decisions/ Attempt TOL/Eligible | VBAC/TOL | ERCD | Author Year Quality |
|---|---|---|---|
| | | | ***Cross-Sectional*** |
| INVALID: Assuming a 50-70% success rate. 24/50 (48%) of Group 1 would choose TOL for next. 29/50 (58%) Group 2. Overall: 53/100 (53%). | NA | INVALID: Assuming a 50-70% success rate. 26/50 (52%) of Group 1 would choose ERCD for next. 21/50 (42%) Group 2. Overall 47/100 (47%). | Lau 1996[123] GOOD |
| INVALID: 33/50 (66.0%) | INVALID: 21/33 (63.4%) | 12/50 (34%) | Murphy 1989[124] GOOD |
| 17/40 (67.5%) | NR | 13/40 (32.5%) | Gamble 2001[122] FAIR |
| NA. Only recruited VBAC patients. | 100%. Study only recruited VBAC patients. NA | NA | Fawcett 1994[84] FAIR |

**2a. Patient preferences - good or fair quality studies (continued)**

| Reasons or factors for elective repeat CD | Information sources for elective repeat CD |
|---|---|
| More patients who chose ERCD 20/46 (43.5%) had a fear of vaginal delivery compared with 2/53 (3.8%) (p=.000). | |
| None of the patients had chosen an ERCD before pregnancy began. 5/12 (41.7%) chose ERCD before 4 months. 6/12 (50%) women wanted to avoid an unsuccessful labor and another 4/12 felt that a repeat CD was a safer method. 6/12 (50%) wanted to avoid the effect of the prolonged, painful labor. | None of the patients had chosen an ERCD before pregnancy began. 5/12 (41.7%) chose ERCD before 4 months. 9/12 (75%) felt the health care provider was the most influential source. 3/12 (25%) felt the health care provider was the major source of support. |
| Predominant reasons: safety of baby. Women who were very disappointed with last delivery were more like to chose CD. | NR |
| NA | NA |

BEQ=birth experience questionnaire; VBAC=vaginal birth after cesarean; TOL=trial of la
elective repeat cesarean delivery; DD=delivery decision; CD=cesarean delivery

abor; NR=not reported; ERCD=

BEQ=birth experience questionnaire; VBAC=vaginal birth after ces
elective repeat cesarean delivery; DD=delivery decision; CD=cesarea

arean; TOL=trial of labor; NR=not reported; ERCD=
an delivery

BEQ=birth experience
elective repeat cesarea

e questionnaire; VBAC=vaginal birth after cesarean; TOL=trial of labor; NR=not reported; ERCD=
n delivery; DD=delivery decision; CD=cesarean delivery

**Evidence Table 12b. Patient preferences - poor quality studies**

| Author<br>Year<br>Quality | Country<br>Setting | Study Design<br>Intervention<br>Years of Study<br>Research Objective | Population | Exclusion criteria |
|---|---|---|---|---|
| ***Cohort*** | | | | |
| Quinlivan 1996[125]<br>POOR | Austria<br>Teaching hospital in Western Austria<br><br>CD rate was 17.8% | Prospective cohort<br><br>Physician who performed the surgery completed a computerized audit sheet<br><br>1995-1997<br><br>To determine reasons for emergency & ERCD, examine role of anesthesia in these | All public patients who delivered by CD<br><br>Age and race NR | Private patients |
| Mould 1996[86]<br>POOR | USA<br>University college hospital<br><br>CD rate of 18%. | Prospective cohort<br><br>Clinicians interviewed women 2-3 days after delivery and at 6 week checks<br><br>1994<br><br>To assess extent to which women contribute to CD decision and their satisfaction | 102/104 women who had an emergency CD<br>26/102 had prior CD<br><br>Age and race NR | NR |
| Abitbol 1993[85]<br>POOR | USA<br>VBAC program in NY hospital<br><br>62% service patients<br>38% private | Prospective cohort<br><br>Clinician and social worker interviewed women before and 2-3 days after delivery<br><br>18 month collection, no dates<br><br>To investigate reasons for TOL or ERCD | Prior CD who met ACOG guidelines<br><br>Refused NR<br><br>Age and race NR | Didn't meet ACOG standards<br><br>38/364 (10.4%) |

VBAC=vaginal birth after cesarean; TOL=trial of labor; NR=not reported; ERCD=elective repeat cesarean delivery; DD=delivery decision; CD=cesarean delivery

**Evidence Table 12b. Patient preferences - poor quality studies (continued)**

| Author<br>Year<br>Quality | Delivery decisions<br>Reasons or factors for TOL<br>Attempt TOL/Eligible<br>VBAC/TOL | Delivery decisions<br>Reasons or factors for ERCD |
|---|---|---|
| ***Cohort*** | | |
| Quinlivan 1996[125]<br>POOR | NR | DD:INVALID:<br>103 & another 47 deliveries partially attributed to mother's request<br>147 with more than 1 prior CD<br><br>Reasons: INVALID:<br>Women with more than 1 prior CD advised to have elective repeat. |
| Mould 1996[86]<br>POOR | DD: INVALID: For next delivery, 44/87 (51%) of women would choose TOL<br><br>Reasons, numbers NR | DD:<br>INVALID: For next delivery, 43/87 (49%) of women would choose ERCD.<br><br>Reasons: INVALID:<br>Reasons for current CD:<br>• 9/34 had fetal distress<br>• 4/12 with mal presentation<br>• 11/14 with prior CD/myomectomy<br>• 7/19 failed to progress<br>• 1/5 failed induction<br>• 2/6 pregnancy induced hypertension<br>• 1/1 patient desire. |
| Abitbol 1993[85]<br>POOR | DD: NR<br>Reasons:INVALID:<br>For all TOL patients:<br>• Main reason, wanted "natural birth"<br>• 49% health of baby<br>• 38% negative feeling toward CD (can't bond, felt failure)<br>• 13% feared major surgery<br><br>Attempt/Eligible:<br>187/312 (60%)<br><br>VBAC/TOL:<br>122/187 (65%) | DD: 125/312 (40%)<br><br>Reasons:INVALID:<br>• 71.2% avoidance<br>• 36.8% baby's health<br>• 60.0% mom's work schedule<br>• 20.8% med lay literature<br>• 8.8% mom's health concerns. |

VBAC=vaginal birth after cesarean; TOL=trial of labor; NR=not reported; ERCD=elective repeat cesarean delivery; DD=delivery decision; CD=cesarean delivery

**Evidence Table 12b. Patient preferences - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Study Design<br>Intervention<br>Years of Study<br>Research Objective | Population | Exclusion criteria |
|---|---|---|---|---|
| Joseph 1991[126]<br>POOR | USA<br><br>Private Hospital in LA | Prospective cohort<br><br>The patient's and MD's birth choice (and reasons) recorded and updated throughout pregnancy<br><br>1989<br><br>To determine if resistance from patient or MD prevents greater utilization of a VBAC program | One prior CD<br><br>All women with one prior CD<br><br>Age and race NR | • More than one prior CD<br>• Classic scar<br>• Abnormal presentation at term<br>• Multiple gestation<br>• Abnormal antepartum testing<br>• Lumbar disc disease precluding epidural use<br>• Medical complications<br>• Fetal heart rate concerns. |
| ***Cross-Sectional*** | | | | |
| Dilks 1997[126]<br>POOR | USA<br>Northeast<br><br>Clinician's offices, childbirth classes, hospital-based clinics that served a tertiary care center | Cross-sectional<br><br>Convenience sample. Childbirth Self-efficiency Inventory during pregnancy<br><br>Inferred early to mid 1990s<br><br>To compare self-efficacy of primigravidas and multigravidas with prior CD | At least 28 weeks gestation<br>74/225 (32.9%)<br><br>Mean age:<br>32.3 yrs (SD 4.4 yrs)<br>Nonwhite:<br>12/74 (16.2%) | Read and write English |

VBAC=vaginal birth after cesarean; TOL=trial of labor; NR=not reported; ERCD=elective repeat cesarean delivery; DD=delivery decision; CD=cesarean delivery

**Evidence Table 12b. Patient preferences - poor quality studies (continued)**

| Author<br>Year<br>Quality | Delivery decisions<br>Reasons or factors for TOL<br>Attempt TOL/Eligible<br>VBAC/TOL | Delivery decisions<br>Reasons or factors for ERCD |
|---|---|---|
| Joseph 1991[126]<br>POOR | DD, reasons: NR<br><br>Attempt/Eligible:<br>85/143 (59.4%)<br><br>VBAC/TOL:<br>30/85 (35.2%) | DD: 92/143 (64.3%)<br><br>Reasons:INVALID:<br>• 28/92 (30.4%) MD advised diminished chance of vaginal delivery<br>• 24/92 (26.1%) patients had fear of labor<br>• 22/92 (23.9%) patients chose for convenience<br>• 12/92 (13.0%) patients eligible but considered "poor candidates"<br>• 6/92 (6.5%) had a fear of recurrent outcome |
| ***Cross-Sectional*** | | |
| Dilks 1997[126]<br>POOR | DD: NR<br><br>Reasons:INVALID:<br>The group electing for a TOL had similar expectation of the outcomes and similar self-efficacy as the primigravida group<br><br>Numbers NR | DD: NA<br><br>Reasons:INVALID:<br>Group electing for a ERCD had lower expectation of the outcomes (p=.011) than the primigravida group. |

VBAC=vaginal birth after cesarean; TOL=trial of labor; NR=not reported; ERCD=elective repeat cesarean delivery; DD=delivery decision; CD=cesarean delivery

**Evidence Table 13. Legal and legislative factors - good quality studies**

| Author<br>Year<br>Quality | Country<br>Setting | Years of study<br>Research objective | Subject Eligibility:<br>Included (I) /<br>Excluded (E) | Study Group |
|---|---|---|---|---|
| ***Retrospective Cohort*** | | | | |
| Studnicki 1997[132]<br><br>GOOD | USA<br>FL | 1992-1993<br>Florida law mandates Obstetricianss receive guidelines and hospitals use peer review to enforce. This study is to evaluate outcomes. | (I) Birth at non-federal, acute-care hospital /<br>(E) <30 deliveries paid for by state or state-administered funds | 1992 (pre-rule)<br><br>1993 (post-rule) |
| King 1994[115]<br><br>GOOD | USA<br>NY | 1989<br>Determine effects of hospital characteristics on VBAC rate | (I) Birth in NY hospital to NY resident with prior CD | Hospital paid loss<br><br>Physician premiums for a $5000 annual increase |

VBAC=vaginal birth after cesarean; CD=cesarean delivery; RCD=repeat cesarean delivery; CI=confidence interval

**Evidence Table 13. Legal and legislative factors - good quality studies (continued)**

| Author Year Quality | Sample Size (enrolled/ complete) | Measure | Estimate | Notes |
|---|---|---|---|---|
| ***Retrospective Cohort*** | | | | |
| Studnicki 1997[132]<br><br>GOOD | 22,938 | VBAC rate: 1992 | 26.70% | Stratified by maternal age, insurance payor, race, timing of adoption of law, RCD vs. primary CD |
| | 23,127 | 1993 | 30.90% | Of 54 categories with RCD, 12 found significant decreases in RCD (without adjusting for multiple comparisons). |
| King 1994[115]<br><br>GOOD | | Adjusted odds ratio (CI) with / without NYC | 1.01 (0.99, 1.03)/ 0.96 (0.95, 0.98) | Results adjusted for risk and confounders |
| | | | 0.98 (0.97, 0.99)/ 1.01 (1.00, 1.08) | |

VBAC=vaginal birth after cesarean; CD=cesarean delivery; RCD=repeat cesarean delivery; CI=confidence interval

**Evidence Table 14a. Guidelines - good or fair quality studies**

| Author<br>Year<br>Quality | Country<br>Setting | Years of study<br>Research objective | Guideline used | Subject Eligibility: Included (I)/Excluded (E) |
|---|---|---|---|---|
| ***Randomized Trial Designs*** | | | | |
| Lomas 1991[133]<br><br>GOOD | Canada | 1988-89<br>Randomized trial of audit/ feedback, opinion leaders, and no intervention to improve clinical outcomes | Society of Obstetricians and Gynecologists of Canada and Ontario Hospital Association (1986) | (I) Women with prior CD (including not more than one and with no vertical uterine scar) in one of participating hospitals/(E) Not eligible for TOL |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 14a. Guidelines - good or fair quality studies (continued)**

| Author Year Quality | Study Group | Sample Size (enrolled/ complete) | Measure | Estimate | Notes |
|---|---|---|---|---|---|
| ***Randomized Trial Designs*** | | | | | |
| Lomas 1991[133] GOOD | Control | 8 hospitals (1233 women) | Offered TOL/underwent TOL | 51.3%/28.3% | P-values+N3=0.002/0.007 |
| | Audit/ feedback | 4 hospitals (524 women) | | 56.3%/21.4% | Small number of hospitals. No adjustment for potential confounders but no differences in baseline variables reported |
| | Opinion leader | 4 hospitals (739 women) | | 74.2%/38.2% | |
| | Control | | VBAC rate/ ERCD rate | 14.5%/66.8% | P-value=0.003/0.001 |
| | Audit/ feedback | | | 11.8%/69.7% | |
| | Opinion leader | | | 25.3%/53.7% | |
| | Control | | Dehiscence/ rupture of uterus | " 2/1 | |
| | Audit/ feedback | | | 0/0 | |
| | Opinion leader | | | " 4/1 | |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**EvidenceTable 14a. Guidelines - good or fair quality studies (continued)**

| Author Year Quality | Country Setting | Years of study Research objective | Guideline used | Subject Eligibility: Included (I)/Excluded (E) |
|---|---|---|---|---|
| Bickell 1996[134] FAIR | US NY | 1988 1993 Test effectiveness of joint statewide peer review by specialty society and health department | Unclear: NY State Health Department and State ACOG Chapter collaborated | (I) Hospital with active delivery services/(E) If hospital refused, replacement hospital randomly selected |
| ***Retrospective Cohort Design*** | | | | |
| Santerre 1996[136] FAIR | US (MA) | 1985-93 Assess impact of ACOG guidelines (published 10/88) on VBAC rate | ACOG (1988) | (I) Data in panel of 55 hospitals |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**EvidenceTable 14a. Guidelines - good or fair quality studies (continued)**

| Author Year Quality | Study Group | Sample Size (enrolled/ complete) | Measure | Estimate | Notes |
|---|---|---|---|---|---|
| Bickell 1996[134] FAIR | Reviewed hospitals | 45 | VBAC rates (SD): 1988/1993 | 10.1% (1.4%)/24.8% (2.0%) | 1988 value, 1993 value. No difference if models adjusted for other factors. Overall CD rate differ in 1988; all other differences not significant. |
| | Control hospitals | 120 | | 12.1% (0.9%)/24.8% (1.1%) | Limited impact on rates. This strategy may not be effective. Small number of hospitals in intervention group but may not matter. |
| | Reviewed hospitals | 45 | RCD rate (SD): 1988/1993 | 10.9% (0.5%)/10.2% (0.5%) | No adjustment of VBAC rates for potential confounding variables evident. |
| | Control hospitals | 120 | | 9.8% (0.3%)/9.2% (0.2%) | |
| ***Retrospective Cohort Design*** | | | | | |
| Santerre 1996[136] FAIR | 1985 | | Unadjusted VBAC rate | 6.60% | Regression model predicts about 5.6% "permanent" increase in VBAC rate. |
| | 1986 | | | 8.50% | Minimum chi-square regression model used. Adjusted for some risk predictors (low birth weight, race, and payment source). |
| | 1987 | | | 9.80% | Nature of panel of hospitals not defined. |
| | 1988 | | | 12.60% | Denominator of VBAC rates unclear. |
| | 1989 | | | 18.50% | |
| | 1990 | | | 20.40% | |
| | 1991 | | | 24.20% | |
| | 1992 | | | 25.10% | |
| | 1993 | | | 25.40% | |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**EvidenceTable 14a. Guidelines - good or fair quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Years of study<br>Research objective | Guideline used | Subject eligibility: included (I)/excluded (E) |
|---|---|---|---|---|
| Lomas 1989[135]<br><br>FAIR | Canada (Ontario) | 1982-88<br>Assess effect of publication of guidelines | Society of Obstetricians and Gynecologists of Canada and Ontario Hospital Association (1986) | (I) All deliveries in hospitals |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**EvidenceTable 14a. Guidelines - good or fair quality studies (continued)**

| Author Year Quality | Study group | Sample size (enrolled/ complete) | Measure | Estimate | Notes |
|---|---|---|---|---|---|
| Lomas 1989[135] FAIR | 6 years before guidelines published | | Mean (SD) monthly rate of change of rate of RCD per 100 patients from linear regression model | -0.041 (0.008) | Other variables in regression models not specified so unclear if controlled for confounders. Survey response rate 76% to 98% across samples. |
| | 2 years after guidelines published | | | -0.113 (0.023) | Survey results not cited as contained self-reported attitudes not quantitative data. |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 14b. Guidelines - poor quality studies**

| Author<br>Year<br>Quality | Country<br>Setting | Years of study<br>Research objective | Guideline used | Subject eligibility: included (I)/excluded (E) |
|---|---|---|---|---|
| ***Prospective Cohort Study Designs*** | | | | |
| Myers 1988[139]<br><br>POOR | USA<br>IL | 1985-87<br>Assess impact of program to reduce rates of CD at inner city hospital (established in 1986) | Local: 2nd opinion; dystocia, fetal distress, breech delivery criteria defined; comprehensive peer review | (I) Birth at hospital; no other criteria stated |
| Porreco 1985[140]<br><br>POOR | USA<br>CO | 1982-83<br>Assess impact of CD manage-ment phil-osophy | Local: 8 "principles" to guide decision of TOL versus ERCD | (I) Birth at hospital; no other criteria stated |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 14b. Guidelines - poor quality studies (continued)**

| Author Year Quality | Study group | Sample size (enrolled/ complete) | Measure | Estimate | Notes |
|---|---|---|---|---|---|
| ***Prospective Cohort Study Designs*** | | | | | |
| Myers 1988[139]<br><br>POOR | 1985 | 122 prior CDs | ERCD rate/TOL rate (after VBAC) | 55%/53% | No adjusting for potential confounders. Single hospital for short time period. |
| | 1986 | 193 | | 32%/80% | Unclear if true prospective cohort. |
| | 1987 | 271 | | 14%/70% | |
| Porreco 1985[140]<br><br>POOR | OB management (clinic service) | 1058 total deliveries | ERCD rate/Total RCD rate/VBAC rate | 0.7%/1.4%/84.3% | No adjusting for potential confounders or description of baseline risk factors. Single hospital for short time period. |
| | Usual care (private service) | 2459 | | 5.7%/6.6%/77.6% | Denominators of rates: all births for ERCD rate and total RCD rate; TOL patients for VBAC rate. Unclear if true prospective cohort. |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 14b. Guidelines - poor quality studies (continued)**

| Author Year Quality | Country Setting | Years of study Research objective | Guideline used | Subject eligibility: included (I)/excluded (E) |
|---|---|---|---|---|
| ***Retrospective Cohort Study Designs*** | | | | |
| Myers 1993[137] POOR | USA IL | 1985-91 Assess long-term impact of CD guidelines including RCD | Local hospital guidelines (implemented 1986) | (I) All deliveries in data base |
| Sanchez-Ramos 1990[138] POOR | USA FL | 1986-89 Assess impact of new RCD guidelines (implemented in 7/87) | Local hospital guidelines (1987) | (I) All deliveries with prior low transverse or low vertical CD./(E) Patients with other indications for RCD. |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 14b. Guidelines - poor quality studies (continued)**

| Author Year Quality | Study group | Sample size (enrolled/ complete) | Measure | Estimate | Notes |
|---|---|---|---|---|---|
| ***Retrospective Cohort Study Designs*** | | | | | |
| Myers 1993[137]<br><br>POOR | 1985 | | ERCD rate/VBAC after TOL rate | 55%/53% | No risk adjustment or other potential confounders |
| Sanchez-Ramos 1990[138]<br><br>POOR | 1986 | | VBAC rate (among TOL)/RCD rate (among all births) | 64.7%/8.0% | Difference 1989 rate - 1986 rate: VBAC rate p-value<0.0001, RCD rate p-value<0.0001 |
| | 1987 | | | 73.6%/7.4% | No adjustment for baseline risk or other potential confounders |
| | 1988 | | | 85%/3.9% | |
| | 1989 | | | 82.7%/3.3% | |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 14b. Guidelines - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Years of study<br>Research objective | Guideline used | Subject eligibility: included (I)/excluded (E) |
|---|---|---|---|---|
| Coulter 1995[141]<br><br>POOR | USA<br>IL | Date NR<br>Survey of TOL guidelines and VBAC rates among physician executives | Various | (I) Member of American College of Physician Executives/(E) Incomplete forms |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 14b. Guidelines - poor quality studies (continued)**

| Author Year Quality | Study group | Sample size (enrolled/ complete) | Measure | Estimate | Notes |
|---|---|---|---|---|---|
| Coulter 1995[141]<br><br>POOR | 159 surveys | 64 (41%) returned surveys | VBAC rates: HMO with/without VBAC policy | 39%/40% | 63% [47%] of HMO's [hospitals] have VBAC policy. 74% [87%] monitor performance. 28% [36%] hold provider accountable. |
| | | | VBAC rates: hospital with/without VBAC policy | 37%/47% | Among high VBAC organizations (50%+): 66% [60%] VBAC rate |
| | | | VBAC rates: HMO with/without confor-mance monitoring | 42%/36% | 33 HMOs and 21 hospitals |
| | | | VBAC rates: hospital with/without conformance monitoring | 48%/2% | No adjustment for risk or potential confounders. |
| | | | VBAC rates: HMO with/without provider account-ability | 46%/39% | Self-reported data with very poor response rate for survey. |
| | | | VBAC rates: hospital with/without provider account-ability | 59%/30% | |
| | | | VBAC rates: HMO with/without removal of incentives for surgery | 46%/33% | |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 15. Provider characteristics - poor quality studies**

| Author<br>Year<br>Quality | Country<br>Setting | Years of study<br>Research objective | Subject Eligibility:<br>Included (I)/Excluded (E) | Study Group |
|---|---|---|---|---|
| ***Prospective Cohort Study Design*** | | | | |
| Sinusas 2000[144]<br><br>POOR | US (CT) | 1996<br>Describe deliveries by family physicians | (I) Family practice MD with OB privileges | |
| Davis 1994[149]<br><br>POOR | US (IL) | 1987-90<br>Comparison of obstetrician and nurse-midwife rates of ERCD | (I) Women with low risk pregnancy not at risk of CD/(E) ERCD and indications of high-risk pregnancy | Obstetricians<br><br>Nurse-midwives |
| ***Retrospective Cohort Study Design*** | | | | |
| Coco 2000[148]<br><br>POOR | US (PA) | 1986-95<br>Does change in specialty change rates of CD? | (I) Delivery with Family Health Service (family physician residency) | 1986-1989 (attendings all obstetricians)<br><br>1992-1995 (attendings all family physicians) |
| Harrington 1997[152]<br><br>POOR | US (CA) | 1988-92<br>Evaluate safety and efficacy of nurse-midwife delivery in low-risk patients | (I) Gestational age 36-43 weeks, in active labor, singleton cephalic presentation, estimated fetal weight 2500-4000 grams/(E) Medical complications other than diet-controlled gestational diabetes, records unavailable. | Matched cases (prior CD) and controls (no prior CD). |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 15. Provider characteristics - poor quality studies (continue**

| Author Year Quality | Sample size (enrolled/ complete) | Group | Measure | Estimate |
|---|---|---|---|---|
| ***Prospective Cohort Study Design*** | | | | |
| Sinusas 2000[144] POOR | 32 MDs (of 32 eligible), 478 deliveries | | VBAC rate | 1.7% of all deliveries (8 cases) |
| Davis 1994 POOR | 455 | | Rate of CD after unsuccessful TOL | 23.90% |
| | 20 | | | 5% |
| ***Retrospective Cohort Study Design*** | | | | |
| Coco 2000[148] POOR | | | RCD rate | 8.00% |
| | | | | 2.90% |
| Harrington 1997 POOR | Harrington 1997[152] POOR | Prior CD | VD rate: uncomplic-ated (spontan-eous VD?)/total (includes operative VD) | 91.3%/98.3% |
| | 298 | no prior CD | | 89.6%/99.0% |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

ed)

| Notes |
| --- |
| 9% of family physicians in CT. No multivariable adjustment. |
| P-value<0.05 |
| Multivariable model predicted rate of CD not RCD; no risk adjustment. |
| Odds ratio 0.362 (.250, .524) |
| P-value<0.001. No risk adjustment across time periods. |
| One asymptomatic cesarean rupture (0.3%). 84% of prior CD women had successful vaginal delivery. |
| Oxytocin use 1.2% [12.2%] in women with [without] prior vaginal delivery |

**Evidence Table 15. Provider characteristics - poor quality studies (continued)**

| Author Year Quality | Country Setting | Years of study Research objective | Subject Eligibility: Included (I)/Excluded (E) | Study Group |
|---|---|---|---|---|
| Stone 1996[151] | US (NY) | Describe outcomes for a nurse-midwife service (physicians comanage high risk cases) in a rural setting | (I) Women with prior CD using this service | Prior CD |
| Deutchman 1995[145]<br><br>POOR | US (TN) | Compare low-risk pregnancies managed by family practice and OB at teaching hospital | (I) Non-high-risk pregnancy/(E) No prenatal care, twins, various maternal high-risk comorbidities. | Family physicians<br><br>OB |
| Hueston 1995[150]<br><br>POOR | US | Compare obstetrics residence program to family practice residence program pregnancy manage-ment across 5 states | (I) Monthly random sample of hospital deliveries/(E) Women who transferred in labor or who received care from a non-staff provider | Obstetrics supervised<br><br>Family physician supervised |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 15. Provider characteristics - poor quality studies (continue**

| Author Year Quality | Sample size (enrolled/ complete) | Group | Measure | Estimate |
|---|---|---|---|---|
| Stone 1996[151] | | | VBAC Rate (1989 and 1994) | 68% and 94% |
| Deutchman 1995[145] | 578 | | Number of VBAC/RCD (rate) | 9(1.6%)/14 (2.4%) |
| POOR | | | | |
| | 1364 | | | 10 (0.7%)/122 (8.9%) |
| Hueston 1995[150] | 2804 | Prior CD 14% | Number of RCD | 438 |
| POOR | | | | |
| | 1754 | Prior CD 4% | | 63 |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

ed)

| Notes |
| --- |
| No risk adjustment. Denominator for VBAC rate was TOL attempted. No adverse events reported. |
| Very small numbers of women with prior CD. No evidence of adjustment for VBAC rate<br>Outcome assigned to FP or OB who provided prenatal care and labor management not necessarily delivery. Denominator all pregnancies. P-values (for comparisons of rates by provider) <0.001. |
| No risk adjustment for RCD rate included. No denominator for RCD rate. |
| 14% of OB patients had prior CD but 15.6% had RCD. Practices are very heterogeneous. |

**Evidence Table 15. Provider characteristics - poor quality studies (continued)**

| Author Year Quality | Country Setting | Years of study Research objective | Subject Eligibility: Included (I)/Excluded (E) | Study Group |
|---|---|---|---|---|
| Hueston 1994[154]<br><br>POOR | US | 1990-91<br>Assess predictors of referral patterns for obstetrics. | (I) Random sample of up to 80 deliveries per month at 1 of 5 hospitals | Women who started care or began delivery with family practice physicians |
| Berkowitz 1989[153]<br><br>POOR | US (NY) | 1983-85<br>Evaluate effect of physician character-istics on CD rates | (I) Physicians who delivered at hospital (private patients only)/(E) 2 physicians with same surname and 4 who managed only high risk patients | |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 15. Provider characteristics - poor quality studies (continue**

| Author Year Quality | Sample size (enrolled/ complete) | Group | Measure | Estimate |
|---|---|---|---|---|
| Hueston 1994[154]<br><br>POOR | 2568 began care/2648 began delivery | Referred to ObGyn early in care | Proportion with uterine scar | 32% |
| | | Not referred to ObGyn early in care | | 3% |
| | | Referred to ObGyn in labor | | 10% |
| | | Not referred to ObGyn in labor | | 2% |
| Berkowitz 1989[153]<br><br>POOR | 48 physicians | | Correlation of age with repeat CD rate | 0.18 (p>0.05) |
| | | | Repeat CD rate: male physician/ female physician | 22.6/15.9 (p=0.46) |
| | | | Repeat CD rate: solo practice/group practice | 18.1/23.8 (p=0.27) |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

ed)

| Notes |
| --- |
| Differences between those referred and those not referred significant (P<0.001) in both early labor and delivery. Independent predictor in multivariable model predicting probability of referral. |
| No risk adjustment |
| Small sample size. 37 physicians male and 23 in solo practice. |
| No risk adjustment (males were both older and more experienced). |
| Data from logbook (reliability?) |

**Evidence Table 15. Provider characteristics - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Years of study<br>Research objective | Subject Eligibility:<br>Included (I)/Excluded (E) | Study Group |
|---|---|---|---|---|
| **Case-Control Study Design** | | | | |
| Goldman 1993[143]<br><br>POOR | Canada (Quebec) | 1985-88<br>Determine factors associated with VBAC | (I) Births in Quebec with prior CD/(E) Medical diagnosis, missing data on attending MD | VBAC<br><br>RCD |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 15. Provider characteristics - poor quality studies (continue**

| Author Year Quality | Sample size (enrolled/ complete) | Group | Measure | Estimate |
|---|---|---|---|---|
| **Case-Control Study Design** | | | | |
| Goldman 1993[143] | 635 of 635 | MD CD rate: 20-40% | Adjusted odds ratio (95% CI) | OR = 0.48 (0.38, 0.61) |
| POOR | | | | |
| | Random sample 2593/12,473 | MD CD rate: >40% | | OR = 0.25 (0.17, 0.38) |
| | | MD age 35 - 54 | | OR = 0.86 (0.64, 1.17) |
| | | MD age >54 | | OR = 0.66 (0.44, 0.97) |
| | | MD at risk patients: 5-10% | | OR = 0.67 (0.52, 0.87) |
| | | MD at risk patients: >10% | | OR = 0.92 (0.67, 1.24) |
| | | MD gender: male (female reference) | | OR = 0.93 (0.67, 1.30) |
| | | MD Specialty: OB (general practice reference) | | OR = 0.99 (0.65, 1.48) |
| | | Degree of hospital's neonatal & OB specialization: intermediate | | OR = 2.46 (1.81, 3.34) |
| | | Degree of hospital's neonatal & OB specialization: high | | OR = 3.32 (2.17, 5.23) |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

ed)

| Notes |
| --- |
| Non-significant variables: |
| MD referral rate, gender, specialty OB, number annual deliveries |
| Patient's age, location (urban, intermediate, rural) |
| Hospital OB resource capacity and CD rate |
| Adjustment included only age and provincial region not baseline risk. |
| Possible confounder: patient self-selection for CD |

**Evidence Table 15. Provider characteristics - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Years of study<br>Research objective | Subject Eligibility:<br>Included (I)/Excluded (E) | Study Group |
|---|---|---|---|---|
| Goldman 1993[143] (continued) | | | | |
| Goldman 1990[114]<br><br>POOR | Canada (Quebec) | 1985-87<br>Identify provider characteristics and other predictors of probability of VBAC following prior CD. | (I) Birth recorded in provincial data base/(E) Medical diagnosis (e.g. dystocia or fetal distress) for CD or incomplete data. | |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 15. Provider characteristics - poor quality studies (continue**

| Author Year Quality | Sample size (enrolled/ complete) | Group | Measure | Estimate |
|---|---|---|---|---|
| Goldman 1993[143] (continued) | | Referral rate: 10%-30% | | OR=0.81 (0.64,1.03) |
| | | Referral rate: >30% | | OR=0.80 (0.61, 1.06) |
| | | Annual deliveries: 50-150 | | OR=1.18 (0.79, 1.77) |
| | | Annual deliveries: >150 | | OR=1.28 (0.83, 1.99) |
| Goldman 1990<br><br>POOR | 400 cases and 1600 unmatched controls | | Odds ratio (95% CI) for VBAC versus RCD: physician gender (female reference) | 1.08 (0.71, 1.64) |
| | | | Age 35-54 (<35 reference) | 0.83 (0.58, 1.20) |
| | | | Age >54 (<35 reference) | 0.60 (0.37, 0.97) |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

ed)

**Notes**

No risk adjustment (other than age). Odds ratios from multivariable predictive model.

Number of variables in predictive model suggests multicollinearity may be a problem.

Odds ratio >1 denotes higher probability of VBAC than reference group

**Evidence Table 15. Provider characteristics - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Years of study<br>Research objective | Subject Eligibility:<br>Included (I)/Excluded (E) | Study Group |
|---|---|---|---|---|
| Goldman 1990[114] (continued) | | | | |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 15. Provider characteristics - poor quality studies (continue**

| Author Year Quality | Sample size (enrolled/ complete) | Group | Measure | Estimate |
|---|---|---|---|---|
| Goldman 1990[114] (continued) | | | Ob/Gyn specialty (general practice reference) | 1.32 (0.79, 2.19) |
| | | | Annual number of deliveries 50-150 (<50 reference) | 0.51 (0.30, 0.89) |
| | | | Annual number of deliveries >150 (<50 reference) | 0.76 (0.44, 1.31) |
| | | | High-risk pregnancies 5-10% (<5% reference) | 0.76 (0.55, 1.05) |
| | | | High-risk pregnancies >10% (<5% reference) | 1.19 (0.84, 1.68) |
| | | | Referral rate 10-30% (<10% reference) | 0.48 (0.36, 0.64) |
| | | | Referral rate >30% (<10% reference) | 0.50 (0.36, 0.70) |
| | | | CD rate 20-40% (<20% reference) | 0.49 (0.36, 0.66) |
| | | | CD rate >40% (<20% reference) | 0.17 (0.10, 0.27) |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

ed)

| Notes |
| --- |
| Control group includes some potentially not eligible for VBAC |

**Evidence Table 15. Provider characteristics - poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Years of study<br>Research objective | Subject Eligibility:<br>Included (I)/Excluded (E) | Study Group |
|---|---|---|---|---|
| ***Case Series*** | | | | |
| Miller<br>1995[146]<br><br>POOR | US (PA) | 1988-92<br>Estimate VBAC rate in FP residency program in community hospital | (I) Women with 2 or fewer prior CD/(E) Women with prior classical or low vertical CD, breech, twins with A non-vertex, active genital Herpes | |
| Hangsleben<br>1989[155]<br><br>POOR | US (MN) | 1982-1987 5.5 years)<br>Describe VBAC experience over 5 years in midwife service | (I) Women requesting VBAC in nurse-midwife service. (E) 15 women who requested ERCD. | |
| ***Surveys*** | | | | |
| Barnsley<br>1990[147]<br><br>POOR | Canada | NR | (I) Physician a member of Ontario Medical Association Section on Obstetrics and Gynecology | |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 15. Provider characteristics - poor quality studies (continue**

| Author Year Quality | Sample size (enrolled/ complete) | Group | Measure | Estimate |
|---|---|---|---|---|
| ***Case Series*** | | | | |
| Miller 1995[146]<br><br>POOR | 98 (11 of these excluded) | | Repeat CD,<br>Attempt VBAC,<br>VBAC delivery | 56%,<br>57%<br>77% |
| Hangsleben 1989[155]<br><br>POOR | 53 | | VBAC rate | 83% |
| ***Surveys*** | | | | |
| Barnsley 1990[147]<br><br>POOR | 192 returned surveys | | | |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

ed)

| Notes |
| --- |
| 85% of those who failed TOL had cephalopelvic disproportion. No comparison group |
| Data on ERCD would have been interesting. Population may be highly selected but details not provided. |
| 30% reported ERCD in <50% of patients but 77% noted TOL in hypothetical case |

**Evidence Table 16a. Hospital characteristics - good or fair quality studies**

| Author Year Quality | Country Setting | Years of study Research objective | Subject eligibility: included (I)/excluded (E) | Study group |
|---|---|---|---|---|
| ***Retrospective Cohort Study Designs*** | | | | |
| Gregory 1999[164] GOOD | USA CA | 1991 Compare CD rates in Medicaid patients | (I) Medicaid patients delivering in Los Angeles County/(E) Inconsistent ICD-9 codes (N=2) | Number of hospitals (patients): Private non-teaching hospitals |
| | | | | Public hospitals |
| | | | | Private teaching hospital |
| | | | | HMOs |
| McMahon 1996[5] GOOD | Canada Nova Scotia | 1986-92 Compare outcomes of TOL versus ERCD | (I) Women who gave birth in Nova Scotia hospitals with at least 1 prior CD/(E) Nonvertex presentation, multiple gestation, prior CD with vertical to T-shaped incision, placenta previa, maternal Herpes simplex infection, previous uterine surgery. | Tertiary care |
| | | | | Regional |
| | | | | Community |
| | | | | Tertiary care |
| | | | | Regional |
| | | | | Community |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 16a. Hospital characteristics - good or fair quality studies (continued)**

| Author Year Quality | Sample size (enrolled/ complete) | Measure | Estimate | Notes |
|---|---|---|---|---|
| ***Retrospective Cohort Study Designs*** | | | | |
| Gregory 1999[164]<br><br>GOOD | 65 (5016) | Unadjusted RCD rate/adjusted RCD rate | 85.7%/85.7% (reference group) | Adjusted RCD rates similar to unadjusted rates. All differences with reference group are significant (P<0.001) |
| | 4 (2625) | | 44.2%/43.0% | Adjustment for maternal and fetal clinical conditions |
| | 4 (883) | | 43.3%/40.0% | |
| | 5 (84) | | 60.7%/59.0% | |
| McMahon 1996[5]<br><br>GOOD | 3,725 | TOL rate/adjusted odds ratio (CI) | 60.1%/1.0 (reference) | Adjusted for both baseline risk and other confounders. Cohort is population-based. |
| | 1,956 | | 43.1%/0.5 (0.5, 0.6) | |
| | 457 | | 36.3%/0.4 (0.3, 0.5) | |
| | 2,239 | Successful TOL rate/adjusted odds ratio (CI) | 63.6%/1.0 (reference) | |
| | 844 | | 53.4%/0.7 (0.6, 0.8) | |
| | 166 | | 53.0%/0.7 (0.5, 0.9) | |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 16a. Hospital characteristics - good or fair quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Years of study<br>Research objective | Subject eligibility: included (I)/excluded (E) | Study group |
|---|---|---|---|---|
| King<br>1994[115]<br><br>GOOD | USA<br>NY | 1989<br>Determine effects of hospital characteristics on VBAC rate | (I) Birth in NY hospital to NY resident with prior CD | Hospital ownership: voluntary<br><br>Church<br><br>Government<br><br>Level I care<br><br>Level II care<br><br>Level III care<br><br>Teaching hospital |
| Santerre<br>1996[136]<br><br>FAIR | USA<br>MA | 1987-91<br>Assess impact of ACOG guidelines (published 10/88) on VBAC rate | (I) Data in panel of 55 hospitals | |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 16a. Hospital characteristics - good or fair quality studies (continued)**

| Author Year Quality | Sample size (enrolled/complete) | Measure | Estimate | Notes |
|---|---|---|---|---|
| King 1994[115]<br><br>GOOD | 10,636 | Unadjusted VBAC rate/adjusted odds ratio (CI) | 21.8%/1.0 (reference) | Odds ratio is for VBAC compared to ERCD. The following list results without New York City if CI changes with respect to no association (odds ratio=1.0) |
| | 2,526 | | 23.6%/1.13 (1.01, 1.26) | 1.07 (.95, 1.21) |
| | 782 | | 19.7%/0.77 (0.63, 0.94) | |
| | 7,030 | | 18.7%/1.0 (reference) | |
| | 3,754 | | 24.2%/1.30 (1.18, 1.44) | |
| | 3,160 | | 26.6%/1.55 (1.34, 1.81) | |
| | 1,065 | | 25.8%/1.11 (0.99, 1.24) | 1.36 (1.21, 1.54) if New York City hospitals excluded |
| Santerre 1996[136]<br><br>FAIR | | | | Regression model predicted lower VBAC rate at hospitals with higher proportion of low-birth-weight and Hispanic babies and non-teaching hospitals (VBAC rate average about 24% higher at teaching hospital than non-teaching hospital. Minimum chi-square regression model used. Results from model with supply-side and demand-side factors although models that exclude one of these in favor of the others explain more variability.<br><br>Volume of births, presence of neonatal ICU, ownership status, and urban location did not predict VBAC rate in model. |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 16a. Hospital characteristics - good or fair quality studies (continued)**

| Author Year Quality | Country Setting | Years of study Research objective | Subject eligibility: included (I)/excluded (E) | Study group |
|---|---|---|---|---|
| ***Case Series*** | | | | |
| Raynor 1993[29]<br><br>FAIR | USA<br>NC | 1988-91<br>Evaluate outcomes of VBAC in small rural practice | (I) 1 or more prior CDs, low transverse or unknown scar cephalic or breech presenta-tion/(E) Other malpresentations, vertical uterine scars | |
| Walton 1993[157]<br><br>FAIR | USA (military hospital in Japan) | 1988-89<br>Summarize VBAC experience in rural military hospital | (I) Pregnant women with prior CD/(E) Failure to meet ACOG criteria | Trial of labor |
| Schimmel 1992[162]<br><br>FAIR | USA<br>CA | 1990<br>Summarize outcomes for midwife service for low income (Medicaid) women | (I) Women with at least 1 prior CD | |
| ***Surveys*** | | | | |
| Stafford 1991[170]<br><br>GOOD | USA<br>CA | 1986<br>Estimate rates of VBAC with adjustment for potential confounders | (I) Delivery by woman with prior CD in non-military hospital | Proprietary<br><br>Private non-profit<br><br>Kaiser Permanente with Kaiser payment<br><br>Kaiser Permanente without Kaiser payment<br><br>University of California |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 16a. Hospital characteristics - good or fair quality studies (continued)**

| Author Year Quality | Sample size (enrolled/complete) | Measure | Estimate | Notes |
|---|---|---|---|---|
| ***Case Series*** | | | | |
| Raynor 1993[29] FAIR | | TOL rate/VBAC rate | 51 of 67 (76%)/31 of 51 (61%) | Rates unadjusted. Small series. 2 uterine scar dehiscences in 67 patients. Level I nursery. |
| Walton 1993[157] FAIR | 62 Women with prior CD | VBAC rate | 28 of 32 (88%) | 79% of 62 patients agreed to a TOL initially but 14 failed to meet guidelines for TOL. 3 decided to undergo ERCD in late pregnancy. Change of criteria after 10/98 (women with >2 prior CD offered TOL). |
| Schimmel 1992[162] FAIR | 37 | VBAC rate | 32 of 37 (87%) | Rates unadjusted. Small series. Many Medicaid women refused care by obstetricians. |
| ***Surveys*** | | | | |
| Stafford 1991[170] GOOD | 7,511 Births | VBAC rate/Adjusted odds ratio (CI) | 4.9%/1.0 (reference) | |
| | 27,846 | | 8.2%/1.4 (1.2, 1.6) | |
| | 4,506 (includes next row) | | /3.9 (3.3, 4.6) | VBAC rate 19.8% across Kaiser |
| | | | /2.6 (1.4, 4.6) | |
| | 1,166 | | 29.2%/3.7 (3.0, 4.6) | |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 16a. Hospital characteristics - good or fair quality studies (continued)**

| Author Year Quality | Country Setting | Years of study Research objective | Subject eligibility: included (I)/excluded (E) | Study group |
|---|---|---|---|---|
| Stafford 1991[170] (continued) | | | | County with indigent payment |
| | | | | County without indigent payment |
| | | | | Non-teaching |
| | | | | Non-medical school-affiliated teaching |
| | | | | Medical school-affiliated teaching |
| | | | | Council of Teaching Hospitals member |
| | | | | Neonatal ICU in hospital |
| | | | | No neonatal ICU |
| | | | | Number of annual births < 1000 |
| | | | | 1000-1999 |
| | | | | 2000-3499 |
| | | | | 3500 or more |
| | | | | Median family income by zip code in $1000: 24.5 or more |
| | | | | 20.8-24.5 |
| | | | | 17.5-20.7 |
| | | | | 13.0-17.4 |
| | | | | <13.0 |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 16a. Hospital characteristics - good or fair quality studies (continued)**

| Author Year Quality | Sample size (enrolled/complete) | Measure | Estimate | Notes |
|---|---|---|---|---|
| | 4396 (includes next row) | | /2.5 (2.1, 2.9) | VBAC rate 23.6% across county |
| | | | /2.7 (2.1, 3.5) | |
| | 25,935 births | | 7.1%/1.0 (reference) | |
| | 4,046 | | 9.8%/0.7 (0.6, 0.8) | |
| | 7,807 | | 12.1%/0.9 (0.8, 1.0) | |
| | 7,367 | | 23.3%/1.7 (1.5, 1.9) | |
| | 25,039 | | 14.2%/0.9 (0.8, 1.0) | |
| | 20,386 | | 6.8%/1.0 (reference) | |
| | 7,995 | | 5.4%/1.0 (reference) | |
| | 11,900 | | 7.8%/1.4 (1.4, 1.5) | |
| | 13,833 | | 11.8%/1.8 (1.7, 1.9) | |
| | 11,687 | | 16.6%/2.7 (2.4, 3.0) | |
| | 9,064 | | 10.1%/1.0 (reference) | |
| | 8,620 | | 10.4%/0.8 (0.7, 0.9) | |
| | 9,648 | | 10.4%/0.9 (0.8, 1.0) | |
| | 8,860 | | 10.3%/0.9 (0.8, 1.0) | |
| | 9,233 | | 13.0%/0.9 (0.8, 1.0) | |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 16a. Hospital characteristics - good or fair quality studies (continued)**

| Author Year Quality | Country Setting | Years of study Research objective | Subject eligibility: included (I)/excluded (E) | Study group |
|---|---|---|---|---|
| Shiono 1987[163]<br><br>FAIR | USA | 1984<br>Appraisal of obstetrical services at US hospitals | (I) 550 randomly selected hospitals (87% response rate)/(E) 12 hospitals outside of 50 states and DC. | Neonatal ICU in hospital |
| | | | | No neonatal ICU |
| | | | | OB residency |
| | | | | No OB residency |
| | | | | <500 annual deliveries |
| | | | | 500-999 |
| | | | | 1000-1999 |
| | | | | 2000-4999 |
| | | | | 5000 or more |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 16a. Hospital characteristics - good or fair quality studies (continued)**

| Author Year Quality | Sample size (enrolled/complete) | Measure | Estimate | Notes |
|---|---|---|---|---|
| Shiono 1987[163] FAIR | 174 hospitals | TOL rate (adjusted for size of delivery service) | 12.50% | Results weighted to all US acute care hospitals. Not adjusted for patient level characteristics. Denominators for rates not clearly defined. |
| | 248 | | 6.50% | P-value<0.001 comparing neonatal ICU to none. |
| | 119 | | 14.60% | |
| | 303 | | 6.60% | P-value<0.001 comparing OB residency to none. |
| | 145 | TOL rate/TOL Success rate/VBAC rate | 1.8%/57.8%/2.4% | VBAC rate is rate of TOL times success rate of TOL. These rates may be adjusted as the definition does not hold with simple multiplication. |
| | 93 | | 8.1%/44%/4.1% | |
| | 84 | | 12.5%/49.1%/9.0% | |
| | 135 | | 22.0%/49.9%/13.1% | |
| | 36 | | 25.4%/62.8%/16.4% | Test for trend significant at p-value<0.0.5. |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 16b. Hospital characteristics- poor quality studies**

| Author<br>Year<br>Quality | Country<br>Setting | Years of study<br>Research objective | Subject Eligibility:<br>Included (I)/Excluded (E) | Study Group |
|---|---|---|---|---|
| ***Retrospective Cohort Study Designs*** | | | | |
| Whitsel 2000[158]<br><br>POOR | USA<br>VT | 1997-98 (6 months of 1999 for university hospital)<br>Compare university and community hospitals RCD rate | (I) Pregnancies of 20+ week duration with prior CD | University hospital (level III NICU)<br><br>2 community hospitals |
| Gregory 1999[164]<br><br>POOR | USA<br>CA | 1995<br>Assess rates of rupture in women with prior CD | (I) History of prior CD | Hospital with low VBAC rate<br><br>Hospital with high VBAC rate (60%+) |
| Curtin 1997[167]<br><br>POOR | USA | 1995<br>Summarize data from 1995 National Hospital Discharge Survey | (I) Pregnancy in non-federal short-stay hospital | Hospital ownership:<br>non-profit<br>State or local government<br>Proprietary<br><br>Hospital number of beds: <100<br>100-499<br>>499 |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 16b. Hospital characteristics- poor quality studies (continued)**

| Author Year Quality | Sample size (enrolled/ complete) | Measure | Estimate | Notes |
|---|---|---|---|---|
| ***Retrospective Cohort Study Designs*** | | | | |
| Whitsel 2000[158]<br><br>POOR | 4358 deliveries (total deliveries) | Repeat CD rate | 5.8% (estimated from graph) | P-value=0.02 across 3 hospitals for RCD overall. University CD rates stratified by 6 risk categories. RCD rate 43.2% in delivery>=36 weeks without medical risks, 54.2% with risks, 56.4% if delivery<36 weeks, 66.7% if multiple gestation, 100% if malpresentation, and 92.6% if not TOL permitted. |
| | 1167deliveries | | 3.8% (estimated from graph) | Risk-adjusted results for RCD for community hospitals not reported for community hospitals. |
| Gregory 1999[164]<br><br>POOR | | VBAC rate/rupture rate/relative risk (CI) | 55.6%/0.056 %/reference | Unadjusted rates of rupture. Artificial classes of low and high rates of VBAC (derived after exclusions of hospitals with <200 deliveries per year or no women with prior CD) |
| | | | 65.0%/ 0.088%/1.56 (1.27, 1.92) | |
| Curtin 1997[167]<br><br>POOR | 29,000 pregnancy discharges in survey | VBAC rate (SE) | 38.1 (1.6) | Exact number of women with prior CD not reported. |
| | | | 30 (5.5) | Total CD not just RCD. |
| | | | 25.7 (8.2) [based on <60 cases in sample] | |
| | | | 28.5 (5.2) | |
| | | | 36.9 (1.9) | |
| | | | 38.7 (2.8) | |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 16b. Hospital characteristics- poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Years of study<br>Research objective | Subject Eligibility:<br>Included (I)/Excluded (E) | Study Group |
|---|---|---|---|---|
| Sieck 1997[168]<br><br>POOR | USA<br>OK | 1993-96<br>Compare VBAC rates in rural and urban hospitals | (I) All deliveries | Rural<br><br>Urban |
| Paterson 1991[165]<br><br>POOR | UK<br>England | 1988<br>Audit of obstetric management of women with prior CD | (I) Prior CD with no other deliveries, singleton cephalic presentation, >36 weeks gestation | |
| Placek 1988[169]<br><br>POOR | USA | 1980-85<br>National survey estimates (National Hospital Discharge Survey) | (I) Patients in non-federal general and special short-stay hospitals | Hospital size:<br><100 beds<br><br>100-499 beds<br><br>>499 beds<br>Hospital ownership:<br>proprietary<br>Government<br>Voluntary |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 16b. Hospital characteristics- poor quality studies (continued)**

| Author Year Quality | Sample size (enrolled/ complete) | Measure | Estimate | Notes |
|---|---|---|---|---|
| Sieck 1997[168]<br><br>POOR | 3170 deliveries | TOL rate/VBAC rate/RCD rate | 30.1%/60.2% /13.3% | No risk adjustment. No statistical analyses. Not population-based (ignores deliveries at other hospitals. |
| | 13,954 deliveries | | 46.6%/77.3% /6.5% | Denominators are eligible for VBAC for TOL rate, attempted TOL for VBAC rate, and total deliveries for RCD rate. Eligible for VBAC is estimate based on constant (85%) of successful VBAC and RCD. Method of selection of 4 hospitals not stated (possible selection bias). |
| Paterson 1991[165]<br><br>POOR | 1059 women, 664 with TOL | Correlation: rate of TOL with rate of VBAC | r = -0.09 (p>0.05) | Descriptive (no comparison) study of correlations at level of hospital unit unadjusted for potential confounders. |
| | | Correlation: rate of VBAC with longer labor allowed | r = 0.51 (p<0.05) | Retrospective cohort study of a regional data base. Maternity unit is sample unit. |
| | | Correlation: rate of VBAC with rate of oxytocin use | r = 0.31 (p>0.05) | |
| Placek 1988[169]<br><br>POOR | | VBAC rate | 4.4% (may lack precision) | No risk adjustment. National data base. |
| | | | 4.70% | Potential lack of precision is due to small sample size for numerators. |
| | | | 5.70%<br>4.4% (may lack precision)<br>5.80%<br>4.70% | |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 16b. Hospital characteristics- poor quality studies (continued)**

| Author<br>Year<br>Quality | Country<br>Setting | Years of study<br>Research objective | Subject Eligibility:<br>Included (I)/Excluded (E) | Study Group |
|---|---|---|---|---|
| ***Case-Control Study Designs*** | | | | |
| Goldman 1993[143]<br><br>POOR | Canada (Quebec) | 1985-88<br>Determine factors associated with VBAC | (I) Births in Quebec with prior CSx/(E) Medical Dx justifying RCD, missing data on MD | |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 16b. Hospital characteristics- poor quality studies (continued)**

| Author Year Quality | Sample size (enrolled/ complete) | Measure | Estimate | Notes |
|---|---|---|---|---|
| ***Case-Control Study Designs*** | | | | |
| Goldman 1993[143]<br><br>POOR | 635 cases and 2593 controls | Adjusted odds ratio (95% CI): Degree of education of served population: intermediate | 0.44 (0.32, 0.59) | Adjusted for patient characteristics (age and provincial region) and provider and hospital characteristics. Does not adjust for clinical variables. |
| | | Degree of education of served population: high | 0.92 (0.64, 1.32) | Odds ratio is odds of VBAC compared to RCD. |
| | | OB resource capacity: inter-mediate | 0.90 (0.66, 1.22) | |
| | | OB resource capacity: high | 1.12 (0.78, 1.61) | |
| | | Hospital CD rate: 15%-20% | 1.01 (0.72, 1.40) | |
| | | Hospital CD rate: >20% | 0.90 (0.62, 1.31) | |
| | | Degree of hospital's neonatal & obstetrical specialization: intermediate | 2.46 (1.81, 3.34) | |
| | | Degree of hospital's neonatal & obstetrical specialization: high | 3.32 (2.17, 5.23) | |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 16b. Hospital characteristics- poor quality studies (continued)**

| Author Year Quality | Country Setting | Years of study Research objective | Subject Eligibility: Included (I)/Excluded (E) | Study Group |
|---|---|---|---|---|
| Goldman 1990[114] POOR | Canada (Quebec) | 1985-87 Identify hospital characteristics and other predictors of probability of VBAC following prior CD. | (I) Birth recorded in provincial data base/(E) Medical diagnosis (e.g. dystocia or fetal distress) for CD or incomplete data. | |
| ***Cross-Sectional Study Designs*** | | | | |
| Skelton 1997[159] POOR | USA MO | 1992 Explore relationships among quality, cost, and compet-ition | (I) 89 acute care hospitals in MO. | |
| ***Case-Series*** | | | | |
| Kumar 1996[166] POOR | Australia | 1994-96 Evaluate VBAC with early induction in remote-area hospital over almost 2 years | (I) 1 or 2 prior CD, delivery at hospital, willing to attempt TOL/(E) TOL contraindicated (no details) | |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 16b. Hospital characteristics- poor quality studies (continued)**

| Author Year Quality | Sample size (enrolled/ complete) | Measure | Estimate | Notes |
|---|---|---|---|---|
| Goldman 1990[114]<br><br>POOR | 400 cases and 1600 unmatched controls | Odds ratio (95% CI) for VBAC versus RCD: hospital CD rate 16-20% (<16% reference) | 1.11 (0.74, 1.66) | No risk adjustment (other than age). Odds ratios from multivariable predictive model. |
| | | Hospital CD rate >20% (<16% reference) | 1.08 (0.98, 1.74) | Number of variables in predictive model suggests multicollinearity may be a problem. |
| | | Degree of specialization intermediate (general care reference) | 2.65 (1.46, 4.81) | Odds ratio >1 denotes higher probability of VBAC than reference group |
| | | Degree of specialization specialized (general care reference) | 3.18 (1.60, 6.28) | Specialization of care is a summary of 7 hospital characteristics |
| ***Cross-Sectional Study Designs*** | | | | |
| Skelton 1997[159]<br><br>POOR | | | | Significant correlations of VBAC rate with average distance to 5 closest hospitals (-), total births (+), average charge per CD (+), CD LOS (+), CD rate (-), total normal newborns (+), normal newborn LOS (-), total VD (+), average charge per VD (+), average charge all procedures (+), patient satisfaction (+), expected and observed numbers of neonatal deaths (+), bed size (+), total discharges (+) and total inpatient days (+). |
| ***Case-Series*** | | | | |
| Kumar 1996[166]<br><br>POOR | 33 women attempted TOL | Induction rate/overall and induced VBAC rates | 87.9%/87.9% /89.7% | Very small series. No adverse events. Various reasons induction preferred in this setting (including patient travel time and provider convenience). |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 16b. Hospital characteristics- poor quality studies (continued)**

| Author Year Quality | Country Setting | Years of study Research objective | Subject Eligibility: Included (I)/Excluded (E) | Study Group |
|---|---|---|---|---|
| Iglesias 1991[161]<br><br>POOR | Canada (Alberta) | 1985-89<br>Assess VBAC in small rural hospital | (I) Pregnant mother with prior CD eligible for VBAC | 1985<br><br>1986<br><br>1987<br>1988<br>1989 |
| ***Surveys*** | | | | |
| Barnsley 1990[147]<br><br>POOR | Canada | NR | (I) Ontario Medical Association section on obstetrics and gynecology | |
| Mor-Yosef 1990[160]<br><br>POOR | Israel | 3 months in 1983-84<br>National survey to assess VBAC | (I) Singleton live delivery with previous CD/(E) Delivery before 26 weeks gestation, fetal malformations, home deliveries, multiple deliveries, >1 prior CD, incomplete data | Medical center<br><br>General hospital<br>Peripheral hospital |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 16b. Hospital characteristics- poor quality studies (continued)**

| Author Year Quality | Sample size (enrolled/ complete) | Measure | Estimate | Notes |
|---|---|---|---|---|
| Iglesias 1991[161]<br><br>POOR | TOL: 2 | VBAC rate | 100% | Small rural hospital. No risk-adjustment. Very small n. |
| | 12 | | 75% | VBAC rate denominator is number attempting TOL |
| | 17 | | 76% | |
| | 15 | | 87% | |
| | 26 | | 81% | |
| ***Surveys*** | | | | |
| Barnsley 1990[147]<br><br>POOR | 192 returned surveys | | | Used hypothetical cases. Obstetricians in community hospital more likely to perform ERCD than those in teaching hospital. Obstetricians more likely to perform ERCD if anesthesia availability >15 minutes. |
| Mor-Yosef 1990[160]<br><br>POOR | 354 | VBAC rate | 58.1% | Collected patient-level data in survey. No risk adjustment. Difference not significant |
| | 542 | | 50.9% | |
| | 184 | | 61.9% | |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**EvidenceTable 17a. Insurance Factors - good or fair quality studies**

| Author Year Quality | Country Setting | Years of study Research objective | Subject eligibility: Included (I)/Excluded (E) | Study Group |
|---|---|---|---|---|
| ***Retrospective Cohort Design*** | | | | |
| King 1994[115] GOOD | USA NY | 1989 Determine effects of hospital characteristics on VBAC rate | (I) Birth in NY hospital to NY resident with prior CD | Private insurance |
| | | | | HMO |
| | | | | Self-pay |
| | | | | Medicaid |
| Stafford 1991[116] GOOD | USA CA | 1986 Estimate rates of VBAC with adjustment for potential confounders | (I) Delivery by woman with prior CD in non-military hospital | Private insurance |
| | | | | Non-Kaiser HMO |
| | | | | Medi-Cal (Medicaid) Self-pay |
| | | | | Kaiser Permanente |
| | | | | Indigent services in non-county hospital |
| | | | | Other payers |
| Stafford 1990[170] GOOD | USA CA | 1986 Estimate rates of CD in CA | (I) Non-military hospital delivery in 1986 with prior CD | Private insurance |
| | | | | Other HMO's |
| | | | | Medi-Cal |
| | | | | Kaiser Permanente |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**EvidenceTable 17a. Insurance Factors - good or fair quality studies (continued)**

| Author Year Quality | Sample size (enrolled/ complete) | Measure | Estimate | Notes |
|---|---|---|---|---|
| ***Retrospective Cohort Design*** | | | | |
| King 1994[115] | 8,855 | VBAC rate/Adjusted odds ratio (CI) | 21.6%/1.0 (reference) | Results adjusted for risk and confounders. VBAC denominator is number of births with prior CD |
| GOOD | | | | |
| | 1,823 | | 25.2/1.15 (1.02, 1.30) | 1.03 (0.90, 1.17) without NYC |
| | 616 | | 23.4%/1.19 (0.96, 1.47) | 1.28 (1.01, 1.81) without NYC |
| | 2,650 | | 20.7%/1.01 (0.89, 1.15) | No major difference from with NYC |
| Stafford 1991[116] | 18,911 | VBAC rate/Adjusted odds ratio (CI) | 8.1%/1.0 (reference) | Adjusted for a range of potential confounders |
| GOOD | | | | |
| | 5,094 | | 8.4%/1.0 (0.8, 1.1) | VBAC rate denominator is women with prior CD |
| | 11,513 | | 9.4%/0.8 (0.8, 0.9) | |
| | 3,370 | | 18.0%/1.7 (1.5, 1.9) | |
| | 4,413 | | 19.9%/NR | With Kaiser payment OR 3.9 (3.3, 4.6); without OR 2.6 (1.4, 4.6) |
| | 666 | | 25.2%/1.9 (1.0, 3.6) | |
| | 1,458 | | 17.0%/1.3 (1.1, 1.5) | |
| Stafford 1990[170] | 18,837 | VBAC rate (CI) | 8.1% (7.6% 8.6%) | Blue Cross, Blue Shield, others |
| GOOD | | | | |
| | 5,064 | | 8.3% (7.3%, 9.4%) | Non-Kaiser HMO's |
| | 11,444 | | 9.4% (8.6%, 10.1%) | California Medicaid |
| | 4,385 | | 19.9% (18.3%, 21.5%) | Stratified on three potential confounders and adjusted using logistic regression: similar results but only unadjusted reported. |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**EvidenceTable 17a. Insurance Factors - good or fair quality studies (continued)**

| Author Year Quality | Country Setting | Years of study Research objective | Subject eligibility: Included (I)/Excluded (E) | Study Group |
|---|---|---|---|---|
| Stafford 1990[170] (continued) | | | | Self-pay |
| | | | | Indigent Services |
| | | | | Other payers |
| Gregory 1999[164] FAIR | USA CA | 1995 Compare outcomes of TOL | (I) Pregnancy of woman with prior CD | Private insurance (excluding all government, HMO, PPO, Blue Cross/ Blue Shield non-HMO non-PPO) versus all other payment sources. |
| Santerre 1996[136] FAIR | USA MA | 1987-91 Assess impact of ACOG guidelines (published 10/88) on VBAC rate | (I) Data in panel of 55 hospitals | |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**EvidenceTable 17a. Insurance Factors - good or fair quality studies (continued)**

| Author Year Quality | Sample size (enrolled/ complete) | Measure | Estimate | Notes |
|---|---|---|---|---|
| Stafford 1990[170] (continued) | 3,353 | | 18.1% (16.3%, 19.9%) | |
| | 660 | | 24.8% (20.4%, 29.3%) | |
| | 1,445 | | 17.1% (10.5%, 19.7%) | |
| Gregory 1999[164] FAIR | | Adjusted odds ratio (CI) for risk of uterine rupture. Model adjusted for age, ethnicity and payment sources | 1.09 (0.84, 1.29) | No significant association with binary classification of payer. |
| Santerre 1996[136] FAIR | | | | Regression model showed no effect of payment methods on VBAC rates. Minimum chi-square regression model used. |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 17b. Insurance factors - poor quality studies**

| Author Year Quality | Country Setting | Years of study Research objective | Subject Eligibility: Included (I)/ Excluded (E) | Study Group |
|---|---|---|---|---|
| ***Prospective Cohort Designs*** | | | | |
| Rageth 1999[60] POOR | Switzerland | 1983-96 Evaluate risks of CD following prior CD | (I) Women with prior CD | TOL |
| | | | | ERCD |
| Miller 1992[173] POOR | Australia | 1989-90 Assess outcomes in women with prior CD | (I) Women with at least 1 prior CD who delivered in hospital | Private health insurance |
| | | | | Public health insurance |
| ***Retrospective Cohort Designs*** | | | | |
| Wagner 1999[171] POOR | USA | Measure association of insurance type and delivery method | (I) Prior CD, pregnancy >36 weeks, non-emergent/(E) Insurance status unclear | Medicaid/ Indigent Care |
| | | | | Other private insurance |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 17b. Insurance factors - poor quality studies (continued)**

| Author Year Quality | Sample Size (enrolled/ complete) | Measure | Estimate | Notes |
|---|---|---|---|---|
| ***Prospective Cohort Designs*** | | | | |
| Rageth 1999[60] | Of 17,613 who had a TOL, 6293 had private insurance | Unadjusted relative risk (95% CI) | 0.84 (0.82, 0.87) | P-value< 0.001. No adjustment for baseline risk or other confounders. |
| POOR | | | | |
| | Of 11,433 who had a ERCD, 4,862 had private insurance | | Reference | |
| Miller 1992[173] | 248 | ERCD rate | 62.50% | No adjustment for risk or other confounders. |
| POOR | | | | |
| | 70 | | 54.30% | |
| ***Retrospective Cohort Designs*** | | | | |
| Wagner 1999[171] | 321 | TOL rate/VBAC rate (as % of total sample) | 64%/62% | Adjusted for other potential confounders. More frequent CD for fetal distress and abruption and less for failure to progress. Higher clinical risk status. Higher rates of unmarried, history of substance abuse, infection, chronic hypertension, smoking and less prenatal care. Lower mean birth rate. 20% more VBAC than TOL in report. Single institution study. |
| POOR | | | | |
| | 655 | | 50% (P-value<0.0001 )/60% (P>0.05) | |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 17b. Insurance factors - poor quality studies (continued)**

| Author Year Quality | Country Setting | Years of study Research objective | Subject Eligibility: Included (I)/ Excluded (E) | Study Group |
|---|---|---|---|---|
| Oleske 1998[172]<br><br>POOR | USA<br>CA,FL | 1993<br>Describe variation in CD rates across 3 insurance types | (I) Singleton births, weight > 500g, in non-federal hospitals with 1 of 3 insurance types | Medicaid managed care (MMC)<br><br>Medicaid fee-for-service (MFFS)<br><br>Private managed care (PMC) |
| Curtin 1997[167]<br><br>POOR | USA | 1995<br>Summarize data from 1995 National Hospital Discharge Survey | (I) Pregnancy in non-federal short-stay hospital | Expected payment source:<br>Blue Cross/Blue Shield<br><br>Other private insurance<br>Medicaid<br>Other government sources<br>Self<br>Other |
| Placek 1988[169]<br><br>POOR | US | 1980-85<br>Summarize national survey estimates | (I) Pregnancy in non-federal short-stay hospital | Blue Cross<br><br>Other private insurance<br>Medicaid/other government<br>Self-pay, no charge, other |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 17b. Insurance factors - poor quality studies (continued)**

| Author Year Quality | Sample Size (enrolled/ complete) | Measure | Estimate | Notes |
|---|---|---|---|---|
| Oleske 1998[172] | | VBAC rates: CA/FL | 27.42/42.29 | No adjustment for risk or other confounders |
| POOR | | | | |
| | | | 22.67/34.49 | Significantly higher than for MFFS in CA and than MFFS and PMC in FL (all p<0.01) |
| | | | 27.77/28.44 | Denominator for VBAC rate unclear. |
| Curtin 1997[167] | | | | Exact number of women with prior CD not reported. |
| POOR | | | | |
| Placek 1988[169] | | VBAC rates | 4.30% | No risk adjustment. |
| POOR | | | | |
| | | | 4.50% | |
| | | | 5.80% | |
| | | | 6.90% | |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 17b. Insurance factors - poor quality studies (continued)**

| Author Year Quality | Country Setting | Years of study Research objective | Subject Eligibility: Included (I)/ Excluded (E) | Study Group |
|---|---|---|---|---|
| ***Cross-Sectional Designs*** | | | | |
| Skelton 1997[159]<br><br>POOR | US (MO) | 1992<br>Explore relationships among quality, cost, and competition | (I) Pregnancy in acute care hospitals in MO. | |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation

**Evidence Table 17b. Insurance factors - poor quality studies (continued)**

| Author Year Quality | Sample Size (enrolled/ complete) | Measure | Estimate | Notes |
|---|---|---|---|---|
| ***Cross-Sectional Designs*** | | | | |
| Skelton 1997[159] POOR | | | | Significant positive correlations of VBAC rate with total Medicaid discharges and total with no government assistance. |

TOL=trial of labor; VBAC=vaginal birth after cesarean; ERCD=elective repeat cesarean delivery
SD=standard deviation