Vaginal Birth After Cesarean Section

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Author	Title	Journal	vol	page	yr	Abstract
Crawford Eglin AFB	How safe is vbac for the mother and fetus?	JfamPract	55	149	2006	
Ghaffari Qatar	Safety of VBAC	IntJGynOb	92	38	2006	702 patients with Hx of one PCS, divided into group with no previous vaginal delivery and those with a previous vaginal delivery (62%) Found that vaginal delivery occurred more often in those with no Hx of previous vaginal delivery (87.7% versus 79.2%) Conclusion: these findings indicate that women who have had a CS should strongly consider natural delivery for subsequent pregnancies.
Gonen Israel	Results of a well defined protocol for a TOL after PCS	OG	107	240	2006	Described their management protocol (one PCS, spontaneous labor, Vtx, no prostaglandins, CS if cervix is unripe). Compared 841 women attempting VBAC versus 467 had planned ERCS. There was one uterine rupture found 18 hours after delivery. Conclusion: With their well-defined protocol, a TOL seems to be a safe as planned CS and the length of stay is shorter.
Pare U of Penn	VBAC versus elective repeat CS: assessment of maternal downstream health outcomes	BJOG	113	75	2006	Conc: Long-term reproductive consequences of multiple CS should be considered when making policy decisions regarding the risk/benefit ratio of VBAC.
Yeh U at Buffalo	Temporal trends in the rates of trial of labor in low risk pregnancies and their impact on the rates and success of VBAC	AJOG	194	144	2006	The national rate of VBAC has decreased by 55% between 1996 and 2002. Review of 11,446 patients who had a previous Cesarean section looking at trial of labor, VBAC attempts and VBAC success. Found that the success rates were similar during this time but that fewer attempted VBAC suggesting that the decline in VBAC may be due to a decline in trial of labor attempts and not ot a change in success rates.
Atug Turkey	Delivery of dead fetus from inside urinary bladder with uterine perforation: case report and review of the literature	Urology	65	797	2005	Case report
Baskett Canada	Severe obstetric maternal morbidity: a 15-year population based study.	JOG	25	7	2005	Looked at 159,896 deliveries and looked for indications of severe maternal morbidity (> 5 blood transfusions, emergency hysterectomy, uterine rupture, eclampsia and ICU admission) There were 313 patients with those markers (257 had one, 42 had 2 12 had 3 and 2 had four) 119 cases of > 5 blood transfusions, 88 emergency hysterectomies, 49 uterine rupture, 46 cases of eclampsia and 83 admissions to ICU.

Buhimschi Yale	Rupture of the uterine scar during term labor: contractility or biochemistry?	BJOG	112	38	2005	Uterine rupture occurs more frequently in women who have been given prostaglandins, hypothesize that similar to the cervix, prostaglandins induces biochemical changes in the uterine scar favoring dissolution, predisposing the uterus to rupture at the scar of the lower segment. Compared the location of the rupture of the scar in prostaglandins versus elsewhere without prostaglandins. Found that women treated with prostaglandins tend to rupture at the location of the previous scar more frequently than women in the oxytocin group whose rupture tended to occur remote from their old scar.
Bujold Wayne State	The role of maternal body mass index in outcomes of VBAC.	AJOG	193	1517	2005	8580 pats with a PCS, 21.7% had an elective repeat CS, 78.3% had a trial of labor. Found that maternal body mass index correlated inversely with the rate of successful VBAC but not with the rate of uterine rupture.
Cahill U of Penn	VBAC attempt in twin pregnancies: is it safe?	AJOG	193	1050	2005	Multicenter, retro, 25,005 patients with at least one PCS, 535 had twin pregnancies. Found patients with twins were less likely to attempt VBAC but of those that did try, there was no increase in failure, rupture of uterus or major maternal morbidity.
Casanova U of Penn	Cocaine use during pregnancy and the failure of VBAC	JRM	50	663	2005	Retro, 9254 patients attempting VBAC, found no statistically significant difference in the odds for VBAC failure related to cocaine use.
Cecattu	Factors associated with VBAC in Brazilian women Brazil	RevPanamSaludPulbica	18	107	2005	Nested case control study of 1352 patients with a previous CS and who had also at least one subsequent delivery (150 had vaginal delivery and 1202 had subsequent CS) Found that the main determining factors for a vaginal second delivery after a PCS were unfavorable social and economic factors
Cheung Toronto	Sonographic measurement of the lower uterine segment thickness in women with previous CS	JOG	27	674	2005	US evaluation of the LUS in 102 patients with one or more PCS. The mean sonographic thickness was 1.8 mm Two women had uterine rupture, both of which had a lower uterine segment of < 1mm.
Cleary-Goldman Columbia	Previous CS: understanding and satisfaction with mode of delivery in a subsequent pregnancy in patients participating in a formal VBAC counseling program	AJPeri	22	217	2005	Survey of patients participating in a formal VBAC educational program. Looked at those who had a successful VBAC, those who chose elective CS and those who had a CS after labor. The most satisfied patients were those who had a successful VBAC, most women valued the opportunity to attempt a VBAC regardless of outcome.
Coassolo U of Penn	Safety and efficacy of VBAC at or beyond 40 weeks gestation	OG	106	700	2005	Retro, 11,587 in the cohort attempting VBAC. Found that women past 40 weeks were more likely to have a failed VBAC. (31% versus 22%) Conc: women beyond 40 weeks gestation can safely attempt VBAC although the risk of VBAC failure is increased.
Coleman ACOG	VBAC: practice patterns of ObGyn	JRM	50	261	2005	Survey in July 2003 of ACOG fellows by random sample. 49% said that they were performing more CS than they did 5 years earlier. The reasons given were risk of liability and patient preference. More than 25% of physicians reported that they practiced in hospitals that do not follow the ACOG guidelines. 61% felt competent in determining which patients will have a successful VBAC.
Diab Yemen	Uterine rupture in Yemen	SaudiMedJ	26	264	2005	Retro, 5 year all cases of a patient with a ruptured uterus (5547 deliveries, 60 cases of ruptured uterus, 1.1%) 43 cases happened in an unscarred uterus (71.7&) and 17 (28.3%) in a patient with PCS. 93.3% had no prenatal care, 95% presented to the hospital after a long period of obstructed labor. Grand-multiparity was encountered in 69.8% of the no PCS group and 41.2% of the PCS group.
Dunn Dublin	Comparison of maternal satisfaction following vaginal delivery after CS and CS after previous vaginal delivery.	EuroJObGynReprodBiol	121	56	2005	Questionnaire, found maternal satisfaction with vaginal delivery was high. Those who experienced both preferred a vaginal birth.

Ezegwui	Trends in uterine rupture in Enugu, Nigeria	JOG	25	260	2005	Retro, 4,333 deliveries with incidence of uterine rupture of 1 in 106 deliveries. Findings included multips, labor < 24 hours and 22% had Pitocin given. 68% of the uterine ruptures had a Hx of a previously scarred uterus and 53% of those were in the lower uterine segment. Perinatal mortality was high
Gochnour Utah	The Utah VBAC study	MaternChildHealthJ	9	181	2005	Examined the effects of ACOG's new guidelines on physicians VBAC practices in Utah via questionnaire. Found the 97% of obstetricians and 79% of family practitioners were aware of guidelines. 45% of all physicians reported a decline in VBAC in the preceding 12 months. 87% had physician immediately available (100% of urban, 88% of suburban and 76% of rural) Found that many rural hospitals are unable to comply with number 5 of recommendations.
Godall U of Chicago	Obesity as a risk factor for failed trial of labor in patients with previous cesarean delivery	AJOG	192	1423	2005	Review of all singleton deliveries with previous CS, 1998-2002, stratifying by body mass index (BMI). Normal BMI <25, overweight BMI 25-29.9, obese BMI 30-39.9 and morbidly obese BMI >40. Conclusion: obesity is an independent risk factor for failed TOL in patients with a previous CS.
Guise Oregon	Evidence-based VBAC	Best Pract Res Clin ObGyn	19	117	2005	Chapter review of the literature about the rising risks of VBAC, patient and management factors that may alter risk, and discusses ongoing research as well as suggestions for improving future research
Hassan	Trial of scar and VBAC	JayubMedColl Abbottabad	17	57	2005	297 patients with Hx of PCS, found that 75% success in a non-recurrent indication for CS.
Hicks	Systematic review of the risk of uterine rupture with the use of amnioinfusion after PCS.	SouthMedJ	98	458	2005	Medline, Cochran searches. Conclusion: the use of amnioinfusion in women with PCS who are undergoing a TOL may be a safe procedure, but confirmatory large, controlled prospective studies are needed before definitive recommendations can be made.
Hoffman Delaware	Uterine rupture in patients with prior CS: the impact of cervical ripening	OGS	60	22	2005	Retro, 972 VBAC attempts, 72% success. There were 33 uterine ruptures at the site of previous cesarean delivery (3.4%). All but 5 ruptures were symptomatic. Induction was more frequent in the uterine rupture group and they were much more likely to have had cervical ripening. The odds ratio for cervical ripening and uterine rupture was 3.93. The risk/benefit ratio would seem to discourage cervical ripening.
Honig Germany	Placenta percreta with subsequent uterine rupture at 15 weeks gestation after two previous CS	JOG	31	439	2005	Case report
Juhasz Columbia	Effect of body mass index and excessive weight gain on success of VBAC.	OG	106	741	2005	Divided patients into groups (underweight, normal weight, overweight (BMI 26.1-29) and obese (BMI >29)` Conc: excessive weight gain during pregnancy and obesity both decrease the likelihood of VBAC success.
Kayani Liverpool	Uterine rupture after induction of labor in women with PCS	BJOG	112	451	2005	Retro, 5 year, 205 patients had their labor induced with Hx. of one PCS. There were 4 cases of uterine rupture and one of dehiscence. 2 babies were profoundly acidotic at birth but all five neonates were healthy when discharged. Conclusion: In women with PCS and no vaginal deliveries, induction of labor carries a relatively high risk of uterine rupture/dehiscence despite all precautions, including IUPC.
Kenton Loyola	Repeat CS and primary elective CS: recently trained ObGyn practice patterns and opinions	AJOG	192	1872	2005	Questionnaire of ObGyn attending 2 review courses. Found that 2/3 of recent graduates are willing to perform an elective CS to prevent pelvic floor injury. Most offer VBAC

Klemm Germany	Laparoscopic and vaginal repair of uterine scar dehiscence following CS as detected by ultrasound.	JPerinatalMed	33	324	2005	Case report of 5 cases of laparoscopic or vaginal repair of uterine scar dehiscence following CS.
Landon Ohio State	The MFMU Cesarean registry: factors affecting the success of trial of labor after previous cesarean.	AJOG	193	1016	2005	Multicenter, prospective observational study of 10,690 patients attempting VBAC, with a 73.6% success (patients with a previous vaginal delivery attempting VBAC successful 86.6% versus 60.9% in those with no previous vaginal delivery) Conclusion: Previous vaginal delivery including previous VBAC is the greatest predictor for successful TOL. Previous indication as dystocia, need for labor induction or maternal BMI > 30 significantly lowered success rates.
Latendresse Salt Lake City	A description of the management and outcomes of VBAC in the homebirth setting	JMidwiferyWomensHealth	50	386	2005	Intended home births of 57 patients attempting VBAC. 93% had a spontaneous birth, 97% of those with a previous successful VBAC were again successful, 88% of those without a previous successful VBAC also delivered vaginally. There were no uterine ruptures, there was one fetal demise in a postdate pregnancy with meconium. Conclusion: Given what is known, VBAC is not recommended in the home birth setting.
Lim Netherlands	Pregnancy after uterine rupture: a report of 5 cases and a review of the	OGS	60	613	2005	Case report of 5 pregnancies after a uterine rupture. All were delivered via Cesarean and there were no repeat ruptures.
Macones U of Penn	Maternal complications with VBAC: a multicenter study	AJOG	193	1656	2005	Case control, found that the incidence of uterine rupture was 9.8/1,000; prior vaginal delivery was associated with a lower risk 0.4/1,000. Prostaglandins alone were not associated with an increase in uterine rupture, sequential of prostaglandin and Pitocin was associated with a rupture rate of 3/1,000. Suggest that inductions requiring sequential agents be avoided.
Maconnes U of Penn	Ob outcomes in women with 2 prior cesarean deliveries: is VBAC a viable option?	AJOG	192	123	2005	Compared all patients with 1 versus 2 prior CS attempting VBAC. There were 20,175 patients attempting VBAC after 1 prior CS and 3,970 attempting VBAC after 2 PCS. The rate of success was similar (75.5% versus 74.6%) They found that the risk of morbidity was higher in those attempting VBAC after 2 PCS but that the absolute risk remains low. (Adjusted odds ration 1.61 versus 2.26)
Martel Canada	Guidelines for vaginal birth after previous cesarean birth	JOG	27	164	2005	Recommendations based on a MEDLINE search
McDonnagh Oregon	The benefits and risks of inducing labor in patients with PCS: a systematic review	BJOG	112	1007	2005	Literature review (Medline, Cochrane, etc) of 162 full text articles. Conclusion: Women with a Hx of CS attempting a TOL who require induction have a higher rate of CS and have a slightly increased risk of uterine rupture.
Miller Chelsea and Westminster	Use of the Atad catheter for the induction of labour in women who have had a PCS – a case series	AustNZJObGyn	45	325	2005	Use of a catheter in an unfavorable cervix
Pathadey UK	Induction of labour after a previous Cesarean section: a retrospective study in a district general hospital	JOG	25	662	2005	Retro, of patients undergoing induction of labor after a previous CS. Vaginal delivery after induction of labor was attempted in 81 patients of whom 64 (79%) delivered vaginally. There were few complications and no cases of uterine rupture.
Phipps Brown	Risk factors for bladder injury during CS	OG	105	156	2005	42 bladder injuries amongst 14,757 CS. Found PCS more prevalent than controls and found an adjusted risk for bladder injury associated with PCS 3.83.
Pinette Maine	VBAC rates ae declining rapidly in the rural state of Maine	OGS	60	219	2005	The rate of CS has risen from 5.5% in 1970 to 24.7% in 1986. Retro review of delivery records for the state of Maine 1998 to 2001 after ACOG VBAC recommendations. Found a marked drop in VBAC rates in rural hospitals with an overall decrease of 56%.

Quinones U of Penn	The effect of prematurity on VBAC: success and maternal morbidity	OG	105	519	2005	Compared VBAC success and uterine rupture rates between preterm and term gestations in women with Hx of PCS. 20,156 patients with Hx of PCS, 12,463 attempted VBAC. The VBAC success rate for term gestation was 74% and for preterm gestation was 82%. There may be less uterine rupture in the preterm group.
Richardson U of W Ontario	The impact of labor at term on measures of neonatal outcome	AJOG	192	219	2005	Compared neonatal outcome in planned CS, VBAC and normal deliveries. Found that all three had a low level of severe morbidity mortality however VBAC had an increased labor-related severe morbidity/death.
Rochelson Manhassat	Previous preterm CS: identification of a new risk factor for uterine rupture in VBAC candidates.	JMatFetMeo Med	18	339	2005	Retro chart review of pts with TOL after PCS looking at gestational age when CS was done. Found 25 uterine ruptures and the risk was higher with a preterm cesarean section. Conclusion: an underdeveloped lower uterine segment in the preterm uterus represents a risk for later rupture. Even if the incision is transverse.
Shorten Australia	Making choices for childbirth: a randomized controlled trial of decision-aid for informed birth after cesarean.	Birth	32	252	2005	Prospective, multicenter randomized controlled trial of 227 pregnant patients with Hx of PCS. One group given a decision-aid booklet describing the risk and benefits of elective repeat CS versus VBAC. Conclusion: a decision-aid for women facing choices about birth after CS is effective in improving knowledge and reducing decisional conflict. However, little evidence suggested that this process led to an informed choice
Smayra Beirut	Vesicouterine fistulas: imaging findings in 3 cases	AJR	184	139	2005	Case report of 3 cases of vesicouterine fistulas, one from a patient with a uterine rupture and one from a patient with a cesarean section. Diagnosis discussed
Smith Cambridge	Predicting cesarean section and uterine rupture among women attempting VBAC	PloSMed	2	E252	2005	Retro review of 23,286 pts attempting VBAC at or before 40 weeks. Randomized into model development and validation groups. The factors associated with emergency CS maternal age, male fetus, no previous vaginal delivery, and prostaglandin induction of labor.
SOGC	SOGC clinical practice guidelines. Guidelines for vbac. #155	IntJGynOb	89	319	2005	Guidelines approved by Clinical Practice Obstetrics and Executive Committees of the Society of ObGyn of Canada
Sur Oxford	Does discussion of possible scar rupture influence preferred mode of delivery after a CS?	JOG	25	338	2005	Found that discussion of uterine rupture did not discourage patients in attempting VBAC
Varner U of Utah	The maternal fetal medicine unit cesarean registry: trial of labor with twins	AJOG	193	135	2005	Looked at twins with Hx of at least one previous CS, 412 patients identified or which 226 had an elective repeat CS. 186 patient's (45.1%) attempted TOL, 120 delivered successfully (654.5% success) 30 of the failed TOL involved a successful vaginal delivery of twin A and a CS for twin B.
Zeteroglu	8 years experience of uterine rupture cases	JOG	25	458	2005	Discussed all cases of uterine rupture (40) for an incidence of 0.40%.
Asakura Japan	A case report: change in fetal heart rate pattern on spontaneous uterine rupture at 35 weeks gestation after laparoscopically assisted myomectomy	JnipponMedS ch	71	69	2004	Case report of a uterine rupture following myomectomy. Early signs of rupture included sudden onset of severe abdominal pain, frequent uterine contractions despite reassuring FHT tracing. Variable decelerations were not observed until 7.5 hours after onset.
Aslan Istanbul	Uterine rupture associated with misoprostol labor induction in women with previous cesarean delivery	EurJOGRepBio	113	45	2004	Retro, chart review of women undergoing misoprostol induction with Hx of prior cesarean versus those without Hx of PCS. Uterine rupture occurred in 4 of 41 patients (9.7%) in women with PCS who underwent misoprostol induction versus none in the no previous CS group.

Avery U of Minnesota	VBAC: a pilot study of outcomes in women receiving midwifery care	JMidwiferyWomensHealth	49	113	2004	Retro evaluation of the nurse midwife's role in VBAC. Conclusion: a larger prospective study is needed to provide evidence for determining the continuation of VBAC as part of midwifery care.
Bahl St. Michael's Hosp	Outcome of subsequent pregnancy 3 years after previous operative delivery in the second stage of labour: cohort Study	BMJ	328	311	2004	Retro, cohort of 393 patients who required operative delivery either forceps of CS at full dilation.32% wished to avoid a further pregnancy, women with instrumental vaginal delivery more likely to opt for vaginal delivery than if they had CS. There was a high rate of success for those who attempted a vaginal delivery after CS – 94%.
Bujold Montreal	Trial ol labor in patients with a previous cesarean section: does maternal age influence the outcome?	AJOG	190	1113	2004	Cohort study, 3 age groups, <30, 30-34 and 35 and older undergoing a trial of labor after a previous CS. Of the 2493 patients who met the criteria, 1750 did not have a prior vaginal delivery. Found that the group 35 and older had a lower rate of successful TOL in both the history of previous vaginal delivery group and no previous vaginal delivery.
Bujold U de Montreal	Cervical ripening with transcervical Foley catheter and the risk of uterine rupture	OG	103	18	2004	Retro of all pts. attempting VBAC. Compared those in spontaneous labor versus labor induction with amniotomy and/or oxytocin and patients who underwent a labor induction/cervical ripening using a transcervical Foley catheter. There were 2479 patients, 1807 had spontaneous labor, 417 had labor induced by amniotomy-etc and 255 had labor induced by transcervical catheter. The rate of successful VBAC was significantly different among the groups (78% versus 77.9% versus 55.7%) but not the rate of uterine rupture (1.1% versus 1.2% versus 1.6%)
Bujold Universite de Montreal	Modified Bishop's score and induction of labor in patients with a CPS.	AJOG	191	1644	2004	Retro, all records of 685 patients who had induction of labor with Hx of PCS. There were 4 groups by Bishop score: 0-2, 3-5, 6-8 and 9-12. Group 0-2 had 187 patients with a successful VBAC rate of 57.5%. Group 3-5 had 276 patients with success of 64.5%. Group 6-8 had 189 patients with success of 82.5% and Group 9-12 had 33 patients with success of 97%. Statistically, the rate of uterine rupture was not significant (2.1%/1.8%/0.5% and 0% respectively)
Catry Belgium	Delivery related rupture of the gravid uterus: imaging findings	AbdomImaging	29	120	2004	Case report of uterine rupture in VBAC Dx by means of ultrasound and computed tomography
Chilaka Leicester Royal Infirm	Risk of uterine rupture following induction of labour in women with a PCS in a large UK teaching hospital	JOG	24	264	2004	Retro, all cases of labor inductions. There were 43,175 deliveries, 8761 induction of which 5047 were by prostaglandin. 138 had Hx of PCS. There were no uterine ruptures, and a 39% CS. Conclusion: prostaglandins are safe for inducing labor in women with previous CS but should be administered with caution.
Dauphinee Orlando Reg. S. Seminole	VBAC: safety for the patient and the nurse	JOGNeonatNurs	33	105	2004	Brief view of VBAC Hx. VBAC should be performed in hospitals equipped to care for women at high risk. Nurses caring for patients undergoing VBAC should be able to recognize and respond to the signs and symptoms of uterine rupture, including the most common symptom, which is a non-reassuring fetal monitor tracing. Nurses should be aware of the necessity for 24 hour blood banking, electronic fetal monitoring, on-site anesthesia coverage and continuous presence of a surgeon.
Dinsmoor Med. Col. VA	Predicting failed trial of labor after primary cesarean delivery	OG	103	282	2004	"A better system to predict the success or failure of trial of labor is needed.
Durnwald Case Western	The impact of maternal obesity and weight gain on VBAC success	AJOG	191	954	2004	Study of impact of maternal obesity on success of TOL for VBAC. BMI classified as underweight <19.8 kg/M^2, normal BMI 19.8-24.9, overweight as 25-29.9 kg/M^2 and obese as > 30kg/M^2) Results of 510 patients attempting VBAC, 66% successful overall, obese had success of 54.6%, overweight had success of 65.5% and normal 70.5%

Durnwald Case Western	VBAC: predicting success, risks of failure	JmatFetNeonatalMed	15	388	2004	Retro chart review of patients with one PCS who delivered at their institution. 768 patients studied, 522 attempted VBAC with 66% success. Uterine rupture occurred in 0.8% of VBAC group. Women with successful VBAC had more spontaneous labor and less oxytocin use. There were no differences in outcome between the groups except more frequent low Apgar and increased endometritis in the failed VBAC group.
Eden Oregon	Childbirth preferences after cesarean birth: a review of the evidence	Birth	31	49	2004	Cochran, MEDLINE, Earthstar, Psych INFO and CINAHL databases search patient data on preference for route of delivery. Found that those who have experienced a vaginal delivery were more likely to select trial of labor than women who did not have one.
Ezechi Nigeria	Ruptured uterus in South Western Nigeria: a reappraisal	Singapore Med J	45	113	2004	10-year retro, 61 cases of ruptured uterus only 25% with uterine scar.
Fox Good Samaritan	The magnetic resonance imaging-based fetal-pelvic index: a pilot study in the community hospital.	AJOG	190	1679	2004	Pt's who were planning VBAC were recruited for MRI pelvimetry and fetal ultrasonography at 37-38 weeks. A fetal-pelvic index was calculated, pregnancies were managed routinely. 13 patients attempted VBAC, the most favorable index 5/6 was successful, the two patients in the unfavorable index had failed attempt. Conclusion: The use of comparative MRI pelvimetry and fetal ultrasonography is feasible in a community hospital and appears to have potential in enhancing the management of VBAC candidates.
Garg Saudi Arabia	VBAC following 2 PCS – are the risks exaggerated?	AnnSaudiMed	24	276	2004	Prior to 1996 all patients with Hx of 2 PCS had repeat CS, after 1996 appropriate patients were allowed to attempt VBAC. Labor was neither induced nor augmented. There were 205 patients in the study, 66 delivered vaginally, 68 had emergency CS, and 71 had elective CS. There were no scar dehiscence nor was hysterectomy required in either group. There rate of complications was lower in the vaginal group (4.5%) than in the CS group (19.4%)
Gonen Israel	Variables associated with successful VBAC after one CS: a proposed VBAC score.	AmJPerin	21	447	2004	Retro, 475 patients with Hx of PCS, 136 had elective CS and 339 underwent a TOL of whom 82% were successful. Attempted to develop a scoring system based on 5 factors significantly associated with successful VBAC, each factor had 0-3 score. (Abnormal presentation as indication for first CS, previous VBAC, cervical dilation, gestational age <41 weeks and lower gestational age at the time of the first CS.) The proposed score may help obstetricians when counseling patients.
Grinstead Northwestern	Induction of labor after one prior cesarean: predictors of vaginal delivery	OG	103	534	2004	Statistical study of 429 women with Hx of PCS attempting VBAC, 77.9% successfully. Found only Hx of prior vaginal delivery associated with a successful outcome, odds ratio 3.75. Decreased likelihood of success as associated with prior CS for dystocia, induction at or past due date, need for cervical ripening and maternal gestational or preexisting diabetes. Level of evidence: II-2
Guise Oregon	Systematic review of the incidence and consequences of uterine rupture in women with PCS	BMJ	329	19	2004	Medline, Cochran and Health STAR search, 568 full text articles, identifying 78 potential eligible studies, 21 rated at least fair in quality. Found that trial of labor increased risk of uterine rupture 2.7/1000 cases. For attempting trial of labor, the additional risk of perinatal death from uterine rupture was 1.4/10,000 and additional risk of hysterectomy was 3.4/10,000. Conclusion: Although the literature on uterine rupture is imprecise and inconsistent, existing studies indicate that 370 (213 to 1370) elective cesarean sections would need to be performed to prevent one symptomatic uterine rupture.
Guise Oregon Health	Safety of VBAC: a systematic review	OG	103	420	2004	Meta-analysis from various sources

Gyamfi Mt. Sinai, NY	Increased success of TOL after previous VBAC	OG	104	715	2004	Retro, 1,216 cases of attempted VBAC, 336 of which had hx of one or more successful VBAC. They had a 94.6% rate of success versus those without a Hx of previous VBAC success of 70.5%. Those with a previous normal vaginal delivery the rate of successful VBAC was 87.8%. Conc: A Hx of a previous successful VBAC increases the likelihood for success with future attempts.
Hammond Wayne State	The effect of gestational age on TOL after PCS	JmatFetNeonatMed	15	202	2004	Cohort study divided into 3 groups: 24-36 weeks gestational age, 37-40 weeks gestational age and >41 weeks. The rate of uterine rupture was sig. Greater in the advanced gestational age (0% versus 1% versus 2.7%) and the rate of successful VBAC was progressively lower (83% versus 75.9% versus 62.6%)
Hashima Oregon	Predicting VBAC: a review of prognostic factors and screening tools	AJOG	190	547	2004	Medline search, 13 of 100 studies applicable, "further research is needed"
Hashima Oregon Health ans Science U	Predicting VBAC: a review of prognostic factors and screening tills.	AJOG	190	547	2004	Literature review, 13 of 100 eligible studies provided fair to good quality evidence for the predictive nature of 12 factors. Conclusion: there is little high-quality data to guide clinical decisions regarding which women are likely to have a successful TOL. Conducting high-quality research should be a national priority.
Hendler U of Montreal	Effect of prior vaginal delivery or prior VBAC on OB outcomes in women undergoing trial of labor.	OG	104	273	2004	Observational, Pts. with only a PCS were compared to those with a PCS and either a previous vaginal birth or successful VBAC. 1,685 had PCS and no vaginal delivery, 198 had a vaginal delivery before the PCS and 321 had a VBAC. The rate of successful trial of labor was 70.1%, 81.8% and 93.1% respectively. Uterine rupture rate was 1.5%, 0.5% and 0.3% respectively. Patients with a prior VBAC had, in addition, a higher rate of uterine scar dehiscence (21.8%) compared with patients with a PCS (5.3%). Conclusion: a prior vagina delivery and particularly, a prior VBAC are associated with a higher rate of successful trial of labor compared with patients with no prior vaginal delivery. In addition, prior VBAC is associated with an increased rate of uterine scar dehiscence. Level of evidence II-2
Hoffman Delaware	Uterine rupture in patients with a PCS: the impact of cervical ripening	AmerJPeri	21	217	2004	Retro, examine factors associated with uterine rupture in patients attempting VBAC. 28 symptomatic ruptures in 972 attempts at VBAC (2.88%) The use of preinduction cervical ripening agents was significantly associated with an increased risk of symptomatic uterine rupture (odds ration 3.92) Conclusion: preinduction cervical ripening is associated with an increased risk of uterine rupture.
Kives Halifax	Vesicouterine fistula in pregnancy: a case report	JOGCan	26	657	2004	Case report of a patient with hx of PCS presented at 23 weeks with Hx c/w SROM. Cystoscopy 3 days after admission demonstrated a ballooning of amnion into the bladder. Several days later she had a precipitous vaginal delivery. Two months late had a successful repair
Kraemer OregonHaSU	The relationship of health care delivery system characteristics and legal factors to mode of delivery in women with PCS: a systematic review	WomensHealthIssues	14	94	2004	MEDLINE and healthSTAR search on the relationship of health care delivery system characteristics and legal factors to mode of delivery in women with PCS. Conclusion: studies have focused primarily on rates of delivery modes rather than patient safety or health outcomes.

Landon Ohio State	Maternal and perinatal outcomes associated with a trial of labor after prior CS	NEJM	351	2581	2004	Prospective 4 years observational study of all women with singleton gestation and hx of PCS. Maternal and perinatal outcomes were compared between women who underwent TOL and those who had ERCS. Results: 17,898 patients attempted VBAC and ERCS was performed on 15,801 patients. Symptomatic rupture occurred in 124 women undergoing TOL (0.7%). Hypoxic-ischemic encephalopathy occurred in no infants whose mothers had ERCS and in 12 infants in TOL group. 7 of these cases of HIE followed uterine rupture, including 2 neonatal deaths. The rate of endometritis was higher in the TOL group as was the rate of blood transfusions. The rate of hysterectomy and maternal death did not differ sig. Between the two groups.
Liang Taipei	Effect of peer review and TOL on lowering CS rates	JchinMed Assoc.	67	281	2004	
Lieberman Brigham and Women's	Results of a national study of VBAC in birth centers	OG	104	933	2004	Prospective collection of pregnancy outcomes in 1,913 women attempting VBAC in 41 participating birth centers from 1990 to 2000. A total of 1,453 of the 1,913 presented to the birthing centers in labor, 24% were transferred to hospitals during labor, and 87% of these had VBAC. There were 6 uterine ruptures (O.4%), one hysterectomy, 15 infants with 5 minute Apgar scores <7 and 7 fetal/neonatal deaths. Most fetal deaths occurred in women without uterine ruptures. Half of the uterine rupture and 57% of the perinatal deaths involved the 10% of women with more than one PCS or who had reached a gestational age of 42. Conc: Birth centers should refer women who have had PCS to hospital for delivery
Lin Emory	Risk of uterine rupture in labor induction of patients with prior CS: an inner city hospital experience	AJOG	190	1476	2004	Retro, pts. who delivered with Hx of one or more prior CS, 3355 patients. They were divided into 4 groups: Oxytocin induction (n=430), misoprostol induction (n=142, spontaneous labor (n=2523) and repeat CS without labor (=438). Found that the rate of rupture was increased in all induction compared with spon. labor group. Among one previous CS groups, the rate of rupture in misoprostol was 0.8% and in the Pitocin group rupture rate was 1.1%.
Loebel St. Francis Conn.	Maternal and neonatal morbidity after ERCS versus TOL after PCS in a community teaching hospital	JmatFetNeonatMed	15	243	2004	Retro, all patients who delivered at term with Hx of PCS and no contraindication to VBAC were studied.1408 deliveries, 749/927 (81%) had a successful VBAC. There were no difference in rates of uterine rupture, transfusion, infection and operative injury. Neonates delivered by ERCS had higher rates of respiratory complications. Mother-neonatal dyads with a failed TOL sustained the greatest risk of complications.
Marchiano U of Penn.	Diet-controlled gestational diabetes mellitus does not influence the success rates for VBAC	AJOG	190	790	2004	Retro, 25,079 patients with Hx of PCS, 13,396 attempted VBAC 1995-1999 at 16 hospitals. Analysis was limited to 9437 without diabetes and 423 with diet-controlled diabetes who attempted VBAC. The success for VBAC was 70% with those with gestational diabetes and 74% for non-gestational diabetes group.

Martel Canada	Guidelines for VBAC	JOGCan	26	660	2004	Medline search with the following guidelines: 1. Patients with one PCS should be offered TOL with informed consent (IIB) 2. The plan should be clearly documented in the patient's record (II-2B) 3. Delivery should be where emergency CS is immediately available (II-2A) 4. Each hospital should have a written policy regarding notification, etc. 5. Suspected uterine rupture requires urgent attention 6. Fetal monitoring is recommended 7. Oxytocin is not contraindicated 8. Medical induction of labor with oxytocin may be associated with an increased risk of uterine rupture and should be used carefully after appropriate counseling 9. Medical induction of labor with prostaglandin is associated with an increased risk of uterine rupture and should not be used except in rare circumstances 10. Prostaglandin E1 (misoprostol) is associated with a high risk of uterine rupture and should not be used. 11. A Foley catheter may be safely used to ripen the cervix 12. Data suggest s that TOL after more than one PCS is likely to be successful but is associated with a higher risk of uterine rupture 13. Multiple gestation is not a contraindication to TOL. 14. Diabetes is not a contraindication to TOL 15. Suspected macrosomia is not a contraindication to TOL 16. Women delivering within 18-24 months after PCS should be counseled about the increased risk of uterine rupture 17. Postdatism is not a contraindication to TOL 18. Every effort should be made to obtain previous operative note These guidelines were approved by the Clinical Practice Obstetrics and Executive Committee of the Society of Obstetricians and Gynecologists of Canada
Matsuo Osaka	Uterine rupture of cesarean scar related to spontaneous abortion in the first trimester	JOGRes	30	34	2004	Case report of a patient with Hx of emergency cesarean, low transverse incision, Transvaginal US showed a gestational sac located in the anterior lower uterine segment and a defect in the uterine wall
Novi U of Penn	Conservative management of vesicouterine fistula after uterine rupture	IntUroJPelvic FloorDysfunct	15	434	2004	Case report of vesicouterine fistulas after a uterine rupture followed an attempted VBAC. The base of the bladder was involved in the uterine rupture, this was repaired. On day 14 a cystogram revealed a vesicouterine fistula Rx with Foley.
Ofir Israel	Uterine rupture: differences between a scarred and an unscarred uterus	AJOG	191	425	2004	Retro, 53 cases of uterine rupture, 26 in a scarred uterus and 27 without a uterine scar. Conclusion: Other than an increased involvement of cervix in the scarred uterus, there were no significant differences in maternal or perinatal morbidity noted.
Pinette Maine Med. Center	VBAC are declining rapidly in the rural state of Maine	JmatFetalNeonatalMed	16	37	2004	Since institution of ACOG guidelines for VBAC in Oct. 1998 and July 1999 VBAC rate have declined over 50% from 30.1% to 13.1% and total CS rate has climbed from 19.4% to 24%.
Ridgeway U of Washington	Fetal heart rate changes associated with uterine rupture	OG	103	506	2004	Case control study of uterine ruptures, there were 48 ruptures, 36 met inclusion criteria (operative confirmation, gestational age > 24 weeks, presence of one or more low transverse incisions and availability of fetal tracings) Fetal bradycardia in first and second stage of labor were the only criteria significantly increased with uterine rupture. There were no sig. differences with mild or severe variable decelerations, late decelerations, prolonged decelerations, fetal tachycardia or loss of uterine tone.

Sheiner Israel	Changes in fetal heart rate and uterine patterns associated with uterine rupture	JRM	49	373	2004	FHT and uterine patters of 50 women with uterine rupture were compared with 601 tracings of controls without scarred uteri. Interobserver and intraobserver agreements of FHT and uterine tracings in the uterine rupture group were excellent. Found much higher rates of severe fetal bradycardia, fetal tachycardia, reduced baseline variability, uterine tachysystole and disappearance of contractions in the uterine rupture group during the first stage. Found in the second stage of labor that the uterine rupture group had a much higher rate of reduced baseline variability, severe variable decelerations, uterine tachysystole and disappearance of contractions.
Shorten Australia	Making choices for childbirth: development and testing of a decision-aid for women who have experienced previous CS.	PatientEducCouns	52	307	2004	Description of development of an educational booklet about VBAC.
Singh UK	An audit on trends of vaginal delivery after one CS	JOG	24	135	2004	Retro, 197 patients with Hx. of one PCS over a one year time frame, TOL was attempted in 51.3% of whom 65.3% were successful for an overall success of 33.5% of all patients with Hx. Of PCS.
Singh UK	An audit on trends of VBAC	JOG	24	135	2004	Audit of 197 patients with one PCS over a 1-year period was undertaken. 35% overall attempted and were successful. Maternal request was the most common indication for ERCS.
Smith Cambridge	Factors predisposing to perinatal death related to uterine rupture during attempted VBAC: retrospective cohort study	BMJ	329	375	2004	Population based, retrospective cohort of all women with one PCS who attempted VBAC at term. There was a 74.2% success and a uterine rupture rate of 0.35%. The incidence of uterine rupture was higher in women who had not had a previous vaginal birth and those whose labor was induced with prostaglandins. The risk of perinatal death was increased in hospitals with less than 3000 births per year.
Topuz Turkey	Spontaneous uterine rupture at an unusual site due to placenta percreta in a 21-week pregnancy with PCS.	ClinExOG	31	239	2004	Case report of uterine rupture with a large transverse rupture at the posterior isthmus wall with a placenta percreta.
Uzoigwe Nigeria	Unplanned VBAC after 2 PCS	NigerJMed	13	410	2004	Case report of multigravid with 2 PCS having an unplanned VBAC successfully.
Van Bogaert South Africa	Mode of delivery after one PCS	IntJGO	87	9	2004	Retro audit of 202 VBAC and 382 repeat CS. There were 108 ERCS and 274 emergency CS after unsuccessful TOL. Conc: dysfunctional labor accounted for most primary and repeat emergency CS, but not as a recurrent condition in the same parturients.
Wen Ontario	Comparison of maternal mortality and morbidity between TOL and elective CS among women with PCS.	AJOG	191	1263	2004	Retro cohort of 308,755 Canadian women with PCS between 1988 and 2000. The rates of uterine rupture (0.65%), transfusions (0.19%), and hysterectomy (o.1%) were higher in the TOL group. Maternal in-hospital death rate was lower in the TOL group (1.6/100,000 deliveries) versus the elective CS group (5.6/100,000)
Yamani Saudi Arabia	VBAC in grand multiparous women	ArchGynOb	270	21	2004	Retro, 405 grandmultips with Hx of PCS. The outcome of 217 VBAC compared to the outcome of 217 multips. Found no statistical difference in outcomes of the groups. Multips required more labor augmentation.
Adanu Ghana	Ruptured uterus: a 7 year review of cases from Accra, Ghana	JOGCan	25	225	2003	Retro, 193 uterine ruptures out of 82061 deliveries for an incid. of 2.4/1,000 deliveries. Of the UR, 24.6% had a Hx of PCS, the most frequently associated factor was prolonged labor (33.6%) The perinatal mortality rate was 74.3%
Ande Nigeria	Two vaginal deliveries after a classical cesarean section—case reports	NigerPostgradMed	10	110	2003	Case report of a patient with previous classical CS refusing repeat CS for both subsequent pregnancies and delivered at another hospital. “Suggests a more liberal attitude to allowing attempt a VBAC in a well-equipped facility”

Biswas Singapore	Management of previous cesarean section	CurrOpinOG	15	123	2003	Review. The absolute risk of VBAC remains small. The maternal and neonatal morbidity risk increases when VBAC fails which emphasizes the importance of careful selection.
Brill Toronto	The management of VBAC at term: a survey of Canadian obstetricians	JOGCan	25	300	2003	Survey of 601 obstetricians who managed VBAC. Found considerable disparity in the approach of Canadian OB to the management of VBAC.
Brill Toronto	VBAC: review of antenatal predictors of success	JOGCan	25	275	2003	Medline literature review
Carroll U of Miss.	VBAC versus elective repeat CS: weight-based outcomes	AJOG	188	1516	2003	209 VBAC candidates stratified into groups by prepregnancy weight: gp I <200 pounds, gp II 200-300, gp III >300 pounds. The TOL success rates were: gp I = 81.8%, gp II 57.1% and 13.3% in gp III. Found that infectious morbidity was increased with increasing weight.
Chauhan Spartanberg, SC	Application of learning theory to obstetric mal occurrence	JmatFetNeon Med	13	203	2003	The avg. ObGyn performs 140 deliveries a year. The majority of brachial plexus injuries are transient and resolve within 6 months, between 8-22% last longer than 12 months. A clinician would encounter one of these every 33 years. Cerebral palsy occurs at a rate of 1-2/1,000 deliveries. One in ten is assoc. with perinatal asphyxia meaning that one case secondary to asphyxia will occur every 6667 deliveries and the avg. clinician would see one case every 48 years. Asphyxia with uterine rupture occurs in 1/2819 VBAC attempts so the avg. clinician would encounter a case every 403 years.
Chauhan Spartanburg, SC	Maternal and perinatal complication with uterine rupture in 142,075 patients who attempted VBAC: a review of the literature	AJOG	189	408	2003	MEDLINE search of 361 articles, 72 met criteria for inclusion. There were a total of 880 uterine ruptures in 142,075 trials of labor. Conclusion: Although relatively uncommon, uterine rupture is associated with several adverse outcomes.
Delany Dalhousie U	Trial of labor compared to elective CS in twin gestations with a previous CS.	JObGynCan	25	289	2003	Retro, 121 women with Hx of PCS and present twin gestation, 38 chose a TOL of which 28 delivered vaginally with no uterine ruptures, scar dehiscence, maternal death or increase in neonatal morbidity or morality. Women choosing repeat CS had a higher incid. of infectious morbidity. "Further research is needed as the studies published to date do not have sufficiently large numbers to detect adverse maternal and neonatal outcomes.
Delany Dalhousie U	Spontaneous versus induced labor after a previous Cesarean section	OG	102	39	2003	Retro, 3745 patients with Hx of previous CS with a trial of labor, (2943 spontaneous labor, 803 induced). The induced group had more early postpartum hemorrhage, cesarean sections, and neonatal intensive care unit. There is a trend toward higher uterine rupture rates in those with induced versus spontaneous labor. (0.7% versus 0.3%) The rate of uterine rupture was higher in the prostaglandin group (1.1% versus 0.6%).
Dodd Australia	VBAC: a survey of practice in Australia and New Zealand	AustNZJOBGyn	43	226	2003	Survey of practice, 67% returned. 96% agreed that VBAC should be presented as an option, varying from 90% agreed for previous breech indication, 88% for previous fetal distress indication, and 55% for FTP indication. 40% agreed that VBAC was the safest option and 44% disagreed. 2/3 would offer induction with 1/3 willing to use prostaglandin. Most respondents preferred to perform VBAC at a level 2 or 3 hospital, while 80-90% required anesthesia, neonatologist and OR crew within 30 minutes availability.

Dunsmoor-Su R U of Penn.	Impact of sociodemographic and hospital factors on attempts at VBAC	OG	102	1358	2003	Retro, cohort comparing all women with previous LTCS who attempted a TOL with those who elected to have a repeat CS for a total of 15,172 patients. Found that the odds of a trial of labor decreased significantly with increasing age, gravity and the number of previous CS. Medicaid patients had a higher odds of trial of labor than did privately insured patients. Patients with a nonrecurrent indication for previous CS had generally higher odds of trial of labor. Black women were more likely to have a trial of labor. Conclusion: clinical and non-clinical factors influence rates of attempted VBAC.
Edwards U of Fla.	Deciding on route of delivery for obese women with a prior cesarean delivery	AJOG	189	385	2003	Historical cohort analysis of singleton deliveries in women with a body mass index 40or greater and one prior cesarean. There were 122, 61 in CS group and 61 in VBAC group. Results-the VBAC group had higher rates of chorioamnionitis (13.1% versus 1.6%), endometritis (6.6% versus 0) and composite puerperal infection (24.6% versus 8.2%). Mean cost of care was similar. Conclusion: compared with planned cesarean, VBAC trials in obese women are 3 times as likely to be complicated by infection and do not result in reduced costs.
Elkousy U of Penn	The effect of birth weight on vaginal birth after cesarean delivery success rates	AJOG	188	824	2003	Retro, from 16 community and university hospitals, 9960 patients attempting VBAC after one previous CS. Four groups: no previous vaginal deliveries, one prev. vaginal birth B4 CS, one prev. vaginal birth after CS and vaginal births B4 and after CS. The overall success rate was 74% (65%, 94%, 83% and 93% respectively) Conc: women with a previous vaginal birth should be informed of the favorable risk. The success rate with no previous vaginal births and EFW of > 4,000 gms was <50%. The uterine rupture rate in the first group with infants > 4,000 gms was 3.6%
Fenwick	Women's experiences of CS and VBAC: a birthrights initiative	IntJNursPract	9	10	2003	Psychological statement from a small pilot study of 59 women survived by mail
Figueroa Winthrop U Hosp	Posterior uterine rupture in a woman with a previous CS	JMatFetNeoMed	14	130	2003	Case report of 33 yo G2, Hx. of previous CS, underwent labor induction at 41 weeks with dinoprostone vaginal insert. Labor was eleven hours, when the patient was fully dilated she developed repetitive late decelerations followed by fetal bradycardia. A posterior uterine wall rupture extending from the fundus to the vagina was repaired. Neonate expired on the 7th day of life.
Fisler Harvard	Neonatal outcome after trial of labor compared with elective repeat CS	Birth	30	83	2003	Compared low-risk, 1-2 previous CS from December 1994 to July 1995 were identified. 136 patients with ERCS were compared with 313 women who delivered after a TOL. Found that TOL group had an increased rate of infant diagnostic tests and therapeutic interventions but that was from a smaller sub-group who had an epidural.
Kazandi Turkey	Placenta Percreta: report of two cases and review of the literature	ClinExpOG	30	70	2003	Case report of two placenta percreta, one of which had 2 previous CS.
Li RWJ MedSchool	Physician CS rates and risk-adjusted perinatal outcomes	OG	101	1204	2003	Population based study, divided physicians into 3 groups low (CS rate < 18%), medium (18-27%) and high rate (>27%) Found that low rate physicians had fewer uterine ruptures but a higher rate in intracranial hemorrhages.
Mankuta Israel	VBAC: Trial of labor or repeat Cesarean section? A decision analysis	AJOG	189	714	2003	Model using a decision tree. The model favors a trial of labor if it has a chance of success of 50% or above and if the wish for additional pregnancies after a cesarean section is estimated at near 10-20% or above because the delayed risks from a repeated cesarean section are greater than its immediate benefit.
O'Brien-Abel U of Wash	Uterine rupture during VBAC trial of labor: risk factors and fetal response	JMidwiferyWomensHeatlh	48	249	2003	Review of risk factors for uterine rupture during VBAC-TOL.

O'Grady Baystate Med. Cntr	Vernixuria: another sign of UR	JPerinatol	23	351	2003	UR complicates approx. 1% of TOL. Classical signs are loss of station, cessation of labor, vaginal bleeding, fetal distress and abdominal pain. Case report of UR indicated by vernix and blood in Foley catheter.
Odibo Uof Penn	Current concepts regarding VBAC	CurrOpinOG	15	479	2003	Review of current literature.
Ofir Israel	Uterine rupture: risk factors and pregnancy outcome	AJOG	189	1042	2003	Population based study comparing all singleton deliveries with and without uterine rupture between 1968 and 1999. There were 117,685 deliveries and 42 uterine ruptures (0.035%) There were three risk factors found for uterine rupture: previous cesarean section, malpresentation and dystocia during the second stage.
Persadie Canada	VBAC: clinical and legal perspectives	OGCand	25	846	2003	Discussion, the common practice of attempting VBAC warrants some reconsideration in light of recent clinical data on the risks associated with VBAC. It is incumbent upon clinicians to ensure that women under their care are fully aware of these risks. Indeed, in some circumstances, an attempt at VBAC may be perceived by the courts to represent a negligent standard of care.
Rouzi Saudi Arabia	Uterine rupture incidence, risk factors and outcome.	Saudi Med J	24	37	2003	Retro review of 23245 deliveries with 23 women with Dx of uterine rupture. 15 (65%) occurred in women with PCS and 8 (34.8%) had no previous uterine surgery. In the previous CS group, 2 women sustained bladder injury, one subsequently developed a vesico-vaginal fistula. In the unscarred uterus, one person died, one developed renal failure, 3 fetal deaths, 4 patient required hysterectomy. Conc: In our circumstances, uterine rupture is not rare and consequences can be life threatening. The outcome is worse in women with unscarred uterus.
Sansregret U of Montreal	Twin delivery after a PCS: a 12 year experience	JOGCan	25	294	2003	Observational study of patients with twins and a Hx of PCS. 26 women in TOL group and 71 in the repeat CS group. Found that the only difference was that the TOL group had a shorter hospital stay.
Segal Israel	Extrusion of fetus into the abdominal cavity following complete rupture of uterus: a case report	EurJObGynReproBiol	109	110	2003	Case report of G10P9, one previous CS, 4 successful VBACs after CS, presented at term complaining of abdominal pain. Severe bradycardia was observed and emergency CS was performed with the findings of a complete uterine rupture, the fetus in intact membranes and placenta was found in the abdominal cavity.
Shipp Harvard	Post-cesarean delivery fever and uterine rupture in a subsequent trial of labor.	OG	101	136	2003	Nested, case-control study in a cohort of all women undergoing TOL after CS in a 12-year period. 21 cases of uterine rupture, the rate of fever after previous delivery was 38% in the uterine rupture group and 15% of the controls. Conc: postpartum fever after CS is associated with an increased risk of uterine rupture during a subsequent trial of labor.
Sicuranza Winthrop U Hosp. NY	Uterine rupture associated with castor oil ingestion	JMatFetNeoMed	13	133	2003	Patient 39 weeks gestation and Hx of prior cesarean section ingested 5 cc castor oil. 45 minutes later, repetitive variable decelerations prompted a CS. At surgery, a portion of the umbilical cord was protruding from a 3 cm. Rupture of the lower transverse scar.
Socol Northwestern U	VBAC—is it worth the risk	SeminPerinatol	27	105	2003	Enthusiasm for VBAC has waned. As a result, the CS rate is again on the rise. As a medical community and society we must decide whether the most appropriate question is "what is safest for my baby" or "is the risk associated with VBAC acceptable?" There are risks assoc. with VBAC but in a hospital setting with appropriate resources these risks are low and would still seem to be acceptable.

Tongson Thailand	Success rate of VBAC at Maharaj Nakorn Chiang Mai Hospital	JMedAssocThai	86	829	2003	Prospective study of 177 pregnant patients with one or two prior CS. Non-directive counseling concerning VBAC and repeat CS were given. Of the 177 patients, 118 chose VBAC, 33 were excluded leaving 98 in the VBAC group and 46 in the repeat CS group. 19 of the planned VBAC had CS because of obstetrical indications or changed their mind leaving 79 trial of labors. 43 of the 79 were successful, 36 underwent CS for obstetrical indications, and The success rate for VBAC after trial of labor was 54%.
Upadhyaya Florida	VBAC in a small rural community with a solo practice	AmJPerinatol	20	63	2003	Retro review of all deliveries over an 11-year period by a single practitioner in a rural community. 74% of patients with Hx of PCS (413) attempted VBAC and 75% of those were successful. There were no incidents of maternal or neonatal death and no uterine rupture.
Wong Hong Kong	Use of fetal-pelvic index in the prediction of VBAC	JOGRes	29	104	2003	170 women with one PCS attempting a TOL enrolled. US was performed at 38-39 weeks to measure fetal head and abdominal circumference and a fetal-pelvic index was derived. Did not find it useful in clinical practice.
ACOG Committee Opinion	Induction of labor for VBAC	OG	99	679	2002	Committee opinion: review of current literature. Conclusion: Rate of uterine rupture with spontaneous labor in VBAC is 5.2/1000, labor induced with Pitocin is 7.7/1000 and prostaglandin 24.5/1000. Committee concludes that the risk of uterine rupture during VBAC attempts is substantially increased with the use of various prostaglandin cervical ripening agents for the induction of labor and their use for this purpose is discouraged.
Ali Saudi Arabia	Obstetric and perinatal outcome of women para	JObGynRes	28	163	2002	Retro., of all women (238) whose parity was > 5 and in whom there was one previous CS. Found an increased incid of fetal malpresentation, uterine rupture and scar dehiscence. There was no increase in perinatal or maternal mortality.
Baloul Saudi Arabia	Placenta percreta with painless uterine rupture at the 2nd trimester	SaudiMedJ	23	857	2002	Case report uterine rupture in case of placenta percreta
Ben-Arpya Israel	Ripening of the uterine cervix in a post-cesarean parturient: prostaglandin E2 versus Foley catheter.	JmatFetNeoMed	12	42	2002	Retro, cohort of 161 patients with PCS undergoing cervical ripening with Foley versus 55 with PGE2 and control gp of 1432 PCS patients without induction. Conclusions: PGE2 was found to be superior to Foley for ripening of the uterine cervix as demonstrated by a lowered repeated CS delivery rate.
Bujold Montreal	Neonatal Morbidity associated with uterine rupture: what are the risk factors?	AJOG	186	311	2002	Retro., 2233 TOL had 23 cases of uterine rupture after a previous LTCS. Nine infants (39.1%) had severe acidosis (pH <7.0), among these, 3 neonates had severe hypoxic-ischemic encephalopathy and another neonate died. Placental or fetal extrusion or both were associated with severe metabolic acidosis but not with other factors (birth weight, induction of labor, use of oxytocin, epidurals and cervical dilatation) Two newborns with severe acidosis had impaired motor development even with an intervention time less than 18 minutes from the onset of prolonged deceleration to delivery. Conclusion: When uterine rupture occurs, placental or fetal extrusion was the most important factor associated with severe metabolic acidosis; Prompt intervention did not always prevent severe metabolic acidosis and neonatal morbidity.
Bujold Montreal	Interdelivery interval and uterine rupture	AJOG	187	1199	2002	Observational cohort, 1527 patients attempting VBAC after one PCS. Uterine rupture rate was 4.8% for interdelivery interval of < 1 year, 2.7% for interval of 13-24 months and 0.9% for > 24 weeks. Conclusion: an interdelivery interval of < 24 months was associated with a 2-3 fold increase in the risk of uterine rupture.
Carr U of Washington	VBAC: a national survey of US midwifery practice	JmidwWomensHealth	47	347	2002	Survey of 325 midwifery practices about VBAC practices with a 62% return rate. Found that criteria for VBAC were stricter and consent forms more extensive.

Chauhan Spartanburg	Pregnancy after classic CS	OG	100	946	2002	Retro, 37,863 deliveries in 10 years, 157 had classic incision. In the next pregnancy, there was 1 rupture with 9% dehiscence. There were no sig differences in the dehiscence and control group. Conclusion: among patients with prior classical incision, uterine rupture and dehiscence are neither predictable nor preventable. One in four patients will experience some form of maternal morbidity. Uterine rupture, although infrequent, can be fatal to the fetus.
Chhabra India	Reduction of occurrence of uterine rupture in Central India	JObGyn	22	39	2002	Retro, 12 cases of uterine rupture with incidence of 0.62/1000 births. 4 were with patients with a PCS, 5 were with malpresentations, 4 lack of progress, 2 abnormal placentation, and 1 with case of hydrocephalus. Perinatal mortality was 77% and there was one maternal mortality.
Coughlan Dublin	What are the implications for the next delivery in primigravidae who have an elective cesarean section for breech presentation	BJOG	109	624	2002	194 patients who had an elective CS for breech as primigravidas. 9.8% had another breech compared with only 1.7% of control group. The overall CS rate was 43.8% in the group with previous CS for breech although 84% of those allowed to labor were successful.
Diaz Riverside Regional Medical Center, VA	Uterine rupture and dehiscence: ten-year review and case-control study.	Southern Medical J	95	431	2002	Retro., 25,718 deliveries at Riverside Regional Medical Center from 1990 to 2000 were reviewed. RESULTS: Eleven uterine ruptures and 10 dehiscences occurred during this period (0.08%). In this group of rupture/dehiscence there was one maternal death (5%) and three neonatal deaths (14%). Other complications included intrapartum non reassuring fetal status (67%), 5-minute Apgar score < 7 (52%), maternal blood transfusion (24%), neonatal hypoxic injury (14%), hysterectomy (14%), and endometritis (10%). Uterine rupture/dehiscence was independently associated with fetal weight > or = 4,000 g, non-reassuring fetal status, use of oxytocin, and previous cesarean delivery; internal fetal monitoring reduced the risk of uterine rupture/dehiscence. CONCLUSIONS: To reduce the risk of uterine rupture/dehiscence, a delivery plan should include assessment of cesarean history and fetal macrosomia, judicious use of oxytocin, and intrapartum monitoring for non-reassuring fetal pattern.
DiMaio U of Fla.	VBAC: a historic and cohort cost analysis	AJOG	186	890	2002	Historic cohort analysis of 204 mother infant pairs, 139 in the TOL group and 65 in the ERCS group in 1999 with the primary outcome variable being mean cost. The mean cost of TOL for mother/baby pairs was $5949 for ERCS and $4863 for the TOL group. Conclusion: In women with a single PCS, a TOL is more cost-effective than an ERCS.
Flamm Kaiser	VBAC: what's new in the new millennium?	CurrOpioObsteGynecol	14	595	2002	Review of trends in the last 2 years. Summary: the recent trend has been towards a more cautious approach to VBAC. Some are concerned that this trend may limit childbirth options for those women who wish to avoid repeat CS.
Harer Riverside Regional Medical Cntr	VBAC: Current Status	JAMA	287	2627	2002	Review article, The rise and fall of VBAC exemplifies fundamental shifts in medical care in the past 20 years. Previously, physicians made most medical decisions, control then shifted to managed care dictates. Increasing pressure by both physicians and the public is now shifting decisional authority back to physicians and their patients. However physicians are serving more in a consultative and advisory role. The current guidelines and dynamic tensions between physician and patient will drive the national VBAC rate dramatically down.
Hopkins Queen's Medical Center	Prediction of vaginal delivery following CS for failure to progress based on the initial aberrant labor pattern	EurJObGynReproBio	101	121	2002	Retro, chart review of 171 patients with Hx of PCS for FTP and subsequently delivered at their hospital. Cervicograms were categorized into one of the four patterns. Conc: categorization did not predict subsequent successful VBAC.

Huang U of C, Irvine	Interdelivery interval and the success of VBAC	OG	99	41	2002	Retro, cohort study from 1997-2000 of pts with PCS attempting VBAC. A total of 1516 pts attempting VBAC were found in 24,162 deliveries. The success rate was 79% with an interdelivery interval of less than 19 months compared with a success of 85.5% if interval was greater than 19 months (not sig) They did find that if the labor was induced there was less success in the interval < 19 months group.
Kieser Delhousie U Nova Scotia	A 10-year population-based study of uterine rupture	OG	100	749	2002	Population-based review of 114,933 deliveries with 39 cases of uterine rupture, 18 complete rupture and 21 incomplete (uterine dehiscence). 36 of the 38 had a history of a PCS (33 LTCS, 2 classical and 1 low vertical). 11,585 deliveries were in patients with a PCS. UR was 2.4/1,000 deliveries and UD was 2.4/1,000 deliveries. There were no maternal deaths. Uterine rupture was associated with sig. More maternal blood transfusion and neonatal asphyxia.
Lavin Northeastern Ohio U	A state-wide assessment of the obstetric, anesthesia and operative team personnel who are available to manage the labors and deliveries and to treat the complications of women who attempt vaginal birth after cesarean delivery	AJOG	187	611	2002	All obstetrical units in Ohio surveyed about immediate availability of OR crew, anesthesiologist and obstetrician for patient attempting VBAC. 94% of Level I units allowed VBAC attempt while level II and III all allowed attempted VBAC. An obstetrician was immediately available 27.3%, 62.9% and 100% of level I, II, III respectively. Anesthesia was available 39%, 100% and 100%. A surgical team was immediately available 35.1%, 97.1% and 100%. Two hospitals had stopped offering VBAC and an additional ten were considering stopping.
Martin	Births: final data for 2001	NatlVitalStatRep	51	1	2002	The CS delivery rate rose for the fifth consecutive year to 24.4%, the primary CS rate was up 5% and the rate of VBAC fell 20%.
Mawson Jackson State U	Reducing CS rates in managed care organizations	AmJManagCare	8	730	2002	Review of methods to encourage a decrease of CS rate from present 22% to 10-15% as proposed by WHO. "The Medical Care Organization objective would be to lower CS rates without alienating physicians or attempting to impose a regimented approach that would offend and be counterproductive for consumers".
Mizunoya Japan	Management of VBAC	JObGynRes	28	240	2002	468 patients with PCS, 365 gave consent for study protocol which was basically awaiting labor, using breathing to avoid straining until vacuum assisted delivery could be accomplished to avoid straining, controlling the intrauterine pressure. Of 322 TOL, 88.2% were successful. There were 2 cases of uterine rupture and one fetal death.
MMWR	VBAC – California 1996-2000	MMWR Center for Disease Control and Prevention	51	996	2002	General discussion of CS rates and CS/VBAC rates in California from 1996-2000. In 2000 the overall CS rate was 23%, 37% of which were repeat CS. A national objective is to reduce primary CS rate to 15% and 63% in those who have had a PCS. A key strategy to reduce repeat CS rate is to promote VBAC as an alternative to ERCS. During 1989-1999 the VBAC rates increased from 19% in 1989 to 28% in 1996 and then decreased to 23% in 1999. California VBAC rate has decreased from 35% in 1996 to 15% in 2000.
Mozurkewich U of Mich.	VBAC Safer than you think	ObG Management	14	56	2002	Article discussing some of the literature on VBAC, pros and cons, management with a favorable tilt towards VBAC.
Ould France	Epidemiological features of uterine rupture in West Africa (MOMA Study)	PaedPerinatlEpidemiol	16	108	2002	Cohort study identifying 25 cases of clinically symptomatic uterine rupture in a population of 20,326 deliveries. Five variables were significantly associated with uterine rupture: PCS, malpresentation, limping, CPD and high parity.
Petrikovsky Nassau U Med Cent, NY	"Endoview" project of intrapartum endoscopy	JSLS	6	175	2002	28 patients with unknown or poorly documented scar were subjected to intrauterine endoscopy after ROM. Were able to visualize all scars.

Shipp Harvard	The association of maternal age and symptomatic uterine rupture during a trial of labor after prior Cesarean Delivery	OG	99	585	2002	Retro., evaluated charts on all patients attempting TOL over a 12 year span, one prior CS, no prior vaginal deliveries. Overall, 32 (1.1%) uterine ruptures occurred among 3015 patients. Of women < 30 years old. The risk of rupture was 0.5% and for those > 30 the risk of rupture was 1.4%. After controlling for birth weight, induction, augmentation and inter-delivvery interval, the odds ratio for symptomatic uterine rupture for women > 30 yo was 3.2 (95% confidence interval 1.2, 8.4)
Smith Cambridge U	Risk of perinatal death associated with labor after previous cesarean delivery in uncomplicated term pregnancies	JAMA	287	2684	2002	Population based, retro, cohort. 313,238 singleton, cephalic term births. There were 15,515 attempted TOL with an overall delivery related perinatal death rate of 12.9/10,000 deliveries. This was approximately 11 times greater than the risk of planned cesarean section and more than double the risk with multiparous women in labor and similar to the risk among nulliparous women in labor. Conclusion: The absolute risk of perinatal death associated with TOL following previous CS is low. However, in our study, the risk was significantly higher than that associated with planned repeat cesarean delivery and there was a marked excess of deaths due to uterine rupture compared with other women in labor.
Sobande Saudi Arabia	Induction of labor with prostaglandin E2 vaginal tablets in parous and grand multiparous patients with PCS.	IJOG	78	19	2002	Prospective study of 113 patients with one PCS of low parity and high parity and induction of labor with prostaglandin tablets. Found no statistical difference in complications. There was one uterine rupture in each group.
Spaans The Netherlands	Risk factors at cesarean section and failure of subsequent trial of labor	EurJOGReprodBiol	100	163	2002	Retro. of hospital records 1988-1999 of index pregnancy compared to subsequent pregnancy for successful outcome VBAC. Conclusion: Women who attempt VBAC may be informed that a labor pattern of their index pregnancy characterized by oxytocin use, contractions of more than 12 hours and slow dilatation is associated with a reduced chance of success.
Stotland UCSF	Delivery strategies for women with a previous classic cesarean delivery: a decision analysis	AJOG	187	1203	2002	Hypothetical cohort analysis, predicted that a 36 weeks delivery may be preferable providing a lower risk of severe adverse outcomes and higher maternal quality of life.
Taylor St. Alexius, Illinois	Uterine rupture with the use of PGE2 vaginal inserts for labor induction in women with previous CS.	JRM	47	549	2002	Retro., 58 patients with Hx of PCS undergoing induction of labor with PGE2. 10% of these experienced a uterine rupture. Conc: the risk of UR is significantly increased when a PBE2 vaginal insert for CX ripening/induction is used.
Toppenberg Tennessee	Uterine rupture: what family physicians need to know	AmFamPhys	66	823	2002	Review article
Turner Ireland	Uterine Rupture	BestPractResClinOG	16	69	2002	Chapter examines the incidence, etiology, clinical presentation, complications and prevention of uterine rupture. The key factor in the cause of rupture is whether or not the uterus is scarred and usually occurs after a TOL in a patient with a PCS.
Walker Australia	Strategies to address global CS rates: a review of the evidence	Birth	29	28	2002	Discussion of interventions that have been used to attempt to reduce Cesarean sections.
Weimin Shangi, China	Effect of early pregnancy on a previous lower segment CS scar	IntJGynOb	77	201	2002	Retro of 15 cases of early pregnancy implanting on uterine scar from previous CS
Akar Turkey	Fetal survival despite unrecognized uterine rupture resulting from previous unknown corporeal scar.	Arch GynOb	265	89	2001	Case report of uterine rupture

Al-Jufairi Salmaniya Medical	Risk factors of uterine rupture	Saudi Med J	22	702	2001	45 uterine ruptures for an incid of 1 in 2213 deliveries. Risk factors for uterine rupture include: previous cesarean, prior CS for CPD, malpresentation, induction and augmentation. Conclusion: Careful monitoring needed. Use of Oxytocin or prostaglandin should be used judiciously to prevent catastrophic uterine rupture.
Ayres U of Mich.	Characteristics of fetal heart rate tracings prior to uterine rupture	IntJGynOb	74	235	2001	Retro eval of FHT for 2-hour period before uterine rupture (dehiscence excluded) 11 patients had uterine rupture, 7 of the 11 had operative or post-operative complications. There were no maternal deaths. 8 tracings were available for review, 7/8 (87.5%) had recurrent late decelerations and 4/8 with terminal bradycardia. All 4 infants with fetal bradycardia were preceded by recurrent late decelerations. Conclusions: The most common FHT pattern occurring before uterine rupture was recurrent late decelerations and bradycardia.
Bais The Netherlands	VBAC in a population with a low overall CS rate.	EurJObGynReprodBiol	96	158	2001	Prospective, population based study. Dutch overall CS rate of 6.5%. Study of 252 patients with previous CS. The TOL rate was 73%, success rate was 77%. The reason for the first CS influenced success rate. Complications, morbidity and mortality were not different between ERCS, TOL and emergency CS groups except for a higher incidence of hemorrhage in the elective CS group.
Beckett London	VBAC: the European experience	ClinOG	44	594	2001	Review of the European experience with VBAC.
Blanchette Metro West Medical	Is VBAC safe? Experience at a community hospital	AJOG	184	1478	2001	4-year prospective, cohort in a community hospital. Total number of PCS were 1481, 727 had ERCS whereas 754 attempted VBAC. Found that the attempted VBAC rate declined significantly in the last two years. There were 2 neonatal deaths caused by uterine rupture. 12 uterine ruptures occurred for a rate of 1.6% and 11 of the 12 ruptures involved with induction or augmentation of labor. Conclusions: VBAC is safe provided that induction of labor is not used.
Bretelle France	VBAC following 2 previous CS	EurJOGRB	94	23	2001	Retro, 180 patients with 2 previous CS, 96 had normal pelvic dimensions and were allowed a TOL. Success rate was 65.5%. There were 3 scar dehiscences, one requiring hysterectomy for hemorrhage with uterine atony
Bujold Quebec	Should we allow a TOL after a PCS for dystocia in the second stage of labor?	OG	98	652	2001	Retro, all attempted TOL after PCS from 1990 to 2000. There were 2002 patients, 11% (214) had CS for dystocia in the second stage of labor, 33% (654) for dystocia in the first stage of labor and 57% (1134) for other indications. The success rates were as follows: CS for second stage dystocia was 75%, dystocia in the first stage was 65.6% and for other indications the success rate was 82.5%
Chauhan Spartanburg, SC	Mode of Delivery for the morbidly obese with prior cesarean delivery: Vaginal versus repeat cesarean section	AJOG	185	349	2001	69 patients weighing > 300 pounds and had history of previous CS over a 3 year span. 39 (57%) underwent an elective repeat CS, 30 (43%) women attempted VBAC. Successful VBAC occurred in 13%, indications for CS were labor arrest (46%), fetal distress (38%), and failed induction (15%) The rate of infectious morbidity and wound breakdown was higher in the trial of labor group. Conclusion: The success rate for a vaginal delivery in the morbidly obese women with a prior CS is less than 15% and more than half of the patients undergoing a trial of labor have infectious morbidity.
Choy-Hee Emory	Misoprostol induction of labor among women with a history of cesarean delivery	AJOG	184	1115	2001	Previous reports have suggested a uterine rupture rate of 6% using misoprostol. Retro of 48 patients attempting VBAC given misoprostol compared with 377 given misoprostol without that history. Women attempting VBAC had a CS rate of 56% versus 28% of those receiving misoprostol but no Hx of CS. There was no difference in overall complication rates. There were no uterine ruptures.
Chung Stanford	Cost effectiveness of a trial of labor after previous CS	OG	97	932	2001	Statistical model looking at cost effectiveness of VBAC versus repeat CS. Found that if there was a 0.74 probability of success than VBAC would be cost effective.

Cohen Beth Israel	Brief history of VBAC	ClinOG	44	604	2001	Review of the history of VBAC. With the safety of repeat CS and the known rare and catastrophic outcomes related to uterine rupture, the future of VBAC remains as uncertain today as it was during Cragin's time.
Coleman Grady Memorial	VBAC among women with gestational diabetes	AJOG	184	1104	2001	Retro, VBAC with and without gestational diabetes. 156 gestational VBAC compared with 272 similar VBAC but no gestational diabetes. Women with gestational diabetes who attempted VBAC were significantly more likely than controls to be delivered abdominally. Those successful VBAC with gestational diabetes were more likely to have an operative delivery with forceps or vacuum.
D'Orsi Brazil	Factors associated with VBAC in a maternity hospital of Rio de Janeiro	EurJObGynReproBiol	97	152	2001	Case control record review, 141 VBAC and 304 controls, greater probability of success associated with one previous CS, CX > 3 cm on admission, < 37 weeks gestation, Hx of one previous VBAC,
Davis	VBAC. Study's focus on induction vs spontaneous labor neglects spontaneous deliver.	BMJ	323	1307	2001	
Flamm UC, Irvine	VBAC: reducing medical and legal risks	ClinOG	44	622	2001	Summary, One lesson is that when a poor outcome occurs, even if you have made no technical errors and even if patient rapport is wonderful, you may still be sued and you may lose. It must be emphasized that once a uterus is scarred, the risk of any and all subsequent pregnancies is increased and selecting one mode of birth instead of the other cannot eliminate this risk. Things to watch out for: 1. Previous classical or T-shaped uterine incisions. Estimates for low vertical ruptures range 1-5% and for classical 5-10%. There is no data on a T incision but generally thought to be contraindicated. 2. Unknown scar, probably OK, one of the largest studies showed a 1% rupture rate with 90% unknown scar. 3. Placenta previa/accreta, this is a major potential risk for life threatening placenta previa accreta. The risk may be as high as 30% with Hx of PCS. 4. Misoprostol, avoid, also avoid outpatient cervical ripening. 5. More than one PCS: exercise caution, risk of rupture is 1.8%. 6. Oxytocin: exercise caution, oxytocin can cause rupture in both scarred and unscarred uteri. 7. Clinical signs of uterine rupture, none are "classic", certainly heavy vaginal bleeding is always of concern, dramatic loss of station. 8. Fetal Monitor: Prolonged deceleration of FHT to 60-70 lasting more than a few minutes requires rapid intervention, as do variable decelerations that are severe and do not respond to nursing intervention. 9. Informed Consent: Must find a middle ground between over informing or a "scorched earth" process versus not informing the patient enough. Strongly suggests a formal consent form balancing the risks of repeat CS and the risks of VBAC. 10. Response Time: There is no "17 minute rule" however since uterine rupture is the main risk of VBAC, it would be prudent for physician to remain in or very near the hospital while a patient is attempting VBAC. Practicing crash CS drills may also help as would having a minimal emergency CS tray always available to eliminate the time of counting instruments before the baby is out. If rapid response is not possible, patients should have a repeat CS or be referred to a center where physicians and facilities are immediately available.
Flamm Kaiser	VBAC	BestPresctResClinObGyn	15	81	2001	Review of VBAC.
Goetzl Baylor	Oxytocin dose and the risk of uterine rupture in trial of labor after cesarean	OG	97	381	2001	Case control study, 24 women in 12 years received oxytocin attempting VBAC. Found no sig difference in uterine rupture. Value very limited in view of small numbers
Hamilton Canada	Dystocia among women with symptomatic uterine rupture	AJOG	184	620	2001	Case control review of 19 women with uterine ruptures.

Hibbard U of Chicago	Failed VBAC: how risky is it? I. Maternal Morbidity	AJOG	184	1365	2001	Retro, chart review, 29,255 deliveries, 2450 had previous CS. 1344 patients who were appropriate attempted VBAC or 75% of all appropriate candidates. There was a 69% success (921 with 424 unsuccessful) The overall rate of uterine rupture was 1.1% of all women attempting VBAC, the rate of true disruption was 0.8% and the rate of hysterectomy was 0.5%. Blood loss was less but chorioamnionitis was higher in the women attempting VBAC. Compared with patients who were successful in attempts at VBAC, those who ended up with CS had a uterine rupture rate of 8.9%.
Johnson	VBAC. Safety of single layer suturing in CS must be proved	BMJ	323	1307	2001	
Kobelin Harvard	Intrapartum management of VBAC	ClinOG	44	588	2001	Review of candidates, induction and labor management. Conclusion: Only complete and thorough counseling between patient and physician weighing the risks and benefits of VBAC should ultimately govern who attempts a TOL. Women with PCS are at increased risk for complications whether they achieve successful VBAC, failed VBAC or opt for elective CS. Research should continue to focus on identifying those who are highest risk for complications as well as those who are most likely to succeed. Meanwhile, the only impact the individual obstetrician can have on decreasing the communal risk of VBAC is by vigilance, with respect to decreasing the rate of primary CS performed.
Lieberman Harvard	Risk factors for uterine rupture during a TOL after CS.	ClinOG	44	609	2001	Review, MEDLINE search of risk factors for uterine rupture. **Type of scar**: low transverse has risk of rupture of 1%, low vertical of 1.1% and classical of 12%. **Number of previous CS**: wide variety of findings, because there are substantial data suggesting that even 2 CS may be associated with a substantial increased risk of rupture**. Previous vaginal deliveries**: data somewhat inconsistent. **Interdelivery interval**: short interdelivery interval was associated with a 3-fold increase in uterine rupture. Postpartum fever after CS: associated with a 3 fold increased risk of rupture. **Maternal age**: > 30 years old associated with a 2.7 fold increased risk of rupture. **Macrosomia**: not associated with a large risk of uterine rupture. **Postdates**: no sig. Increase. **Breech and external cephalic version**: data not definitive but not likely to be associated with an extremely high rate of uterine rupture. **Induction/Augmentation of Labor**: Data from the largest studies suggest that ocytocin is associated with an increased risk of rupture. Recent studies have raised concerns that misoprostol may be associated with an unacceptably high risk of uterine rupture.
Lyndon-Rochelle, University of Washington	Risk of uterine rupture during labor among women with a prior cesarean delivery	NEJM	345	3	2001	Population based, retrospective cohort analysis of all women who gave birth via CS with their first child and then delivered a second child in Washington state from 1987 to 1996. (total of 20,095 patients) Risk of uterine rupture was evaluated for repeat CS, spontaneous labor, induced labor. Results: Uterine rupture occurred in 1.6/1000 with repeat CS (no labor) Uterine rupture occurred 5.2/1000 with spontaneous onset labor. Uterine rupture occurred 7.7/1000 in those whose labor was induced without prostaglandins. Uterine rupture occurred 24.5/1000 in those with prostaglandin induction. Relative risk of uterine rupture: 3.3 with spontaneous labor, 4.9 relative risk with induced labor (not prostaglandin) and 15.6 relative risk of rupture with prostaglandins. The incidence of fetal death was 5.5 with uterine rupture
Macones	Predicting outcomes of TOL in women attempting VBAC: A comparison of multivariate methods with neural networks	AJOG	184	409	2001	Assess the utility and effectiveness of a neural network for predicting the likelihood of success of VBAC relative to standard multivariate predictive models. Identified 100 failed VBAC and compared with 300 successful VBAC by both multivariate predictive model and by a neural network using a back-propagation algorithm. Found that the multivariate model was better able to predict outcome.

Melnikow U of C Davis	VBAC in California	OG	98	421	2001	51 hospitals selected from 267 nonfederal acute care hospitals in a stratified sample. Hospitals were then categorized as having high, medium and low risk-adjusted CS rates using a logistic regression model. 369 charts were reviewed, 312 were potentially eligible for VBAC, for evidence of counseling regarding trial of labor. Hospitals with low rates of CS documented counseling 99% of the time compared with 85% and 79% respectively for intermediate and high CS rates. Completed VBAC rates were 71%, 39% and 31% respectively. They also found that once a patient consented to attempt VBAC, the rates of success were comparable for all institutions.
Michael F. Greene, M.D. Massachusetts General	Vaginal Delivery after Cesarean Section — Is the Risk Acceptable?	NEJM	345	54	2001	**Editorial**: The 91 women in the study by Lydon-Rochelle et al. who had uterine ruptures had substantially greater rates of several postpartum complications, suggesting that these ruptures were clinically important and not merely instances of asymptomatic dehiscence. Notably, the incidence of infant death was 10 times as high among the 91 women who had uterine rupture as among the 20,004 who did not (5.5 percent vs. 0.5 percent). It is important to emphasize that this study, like all others to date, was an observational study of the results of clinical practice and not a randomized trial. The relative risk of 3.3 in the present study for uterine rupture in women with a spontaneous onset of labor, as compared with those who underwent elective repeated cesarean section, is consistent with the odds ratio of 2.1 for a similar comparison reported in a recent meta-analysis of 11 studies involving a total of 39,000 subjects. This meta-analysis also found significant increases in the risks of fetal death (odds ratio, 1.7) and of an Apgar score of less than 7 at five minutes (odds ratio, 2.2) associated with a trial of labor as compared with elective repeated cesarean delivery. These risk estimates reflect broad experience in a wide range of clinical-practice settings. There is no reason to believe that improvements in clinical care can substantially reduce the risks of uterine rupture and perinatal mortality. Given the potential risks, why might a woman choose a trial of labor? Women who successfully deliver vaginally generally have less postpartum discomfort, shorter hospital stays, and shorter periods of disability than women who undergo repeated cesarean section. A trial of labor may be associated with a lower risk of fever than elective repeated cesarean section. Women who plan future pregnancies may prefer to avoid repeated cesarean deliveries that further increase the risks of uterine rupture, placenta accreta, and morbidity related to multiple abdominal surgeries. Finally, there may be social and cultural reasons why some women prefer vaginal delivery. … After a thorough discussion of the risks and benefits of attempting a vaginal delivery after cesarean section, a patient might ask, "But doctor, what is the safest thing for my baby?" Given the findings of Lydon-Rochelle et al., my unequivocal answer is: elective repeat cesarean section.
Myles Texas Tech	VBAC of twins	JMaternFetal Med	10	171	2001	Retro, control of all twins VBAC, 19 twin pregnancies with 57 control VBAC. The success of VBAC twins was 84.2% compared with 75.4% for controls. One uterine rupture occurred in control group and one dehiscence in the study group. The incid of PPH was 5.3% for both groups.
Naiden Yakima Valley	Using active management of labor and VBAC to lower CS rates: a 10 year experience	AJOG	184	1535	2001	Retro, 10-year period, overall CS rate decreased from 16.6% to 10.9% with primary rate decreasing from 7.4 to 3.8%. During this time, active management of labor and encouraging VBAC statistically increased.

November Harvard	Cost analysis of VBAC	ClinOG	44	571	2001	Review of cost analysis of all aspects of VBAC. A VBAC program will likely prove cost-effective only in select women with a previous scar who have a high likelihood of success because the greatest expenses remain with patients who experience adverse outcome that are more frequently associated with a failed TOL.
Nwachuku Albert Einstein, Phila	Safety of misoprostol as a cervical ripening agent in VBAC	OG	97 (Sup)	S67	2001	Retro, 3 VBAC groups compared spontaneous labor (SL), those who received oxytocin (OA) and those who received misoprostol and oxytocin (M+O) There were 100 in the M+O, 115 in SL and 167 in OA. There were no uterine ruptures and 3 uterine dehiscences none of which were in the M+O group. Success was not statistically different between the groups. Conclusion: in contrast to published reports and ACOG's Committee Opinion 228, misoprostol is not assoc. with an increased risk of uterine rupture. Misoprostol in VBAC patients is a relatively safe method for cervical ripening and appears as successful as spontaneous labor or oxytocin in vaginal delivery.
Quilligan U of C, Irvine	VBAC: 270 Degrees	JobGynRes	27	169	2001	
Rabinerson	VBAC?	AJOG	184	780	2001	
Sachs Beth Israel	VBAC: a health policy perspective	ClinOG	44	553	2001	Review of health policy aspects of VBAC. "A great deal of harm is being caused by advocating an ideal CS delivery rate."
Shipp Harvard	Inter delivery interval and risk of symptomatic uterine rupture	OG	97	175	2001	Review of records, 12 years, limited to one previous CS and no VBAC, delivered at term with singleton. 2409 patients had TOL after one PCS and complete data. There were 29 uterine ruptures (1.2%). The rate of rupture was 2.25% with interval of <=18 months and 1.05% if interval >19 months. Conclusion: Inter delivery intervals of up to 18 months were assoc. with 3 times increased risk of symptomatic uterine rupture compared to longer inter delivery intervals.
Sims MUSC	VBAC: to induce or not to induce	AJOG	184	1122	2001	Prospective, observational analysis of 505 pts with Hex of previous CS. Three cohorts developed: repeat CS without TOL (269), spontaneous trial of labor (179) and induced trial of labor (57). VBAC successful in 77% of those in spon labor versus 57.9% of induced labor. Uterine scar separation more common in induced group (7%) than in the repeat CS group (1.5%) Conclusion: Induction of labor in women attempting VBAC is associated with a significantly reduced rate of successful vaginal delivery and an increased risk of serious maternal morbidity.
Wood Australia	TOL after 4 CS: a case report and literature review	AusNZJOG	41	233	2001	Case report of successful VBAC after 4 previous CS.

Yap UCSF	Maternal and neonatal outcomes after uterine rupture in labor	AJOG	184	1576	2001	Retro chart review of all cases of uterine rupture 1976-1998. There were 38,027 deliveries; attempted VBAC rate was 61.3% with 65.3% successful. There were 21 cases of uterine rupture or scar dehiscence. (17 had Hx of prior CS—10 one previous CS, 3 unknown scar, 1 classical CS, 2 with 2 previous CS and one with 4 previous CS.) Of the 4 with no previous Hx of uterine surgery, one had a bicornuate uterus. 16 women had Sx of increased pain, vaginal bleeding or altered hemodynamic status. 2 patients required transfusions and 3 required hysterectomies. There were no maternal deaths. The fetal heart rate pattern in 13 cases showed bradycardia and repetitive variable or late decelerations. 2 cases of fetal or neonatal death occurred but both in markedly premature infants. The cord pH was > 7.0 in 13 infants. All live born infants were without evidence of neurologic damage at the time of discharge. Conclusion: Relative small risk of uterine rupture. In an institution that has in-house Ob, anesthesia and surgical staff in which close monitoring of fetal and maternal well-being is available, uterine rupture does not result in major maternal morbidity or mortality or in neonatal mortality
Zelop Lenox Hill Hosp	Trial of labor after 40 weeks' gestation in women with prior cesarean	OG	97	391	2001	Review of 12 years of 2775 patients with one prior scar and no other deliveries, 1504 were del at or before 40 weeks and 1271 were delivered after 40 weeks. Spontaneous uterine rupture rate before 40 weeks was 0.5% and 1.0% after 40 weeks. For induced labor, the uterine rupture rate was 2.1% B4 40 weeks and 2.6% after 40 weeks. Rates of CS as follows: Spon labor B4 40 weeks-25%, after 40 weeks 33.5% Induced labor B4 40 weeks-33.8%, after 40 weeks 43% Conclusion: The risk of uterine rupture does not increase substantially after 40 weeks but is increased with induction of labor regardless of gestational age.
Zelop Lenox Hill Hosp	Outcomes of TOL following previous CS among women with fetuses weighing > 4,000 grams	AJOG	185	903	2001	Record review of women at term with one PCS comparing outcomes of infants > 4,000 grams with those less than 4,000 grams. There were 365 (of 2749 patients) whose infants weighed > 4,000 grams. The CS rate was 40% for the larger infants and 29% for the small group giving the larger group a 1.7 fold increase in the CS rate. There was not a statistically different rate of uterine rupture. The rate of uterine rupture was 2.4% if the infant weighed > 4250 grams. Conc: VBAC is still a reasonable consideration for the infant weighing. 4,000 grams but some caution should apply when infant weighs 4250 grams.
Zinberg ACOG	VBAC: a continuing controversy	ClinOG	44	561	2001	Review of VBAC and ACOG's stance. Reasons for ACOG's more aggressive approach to the availability of personnel and facilities: First the risk of uterine rupture is at least 1% and among these ruptures, some possibly catastrophic, the rate of maternal and/or fetal morbidity is 10-25%. Moreover, there is concern that uterine rupture in VBAC is an underreported event, making this approximate 1% risk to be even higher. Second, based on reports from members of ACOG, uterine rupture almost always results in legal action, no matter what the clinical outcome and no matter how excellent the clinical care. "Medical positions on subjects of long term debate often demonstrate shifting, evolving or even cyclic patterns. The VBAC controversy is no exception to this premise. The concept that VBAC is a safe and effective approach for may patients is a well-established fact. This does not mean that it is appropriate for all women contemplating a pregnancy in the presence of a uterine scar. In the case of VBAC, the pendulum may have swung too far and it may be time to return closer to a middle ground. The medical community should not use VBAC as its principle tool to respond to societies economic and social concerns about the increasing CS rate rather individual patient safety and the dictates of best evidence-based medical practice should determine the standard.

Appleton Australia	VBAC: an Australian multicentre study. VBAC Study Group. [In Process Citation]	AustNZJOG	40	87	2000	Retro, 11 hospitals, 5 years. Total deliveries of 234,015 of which 21,452 (9.2%) had one or more PCS. Within the PCS group, 5419 (25.3%) delivered vaginally. There were 62 cases of significant UR with no maternal deaths. Perinatal mortality with UR was 25% and serious maternal morbidity (usually requiring hysterectomy) was 25% with UR.
Appleton Melbourne	Knowledge and attitudes about VBAC in Australian hospitals. VBAC Study group.	AustNZJOG	40	195	2000	Survey of staff physicians, 67% response (900). 53% felt that VBAC should be actively encouraged and 47% felt it should be simply presented as an option.
Asakura Nippon Med School	Prediction of uterine dehiscence by measuring lower uterine segment thickness prior to the onset of labor evaluation by TVUS.	JNipponMedSch	67	352	2000	186 term gravidas, PCS, had the thickness of the LUS measured and its correlation with uterine dehiscence/rupture was investigated. There were no cases of rupture; there were 9 cases (4.7%) of dehiscence. The thickness of the LUS in those who developed dehiscence was sig. less than those who did not have dehiscence. Found that if the thickness was >1.6 mm the risk of dehiscence was very small.
Bakashi SUNY	Indications for and outcomes of emergency peripartum hysterectomy. A 5 year review	JRM	45	733	2000	Retro., evaluated 39 cases of emergency peripartum hysterectomy. The overall incidence was 2.7/1,000 liver births. The relative risk was increased for PCS, cesarean and placenta previa.
Bayer-Zwirello Tufts	ACOG's 1999 VBAC guidelines: a survey of western Massachusetts ob services	OG	95 sup	S73	2000	Six OB services surveyed, all returned survey representing 8,000 annual deliveries, had an 18.5% CS rate. From 1994, all reported a decline in overall CS rate and an increase VBAC rate. 50% considered "immediately" available to mean CS within 30 minutes and 50% considered it to be within 15 minutes. 67% describe "physician availability" for anes as in hospital coverage and 33% as anes in L+D.
Bebbington U of Brit. Col.	Uterine Rupture following induction of labor with PCS.	AJOG	182	S137	2000	Retro review, of all cases of uterine rupture 1992-1998 in 3687 women attempting TOL (0.5%). Induction was carried out in 1097 women, 8 ruptures occurred with either oxytocin or PGE2 for a rate of 0.7%. There was no increased risk when compared with those having spontaneous labor.
Blackwell Detroit	VBAC in the diabetic gravida	JRM	45	987	2000	Retro, of class a-r diabetics delivering at >37 weeks gestation with Hx of one PCS. 32 patients were attempting VBAC, 18 of which were successful (43.7% or a CS rate of 56.3%). This was compared with controls-127 without PCS had a CS rate of 26.3%. There were no cases of uterine rupture and no differences in the frequency of endometritis or neonatal intensive care admission. Conc: VBAC success rates appeared to be lower for diabetic gravidas. Although maternal and neonatal complication rates were low, further studies are necessary to determine the safety of VBAC in this population.
Burke U of Penn	UR during a failed TOL: are there any identifiable risk factors?	OG	95	S42	2000	10 year retro, found 25 cases of UR with attempted VBAC. Found no specific factors in the management of a TOL were clearly assoc. with UR.
Chanrachakul Thailand	Epidemic of CS at the general, private and university hospitals in Thailand	JobGynRes	26	357	2000	Questionnaire, overall response was 88%, Mean CS rates were 24%, 48% and 22% for general, private and university hospitals respectively. CS rates had increased in the last 5 years by 78%, 50% and 66% respectively. Repeat CS was the most common indication for CS in the private hosp. (63%) and 88% in the university hospitals. ECV and VBAC were performed in only 12% of the hospitals.
Chauhan Spartanburg, SC	Neonatal acidemia with TOL among parturients with PCS, a case control study	JMatFetMed	9	278	2000	Prospective, compared attempted VBAC with resultant acidemic infant (cord pH < 7.15) compared with the next 4 infants of attempted VBAC without acidemia. The frequency of neonatal acidemia amongst TOL patients overall was 12%. Found that the acidemic infants significantly weighed more, had a higher failed VBAC rate and a higher uterine rupture rate.

Clark U of Utah	Is VBAC less expensive than repeat CS?	AJOG	182	599	2000	Compared total medical costs of VBAC with those of ERCS with both short and long term neonatal costs assoc. with such procedures taken into account. Assumed a 70% successful VBAC rate and delivery in a tertiary center with a mean UR to delivery time of 13 minutes, the net cost differential ranged from a saving of $149 to a loss ot $217, depending on morbidity assumptions. For VBAC success <70%, TOL with 2 prev. CS, and institutional factors increasing the perinatal morbidity rate by just 4%, TOL resulted in a net financial loss to the health care system regardless of all other assumptions made. Conclusion: when costs as opposed to charges are considered and the cost of long-term care for neurologically injured infants is taken into account, TOL is unlikely to be assoc. with a significant cost saving for the health care system. Factors other than cost must govern decisions regarding TOL or ERCS.
Curtin CDC	CS and VBAC rates stalled in the mid-1990s	Birth	27	54	2000	
Esposito	Association of interpregnancy interval with uterine scar failure in labor: a case-control study	AJOG	183	1180	2000	Case-control, of uterine scar failures in TOL measuring interpregnancy interval. Found that an interpregnancy interval of < 6 months was sig more prevalent among patients with patients with scar rupture. Conc: interpregnancy interval was inversely associated with likelihood of UR during subsequent labor
Forsnes US Navy	Bladder rupture assoc. with UR. A report of 2 cases occurring during VBAC	JRM	45	240	2000	Case report, 2 pts with posterior bladder wall rupture in assoc. with rupture of low transverse incision. The potential for bladder injury should be included in the patients antepartum counseling
Fujii	Successful pregnancy following antenatal closure of uterine wall defect	IntJGynOb	68	261	2000	
Gherman US Navy	Uterine Rupture associated with VBAC: a complication of intravaginal misoprostol?	GynObInvest	50	212	2000	Case report of uterine rupture after a single 25 microgram dose of intravaginal misoprostol in a patient with 2 prior CS.
Gotoh Nagasaki University	Predicting incomplete UR with vaginal sonography during the late second trimester in women with prior cesarean	OG	95	596	2000	Serial TVUS of the thickness of the lower uterine segment performed on 374 controls and 348 patients with hx of PCS. Found that the thickness decreased from 6.7 mm to 3 mm in controls and 6.8 mm to 2.3 mm in pts with PCS. 11/12 patients with lower uterine segment less than the mean control minus 1 standard deviation had a very thin lower uterine segment at time of delivery. 17/23 women with LUS < 2mm had intrapartum incomplete UR. Conc: TVUS is useful for measurement of the LUS after PCS.
Grobman Northwestern University	Cost-effectiveness of elective CS after one prior LTCS	OG	95	745	2000	Decision tree model incorporating a Markov analysis was used to examine the reproductive life of a hypothetical cohort of 100,000 pregnant women whose only prior pregnancy was via CS. Routine CS would cause an additional 117,748 CS, 5500 maternal morbid events and 179 million $. The prevention of one major adverse neonatal outcome requires 1591 CS and 2.4 million $. Conc.: routine ECS for second delivery results in an excess of maternal morbidity and mortality and a high cost to the medical system.
Katz Sacred Med Center	Use of misoprostol for cervical ripening	SMJ	93	881	2000	Open label setting of 470 pts induced, 254 with misoprostol, 144 with dinoprostone. With misoprostol, mean time from beginning contractions to delivery was 7 hours, 30 minutes with 85% vaginal birth. 23 patients with previous CS got misoprostol and delivered vaginally. Conc: misoprostol was found to be a sage and effective agent for cervical ripening.

Kirkendall	Catastrophic UR: maternal and fetal characteristics	OG	95 (4 Supp 1 L)	S74	2000	Childbirth Injury Prevention Foundation Used National Registry of Brain-injured Neonates. Of the 81 patients with UR, the number of PCS as follows: No previous CS-11% (9) rupture, One PCS-61% (49 patients) rupture, 2 PCS-27% (22 patients) rupture. Complications included 2 maternal deaths, 14 bladder injuries, 12 hysterectomies, 48 anemias, and 27 transfusions. Of the 82 fetuses, 64 were extruded into the abdomen. (27 partially and 37 completely extruded) Infant mortality within one year was 28%.
Marshak North Shore Univ. Hosp. NY	Prognostic indicators for successful VBAC	OG	95	S38	2000	Retro chart review of 444 undergoing attempted VBAC. Statistically positive predictors were Hx of previous vaginal delivery, spontaneous rather than induced labor, greater dilatation and greater effacement. Heavier women and the use of ripening agents led to a decreased success rate. In women previously having CS after arrest of descent at full dilatation, 74.5% delivered vaginally which is in marked contrast to prior literature reporting success rates of 16%.
MMWR	Use of hospital discharge data to monitor uterine rupture-Massachusetts 1990-97	MMWR Morb Mort Wkly Rep	49	245	2000	During 1990-1997 the proportion of vaginal deliveries among women with previous CS increased 50% from 22.3% to 33.5%. Concern about increased risk of UR cannot be addressed from their data because of lack of adequate specificity for UR surveillance.
Mozurkewich U of Mich.	Elective repeat CS versus TOL: a meta-analysis of the literature from 1989 to 1999	AJOG	183	1187	2000	Medline, etc meta-analysis found 52 controlled studies, 37 of which were excluded because many of controls were not eligible for TOL. 15 studies with a total of 47,682 patients were included. Uterine rupture occurred more frequently amongst patients undergoing a TOL versus elective CS. (odds ratio 2.10) The TOL group had an increase in fetal/neonatal death (odds ratio 1.71) and more 5 minute Apgar scores <5 (odds ratio 2.24). The mothers undergoing a TOL were less likely to have febrile morbidity, require transfusion or hysterectomy. Conc: a TOL may result in small increases in the UR rate and fetal/neonatal mortality rates with respect to elective CS. Maternal morbidity, including febrile morbidity, need for transfusion or hysterectomy may be reduced with a TOL.
Myles Texas Tech	VBAC in the twin gestation	OG	95 sup	S65	2000	Retro, 19 twin pregnancies attempting VBAC along with 57 controls eval. The VBAC success rate for twins was 84.2% and 75.4% for controls. The incid of PPH was 5.3% for both groups. One UR occurred in the control gp, none in the twin group.
Poma U of Illinois	Rupture of a cesarean-scarred uterus: a community hospital experience	JNatMedAssoc	92	295	2000	Retro, studied deliveries and VBAC from 1988 to 1997. During 1994 strategies were developed to reduce cs rate. Found that the total cs rate decreased from 24.3% to 17.9% whereas the primary cs rate decreased from 14.9 to 10.3%. The repeat CS rate decreased from 9.4% to 7.6%. The VBAC rate increased from 13.0 to 28.6% where as the incid of UR did not change. Conc: during the study period, the CS rate decreased while the VBAC rate safely increased. The incid of UR remained unchanged.
Ravasia Calgary	Uterine rupture during induced TOL among women with previous CS.	AJOG	183	1176	2000	Retro, all deliveries between 1992 and 1998 studied. There were 2119 TOL, 575 of which were induced (27%). There overall uterine rupture was 0.71% but the rupture rate with induction was sig higher 1.4%. Rupture was highest when prostaglandin E2 was used. (2.9%)
Reddy Thomas Jefferson U	Population adjustment of the definition of the VBAC rate	AJOG	183	1166	2000	Evaluated the effect of removing non-candidates for a TOL from the statistics for VBAC. All patients with hx of PCS were classified as candidates or non-candidates. Found that the maternal fetal medicine service had higher non-candidates than either the private or resident clinic. Previously, the fetal maternal medicine service had a lower VBAC success rate, when non-candidates are controlled for their success rates are similar.
Shimonovitz	Successful first VBAC: a predictor of reduced risk for uterine rupture in subsequent deliveries	IsrMedAssocJ	2	526	2000	Retro, 26 VBAC del complicated by UR compared with 66 controls. Conc-once the patient has been successful once the risk of UR drops significantly. Risk factors for uterine rupture include: use of Pitocin, PGE2 and instrumental deliveries.

Shipp Mass General	Labor after PCS: influence of prior indication and parity	OG	95	913	2000	Retro, records reviewed of women undergoing TOL after PCS with nullips from 1984-1996. CS rate PCS Nullips Overall 28.7% 13.5% Breech 13.9% FTP 37.3% "Fetal Distress" 25.4% Other 24.8% Conclusion: Overall CS rates are higher for patients attempting VBAC than for nullips. Rates of CS were related to indication for prior CS, highest for failure to progress and lowest for previous breech.
Sirio U of Pittsburgh	Assessing regional variation in CS and VBAC in a major metropolitan area: improving health service delivery	OG	95 sup	S78	2000	Looked at 285 physicians at 22 Pittsburgh hospitals doing 26, 358 consecutive deliveries. Had overall CS rate of 19% and VBAC rate of 40.5% Conclusion: Significant variation among physicians for CS and VBAC rates suggests that decision making by physicians providing ob care is a major contributor to overall rates.
Sloan Pop. Council	Reduction of the CS rate in Ecuador	IntJGO	69	229	2000	Described a method to reduce CS by instituting hospital policy of co-management for CS.
Stone Australia	VBAC: a population study	PaediatrPerinatEpidemiol	14	340	2000	Retro of patients who gave birth and whose previous delivery was via CS.
Tatar Turkey	Women's perceptions of CS: reflections from a Turkish teaching hospital	SocSciMed	50	1227	2000	Discussion
Vineuza Med Col Ga.	Predicting the success of TOL with a simple scoring system	JRM	45	332	2000	Retro, applied the Troyer-Parisi scoring system to predict the success in a patient undergoing a VBAC attempt. Confirmed an inverse relationship between the Troyer-Parisi scoring system and a successful TOL.
Wang Taiwan	Posterior uterine wall rupture during labor	HumRepro	15	1198	2000	Case report of patient attempting VBAC at 38 weeks gestation. Labor course was smooth, no stimulation, with sudden onset of UR. UR resulted in maternal shock and ultimately neonatal death.
Wax	Twin VBAC	ConnMed	64	205	2000	Years 1988-98, one institution, case control, 12 sets of twins with Hx of PCS matched to 36 controls. 10/12 twin sets and 31/36 of controls delivered vaginally. The only difference was that the second twin had a longer NICU stay.
Wittich US Army	Uterine scar separation in patients undergoing TOL in one army hospital	MilMed	165	730	2000	General discussion, no data in abstract
Zelop Mass General	Outcomes of TOL following PCS beyond the estimated date of delivery	OG	95 (4 Suppl 1)	S79	2000	Retro., reviewed outcomes for all women (2,775) with Hx of one PCS and no other deliveries who had a TOL. Analysis included rates of symptomatic UR and CS for term deliveries prior to EDD and those after the EDD while stratifying for spontaneous and induced labor. The rate of rupture before 40 weeks gestation was 0.5% whereas the rate after EDD was 1%. For induced labor before 40 weeks that rate of UR was 2.1% and 2.6% for those beyond 40 weeks.
Zelop Lenox Hill Hosp	Effect of previous vaginal delivery on the risk of uterine rupture during a subsequent trial of labor	AJOG	1183	1184	2000	Retro for 12-year review of TOL with Hx of previous vaginal delivery and the risk of uterine rupture. 1021 patients with Hx of previous CS and prior vaginal delivery. The rate of UR was 1% with no previous vaginal delivery and 0.2% of those with a previous vaginal delivery.

Abitbol	Prediction of difficult vaginal birth and of CS for cephalopelvic disproportion in early labor	JMatFetMed	8	51	99	A total of 1692 patients were eval. In early labor. Predictions for were made combining clinical pelvimetry and fetal measurements on US for: 1. easy labor-vaginal birth, 2. difficult labor vaginal birth and 3. improbable vaginal birth-CS. The combined prediction either 2 or 3 was very accurate (362 of 370 or 97.8%) but the prediction of 2 and 3 was less significant. A similar prediction for 141 VBAC candidates showed that by sectioning electively the patients in whom CS was predicted would barely increase the CS rate.
Abu-Heija Jordan	Emergency peripartum hysterectomy at the Princess Badeea Teaching Hospital in north Jordan	JOGGynRes	25	193	99	Evaluation of 21 emergency peripartum hysterectomies with overall incid of 0.5/1,000 deliveries. 38% associated with abnormal placenta (many also had PCS) 33.3% were for ruptured uterus.
Blanchette	Comparison of the safety and efficacy of intravaginal misoprostol with those of dinoprostone for cervical ripening and induction of labor.	AJOG	180	1551	99	Retro, looked at 81 patients undergoing cervical ripening or induction of labor with prostaglandin E2 (dinoprostone). A comparison prospective analysis of 145 patients undergoing the same procedure with prostaglandin E1 (misoprostol). Findings: mean time to delivery was shorter in the misoprostol group, there was no increased cesarean rate, the incidence of hyperstimulation was higher in dinoprostone group. There were 2 uterine ruptures and one dehiscence with misoprostol group in patients attempting VBAC and 1 rupture in patients without uterine scar.
Callahan UNC-CH	Safety and efficacy of attempted VBAC beyond the EDC	JRM	44	606	99	Computerized database analyzed for attempted VBAC beyond 40 weeks. 90 pts matched with 90 controls. Results: successful VBAC was 65.6% compared with 94.4% of controls. Also found that 62% were successful is there were no previous vaginal births, 82% success was found if patient had at least one prior vaginal birth. Conc: the patient can be reassured that passing her due date does not alter the efficacy or safety of a TOL. No change in counseling is warranted simply due to the completion of 40 weeks' gestation.
Caron	The effect of public accountability on hospital performance: trends in rates for CS and VBAC in Cleveland, Ohio	OualManagHealthCare	7	1	99	14 item survey based on Joint Commission on Accreditation of Healthcare Organization admin to Cleveland hospitals to see if they have responded to public concern about improving CS and VBAC rates. Results showed that all hospitals are a various stages of the process to improve their CS and VBAC rates. From this, it is proposed that public accountability encourages quality improvement.
Caughey Harvard	Rate of uterine rupture during a TOL with one or two PCS	AJOG	181	872	99	Retro, all cases of TOL in 12 years at Brigham reviewed in patients with one PCS compared with two PCS. Women with one PCS (n=3757) had UR rate of 0.8% whereas those with 2 PCS (n=134) had rupture rate of 3.7%. Using logistic regression to control for variables, they found the odds ratio for UR in pts with 2 PCS was 4.8%. Conclusion: women with 2 PCS have an almost 5 fold greater risk for uterine rupture.
Chuang Columbia University	TOL versus ERCS for the women with a previous CS: a decision analysis	ProcAMIASymp		226	99	Decision analysis constructed, found "more patients' preference studies are needed"
Cunha Mozambique	Induction of labor by vaginal misoprostol in patients with PCS	ActaObGynScand	78	653	99	Modified, case-referent study comparing 57 patients attempting TOL after PCS with 57 patients Hx of PCS and an indication for induction. Conclusion: In a setting where human and material resources are extremely scarce, TOL by indicated induction with vaginal misoprostol is potentially a valuable alternative.

Faridi	2 or more CS-elective repeat or vaginal delivery	Zgeburtshilfe Neo	203	8	99	Review, quotes UR of 0-2.8% with fetal bradycardia as a diagnostic sign. Prompt intervention is necessary to minimize both fetal and maternal complications. At present there is no sufficiently predictive method to identify those women most likely to benefit from an elective CS.
Gregory Cedars Sinai Medical Center	VBAC and UR rates in California	OG	94	985	99	Ca discharge summaries to gather data. 536,785 deliveries in 1995, there was a 20.8% CS rate and 12.5% of patients had Hx of previous CS. Of women with PCS, 61.4% attempted VBAC and 34.8% were successful. There were 392 UR (0.07%), women with PCS were 17 times more likely to have UR.
Grischke Heidelberg	Puerperal uterine inversion with covered uterine rupture	Zgeburtshilfe Neo	203	123	99	Case report of uterine inversion after a PCS uterine rupture.
Haney Northwestern	Optional vaginal delivery rate. An informative indicator of intrapartum care.	JRM	44	842	99	Developed a statistical model with the following categories: V-S=standard vaginal, V-O=optional vaginal, C-S=standard cesarean and C-PA=potentially avoidable cesarean. A weighted equation was developed generating physician delivery scores, giving "extra credit" for V-O and a "debit" for C-PA. Conc: the optional vaginal delivery rate and delivery score are more informative indicators of intrapartum management acumen than is CS rate alone.
Lehmann Paris	Predictive Factors of the delivery method in women with CS scars	JGOBioRepro	28	358	99	Retro, multi center of 579 pts with PCS and who deliverer from 1/95-6/97. The rate of successful TOL was 74.5%, overall the morbidity was not increase in the TOL group. Conc: TOL should be allowed in most of the women with PCS. The bishop's score is the best predictor of mode of delivery. Induction of labor and a first CS for dystocia do not affect the chances of vaginal birth.
Macones U of Penn	The utility of clinical tests of eligibility for a TOL following a CS: a decision analysis	BJOG	106	642	99	Theoretical evaluation of 2 strategies for treating women with PCS: TOL for all or application of a hypothetical test. Conc: in developing tests to determine to whom to offer a TOL, investigators and clinicians must realize that a highly sensitive and specific test is needed.
Marcus U of Washington	Extrauterine pregnancy resulting from early UR	OG	94	804	99	Case report, Hx of 2 previous CS, presented at 13 weeks gestation c/o cramping and spotting. Ultrasound and magnetic resonance showed probable uterine dehiscence and a viable extrauterine pregnancy. Uterine arteries were embolized with subsequent fetal death. Exploration showed a complete rupture with the pregnancy enclosed within scar tissue between the uterus and the bladder.
Mastrobattista U of Texas	Vaginal Birth after cesarean delivery	OGCNA	26	295	99	Review of VBAC.
McNally Dublin	Induction of labour after 1 previous CS	AustNZJOG	39	425	99	Retro, 103 patients with 1 PCS had labor induced (51 had never delivered vaginally, 52 had a previous vaginal delivery). The repeat CS rate was 20.4% overall, 37% for those with no previous vaginal delivery and 3.9% for those with a prev. vaginal delivery. 14 of the patients with no previous vaginal delivery had a un effaced CX-their repeat CS rate was 64.3%. There were 2 cases of uterine rupture.

McNally Dublin	Induction of labour after 1 PCS	AustNZJOG	39	425	99	Retro, 103 pts..... with PCS had labour induced. The repeat CS rate after induction was 20.4%, of the 51 patients who had never delivered vaginally before the CS rate was 37% compared with only 3.9% of those who had delivered vaginally previously. 14 patients with no previous vaginal delivery and an unfavorable cervix had a CS rate of 64%. The commonest indication for induction was postdates. There were 2 cases of scar rupture. Conclusion: there is a higher incid of CS in patients being induced who have not had a previous vaginal delivery and in those whose cervix is not effaced.
Menihan Brown Univ.	The effect of uterine rupture on FHT patterns	JNurseMidw	44	40	99	The only reported predictable feature of FHT patterns in response to UR is the sudden onset of fetal bradycardia.
Montanari	Transvaginal US evaluation of the thickness of the section of the uterine wall in PCS.	MinervaGinecol	51	107	99	61 pts at 37-40 weeks gestation with Hx of PCS had TVUS. Wall thickness, cervical length, dilation of the isthmus were measured. Found that a thickness cutoff of 3.5mm of the lower uterine segment had a positive predictive value of 60.7% and a negative predictive value of 100%.
Pasternak	Risk-adjusted measurement of PCS: reliable assessment of the quality of ob services	QualManagHealthCare	8	47	99	Found a 2-hospital system with widely disparate CS rates. Statistical analysis determined that the apparent discrepancy was due primarily to patient related factors.
Perrotin Paris	Scarred uterus: is routine exploration of the CS scar after VBAC always necessary?	JGOBioRepro	28	253	99	Retro, found 3 uterine ruptures (0.43% of all scarred uterus) and 14 dehiscences (2%) during ten years of evaluation. All UR were symptomatic, no dehiscence required surgical Rx. Conc: exploration should be performed only in symptomatic patients
Plaut	Uterine rupture associated with the use of misoprostol in the gravid patient with a previous CS	AJOG	180	1535	99	Case report and review of the literature. 89 patients attempting VBAC received Cytotec for induction, 5 had a uterine rupture (5.6% versus 0.2% who did not receive Cytotec) "Review of the literature reveals insufficient data to support the use of misoprostol in the patient with a PCS.
Quinlivan	Patient preference the leading indication for ERCS in public patients—results of a 2 year prospective audit in a teaching hospital	AustNZJOG	39	207	99	Prospective audit, 9,138 deliveries, 1,624 by CS for an overall rate of 17.8%. Of these, 633 (39%) were ERCS and 911 (61%) were non-elective. The most common indication for ERCS was maternal choice, largely due to refusal of TOL.
Rageth Switzerland	Delivery after previous cesarean section: a risk evaluation	OG	93	332	99	Pooled data from Switzerland. 457,825 deliveries of which 29,046 had history of previous CS. There was a trial of labor rate of 65.5% for 17,613 trials. The success rate overall was 73.3%, 75% for spontaneous labor and 65.6% for induced labor. The following were sig. more frequent in the previous CS group: maternal fever, thromboembolic events, bleeding d/t previa, uterine rupture (92 cases), perinatal mortality (118 cases including 6 associated with uterine rupture). The risk of uterine rupture was higher in the TOL gp versus the repeat CS gp but all other risks were lower in the TOL gp. In the TOL group, the uterine rupture group (70) more often had induced labor(24.9% versus 13.9% in the non rupture gp), etc. Conc.: A history of CS sig. elevates the risks for mother and child with future deliveries. Nonetheless, a TOL after PCS is safe. Induction of labor, epidural anesthesia, failure to progress, and abnormal FHT pattern are all associated with a failure of TOL and uterine rupture.

Raskin U of Okla.	Uterine rupture after use of a prostaglandin E2 vaginal insert during VBAC. A report of 2 cases	JRM	44	571	99	Case report of 2 UR in patients among 57 pts attempting VBAC. Both patients were Rxed with prostaglandin E2 developed signs of UR: persistent suprapubic pain and repetitive FHT variable decelerations followed by bradycardia.
Ravasia U of Calgary	Incid. Of UR among women with mullerian duct anomalies who attempt VBAC.	AJOG	181	877	99	1813 attempted VBAC, 25 with known mullerian anomalies. The rates of UR were 8% in those patients with Hx of mullerian anomalies versus .61% without the anomalies. The rates for abnormal FHT, operative vaginal delivery and cord prolapse were higher in the mullerian duct anomalies group. Conclusion: Vaginal delivery is common among women with mullerian duct anomalies who attempt VBAC but rates of uterine rupture and other complications are higher.
Rayburn U of Okla.	Weekly administration of prostaglandin E2 gel compared with expectant management in women with PCS. Prepidil Gel Study Group.	OG	94	250	99	Compared safety and effectiveness of prostaglandin gel versus expectant management of unfavorable cervix in a randomized, multicenter study in patients appropriate for VBAC. Random assigned to 0.5 mg PGE2 weekly for up to 3 doses starting at 39 weeks. Conc: Safety confirmed but did not improve the likelihood of vaginal delivery.
Ripley U of Fla	Uterine emergencies. Atony, inversion and rupture	OGCNA	26	419	99	Review of uterine atony, inversion and rupture.
Rose	ACOG urges a cautious approach to VBAC.	AmFamPhys	59	474	99	
Rozenberg U of Paris	Thickness of the lower uterine segment: its influence in the management of patients with PCS	EurJOGRepro Bio	87	39	99	Prospective open study, 198 pts with PCS underwent US measurement of LUS compared to a similar population in the previous years whose measurements were not provided to the treating obstetrician. Findings: the rate of vaginal delivery did not vary between the two groups (70% versus 67% controls), those who had measurements provided had a higher elective CS rate but this was balanced off by fewer emergency CS (emergency CS rate 6.3% for measured versus 23.4% of controls).
Sachs Frigoletto	Editorial: the risks of lowering the CS-Delivery rate	NEJM	340	54	99	Sounding Board. Contends that the advantages of vaginal delivery over CS only apply to safe vaginal deliveries and that reducing the rate of CS may lead to higher costs and more complications for mothers and their babies. Discusses the effects of Department of Health and Human Services' Healthy People 2000 objective in relation to the article. The two strategies proposed to reduce the CS rate, increasing the number of VBAC and increasing the number of operative vaginal deliveries, are associated with uterine rupture and neonatal trauma, respectively. Patients must be allowed participation in the decision involving risks to themselves and their babies.
Sanchez-Ramos U of Fla.	Cervical ripening and labor induction with a controlled release dinoprostone vaginal insert: a meta-analysis.	OG	94	878	99	Meta-analysis of 8 studies included 964 subjects, 490 had dinoprostone vaginal insets and 474 had other prostaglandin preparations. Found that those who received the inserts had a lower incid. of vaginal delivery within 12 hours, longer intervals from insert to delivery and lower rates of active labor.
Schnitker Chicago Hosp Risk Pool Prog	UR during TOL: risk management recommendations	JhealthRiskManag	19	12	99	Overview of the risk management of VBAC with recommendations for mitigating the risks of VBAC.

Shipp Mass General	Intrapartum uterine rupture and dehiscence in patients with prior lower uterine segment vertical and transverse incisions	OG	94	735	99	Retro record review of TOL after PCS over 12-year period. The outcomes of 2912 pts with previous transverse incision and 377 pts with vertical incisions undergoing TOL were compared. Overall, there were 38 (1.3%) scar disruptions in the low transverse group and 6 (1.6%) in the low vertical group. Conc: gravids with prior low vertical uterine incision are not at increased risk for UR during a TOL compared with women with prior low transverse incisions.
Socol Northwestern	VBAC: an appraisal of fetal risk	OG	93	674	99	Retro, 91991-1996, 2082 pts with one or more PCS were allowed a TOL, 1677 of whom delivered vaginally and 405 of whom had repeat CS. There were 920 elective repeat CS. Overall, 22,863 patients without a PCS delivered vaginally and 2432 pts were delivered by primary CS after laboring. Comparisons of Apgar scores at 5 minutes and umbilical cord arterial pH were made between groups. Results: the only sig. differences were noted between those patients who had successful VBAC and those who delivered vaginally without PCS. Neonates in the successful VBAC group were more likely to have an Apgar score at 5 minutes < 7 or a pH < 7.1. Those neonates, however, were not at greater risk for an Apgar score of < 4 or a pH of < 7.0. Conc: Suggests that VBAC poses a low level of fetal risk, although a much larger sample size would be required to exclude a 2-fold increase.
Taylor Australia	An evaluation of prostaglandin E2 vaginal gel use in practice	JClinPharmTher	24	303	99	Found no difference in effectiveness, as measured in terms of mode of delivery, was detected.
Vause	Evidence based case report: use of prostaglandins to induce labour in women with PCS.	BMJ	318	1056	99	Case report and literature review. Found a dearth of evidence-based information from which to assess the risks and benefits of using prostaglandins to induce labour in pts with a history of PCS.
Wing USC, LA	VBAC: selection and management	ClinOG	42	836	99	Review article
Yamani Saudi Arabia	Induction of labor with vaginal prostaglandin-E2 in grand multiparous women with one PCS.	IntJGO	65	251	99	26 grandmultips with one PCS were induced with vaginal prostaglandin-E2. 77% were successful, 23% had emergency CS. The mean duration of labor was 6 hours. There were no uterine ruptures or dehiscence. There was one neonatal death and 2 stillborns. Conc: limited study suggests that induction of labor with vaginal prostaglandin-E2 in selected grandmultips with one PCS may be a reasonable option.
Zelop Harvard	UR during induced or augmented labor in gravid women with one PCS.	AJOG	181	882	99	Retro, 12-year period, compared TOL in pts with one PCS in spontaneous labor (n=2214) versus those requiring induction with oxytocin or prostaglandin E(2) gel (n=560). The overall rate of UR was 0.7% in spontaneous labor versus 2.3% in the induction group. Using logical regression analysis to eliminate variables, they found that induction with pitocin resulted in a 4.5 fold increased uterine rupture and use of prostaglandin E(2) gel was associated with an odds ratio of 3.2. Conclusion: Induction of labor with oxytocin is assoc with an increased rate of UR. Use of oxytocin for augmentation of labor should proceed with caution.
Ziadeh Jordan	Obstetric uterine rupture: a 4 year clinical analysis	GynObInvest	48	176	99	Retro review to identify risk factors of UR. Review of multiple etiologies of UR and management strategies.

	Cesarean Section Policy Cost Los Angeles 24 Million Dollars	OG Malpractice Prevention April 98	5/4	32	98	A county policy during the early 1990s of requiring women at public hospitals to attempt vaginal delivery before they could have a CS has cost LAC 24 million dollars in 49 malpractice cases. Although Health Services Director Mark Finucane told LAC Supervisors recently that county hospitals never forced any woman to forgo or delay a necessary CS, numerous county physicians contradicted those assertions. As interns in county hospitals, they had been told to keep the CS rate below 10%, half the rate now considered safe.
Abbassi Maroc	VBAC: can the trial of labor be extended	JGOBioRepro	27	425	98	Retro, 1000 pts with PCS (85.7% one PCS, 12.9% 2 PCS and 1.4% had 3 PCS) TOL was attempted in 862 cases (86.2%) with 84.5% success. Uterine rupture occurred in 23 cases (2.7%), especially in cases with unknown scars (15 cases). No case of perinatal death related to uterine rupture was observed.
Abu Heija Jordan	Can we reduce repeat CS at the Princess Badeea Teaching Hospital?	ClinExpOG	25	56	98	
ACOG	ACOG Practice Bulletin VBAC	ACOG	2	Oct	98	Practice bulletin. **Candidates for VBAC**: 1 or 2 prior LTCS, clinically adeq. pelvis, No other uterine scars or prev. rupture, Physician readily available throughout labor capable of monitoring labor and performing an emergency CS, availability of anesthesia dn OR personnel for emergency delivery. **Success:** overall 60-80% success but population dependent. There is no reliable scoring system to predict success. PCS for nonrecurring reasons have similar success to pts with no PCS. Approx. 50-70% of pts with dystocia are successful. **Risk/Benefit:** Neither VBAC nor ERCS are without risks. It is difficult to calculate cost/benefit for VBAC. Most recent studies have shown that the women attempting VBAC are at greater risk for major maternal morbidity: UR, hysterectomy and operative injury. UR can be a life threatening for both mother and infant. When catastrophic UR occurs, some patients will require hysterectomy and some infants will die or will be neurologically impaired. In most cases, the cause of UR is unknown but poor outcomes can result even in appropriate candidates. Estimated occurrence of UR is 4-9% with a classical or a "T" incision, 1-7% with a LVCS and 0.2-1.5% with a LTCS. The most common sign of UR is a nonreassuring FHT pattern with variable decelerations that may evolve into late decelerations. Other Sx are more variable and include pain, loss of station, vaginal bleeding and hypovolemia. **Contraindications:** Prior classical or T shaped incision, contracted pelvis, inability to perform immediate emergency CS because of unavailable surgeon, anesthesia, staff or facilities. **Anesthesia:** VBAC is not a contraindication to epidural anesthesia and adequate pain relief may encourage mor women to choose TOL. Epidural rarely masks the signs and symptoms of UR. **Intrapartum Management**: Pt evaluated promptly once labor has begun, usually use fetal monitor. Personnel familiar with the potential complications of VBAC should be present to watch for nonreassuring FHT patterns and inadequate progress in labor. **Induction**: Induction or augmentation has been suspected as a factor in UR. A meta-analysis found no relationship between the use of Pitocin and UR. There are occasional reports of UR with prostaglandin preparations. **Summary**: **Level A confidence**- 1. Most can be offered a TOL. 2. Epidural may be used. 3.

						Previous uterine incision extending into the fundus is a contraindication. **Level B confidence**: 1. Women with 2 PCS and no contra. may be allowed to TOL but must be advised of increased risk of UR. 2. Use of Pitocin or prostaglandin requires close monitoring. 3. Women with LVCS with no extension into fundus are candidates for VBAC. **Level C confidence**: 1. Because UR may be catastrophic, VBAC should be attempted in institutions equipped to respond to emergencies with physicians readily available to provide emergency care. 2. The ultimate decision to attempt VBAC or undergo a repeat CS should be made by the patient and her physician.
Al Sakka Qatar	Rupture of the pregnant uterus—a 20 year review	IJGO	63	105	98	Retro, 31 cases of ruptured uterus, 23 cases available for study. 43.5% occurred in patients with PCS and 56.5% were in grand multips. In 43.5% uterine rupture was associated with Pitocin use.
Bretelle France	Birth after 2 CS: the role of TOL	JGOBioRepro	27	421	98	Retro, 184 pts with Hx of 2 PCS. TOL was allowed in 96 cases with vtx presentation and normal pelvis. The success rate was 65%. There were 3 uterine scar dehiscences, one requiring hysterectomy. Neonatal outcome was good in all cases. Conc: TOL after 2 PCS is possible in the majority of cases.
Cadet	Occult Uterine rupture: role of ultrasound	JNat Med Assoc	90	374	98	Case report of spontaneous uterine rupture complicated by pelvic infection and peritonitis. US played a primary role in the diagnosis and clearly demonstrated the uterine wall defect.
Caughey (Mass. Gen.)	TOL after cesarean delivery: The effect of previous vaginal delivery	AJOG	179	938	98	Record review, 4393 had TOL after previous CS. 800 women had history of A. 1 CS followed by 1 vaginal delivery (ie vaginal last) or B. vaginal delivery followed by CS. Those whose last delivery was vaginal had failed TOL/cesarean section rate of 7.2% whereas those with CS as last delivery had failed TOL/CS rate of 14.7%. The mean duration of labor for vaginal last was 5.6 hours, the duration for CS last was 7 hours. Conclusion: Among women with both a PCS and a vaginal delivery, those whose most recent delivery was vaginal had a lower rate of CS and a shorter duration of labor.
Chew (Singapore)	CS and postpartum hysterectomy	Singapore MedJ	39	9	98	Retro review of CS/hyst and postpartum hyst.
D'Ercole	Birth after 2 CS: the role of TOL	JGynObBioRepro	27	421	98	Retro, 184 patients with Hx of 2 PCS. TOL was allowed in 96 cases with cephalic presentation and normal pelvis. The rate of success was 65%. 3 patients had a uterine scar dehiscence and in one of them a hysterectomy was required. Neonatal outcome was good in all cases. Conc: TOL after 2 pcs is possible in the majority of cases. Rate of vaginal birth is high and maternal-fetal morbidity is low.
de Meeus	External cephalic version after PCS: a series of 38 cases.	EurJOGReproBio	81	65	98	Retro, 38 women with breech, >36 weeks and hx of PCS. Version was successful in 25 (65.8%). 76% of the successful version women went on to have a VBAC for a total of 19 (50%). Success rate was less when breech was the indication of PCS. Conc: ECV is acceptable and effective in women with a prior LTCS scar when safety criteria are observed.

Flamm (Kaiser)	Point/Counterpoint: I. VBAC: Where have wee been and where are we going?	OGS	53	661	98	Editorial/Debate with Jeffery Phelan. Good news/bad news. Uterine rupture occurs in 1% of the cases. The good news is that 99% will remain intact and the majority of pts who attempt VBAC will deliver vaginally with no major problems. The bad news is that if the uterus does rupture there can be catastrophic medical and medico-legal consequences. Advocates a "more balanced" VBAC consent form. Before we give up on VBAC we need to remember that doing so would require an additional 112,000 cesareans next year. Because repeat CS are often more difficult we may see a corresponding inc in operative complication rates. Worst of all, it could also result in an increase in maternal deaths. Advocates not abandoning VBAC but making them safer by being ready to move very quickly when a uterine rupture does occur. A prolonged deceleration is often the first signal of uterine rupture. Perhaps it is time to ponder new guidelines for staffing and response times when a VBAC patient is in labor.
Green	Are we underestimating rates of VBAC? The validity of delivery methods from birth certificates	Am J Epid	147	581	98	Looked at Georgia's statistics, found that cross-sectional vital records substantially underestimate VBAC and primary CS rates.
Green Robert Scully Mass General	Weekly Clinicopathological exercises: case 9-1998: cardiovascular collapse after VBAC	NEJM	338	821	98	Case report and clinical/pathologic discussion of uterine rupture and amniotic fluid embolus in pt with VBAC (see original article for additional history). Uneventful labor except 3 decelerations lasting 2-3 minutes, epidural anesthesia with vaginal delivery. PPH with 1200 cc blood loss—manual removal of placenta disclosing uterine rupture and adherent placenta. Profound shock and cardiac arrest followed, disproportionate to the blood loss with resuscitation unsuccessful. Ultimate pathologic diagnosis was uterine rupture, placenta accreta and amniotic fluid emboli. Good discussion follows on management and diagnosis.
Gyzman	Trying vaginal delivery in 1000 pts with PCS in the Antiguo Hospital Civil de Guadalajara	GinecOvstetMex	66	325	98	Retro, 1000 pts with Hx of PCS. 67.9% were successful, there was one uterine rupture and 2 dehiscences. There were 2 fetal deaths.
Impey	First delivery after CS for strictly defined cephalopelvic disproportion	OG	92	799	98	Retro, 1975-90, 42,793 deliveries, of which 84 met strict criteria for CPD. (CX dilation arrested after 5 cm, unresponsive of oxytocin augmentation, after active dilatation of 2 cm or more in 2 hours). 40 with cephalic presentation delivered at their hospital, all 40 had TOL. 27/40 (68%) delivered vaginally with 7 having a larger infant and 20 having a smaller infant. Of 15 women previously delivered by CS at full dilation, 11 (73%) delivered vaginally with no serious maternal or neonatal morbidity. Conclusion: the strictly defined Dx for nulliparous CPD should not constitute an automatic "recurrent" indication for elective CS.
Ito	Lower segment UR related to early pregnancy by in vitro fertilization and embryo transfer after a previous CS.	Jmed	29	85	98	Case report, PCS had invitro fertilization which was likely implanted in the CS scar.
Jongen	Vaginal delivery after previous CS for failure of second stage of labour	BJOG	105	1079	98	Retro, 132 pts who had a PCS during the second stage of labor, 103 were allowed a TOL with 82 (80%) being successful. Conc: In women with a cephalic presentation who had an arrest of descent in the second stage of labor with their PCS, the chances of vaginal delivery are high.

Jongen	Vaginal delivery after previous cesarean for failure of second stage of labour	BJOG	105	1079	98	Retro., 132 pts. whose first CS was done in second stage for FTP. 103 had a TOL with 82 being successful.. 40 of the vaginal births were aided by vacuum. Nealry all TOL were of spontaneous onset. There was one uterine rupture.
Kindig	Delayed postpartum UD. A case report	JRM	43	591	98	Case report, developed delayed UD 6 weeks postpartum. The patient required hysterectomy for definitive Rx.
McMahon (UNC-CH)	VBAC	ClinOG	41	369	98	Review of the literature. For the majority of women with a PCS, a TOL should be encouraged. There are few absolute contraindications. Uterine rupture represents the most catastrophic complication of TOL after PCS. Women who are not successful with a TOL require repeat CS and appear to be at greatest risk for maternal complications. The management of labor in women with a previous uterine scar is not low risk.
Menihan Brown U	Uterine rupture in women attempting a vaginal birth following prior cesarean section	JPerinatol	18	440	98	Retro, 11 women with uterine rupture. No common feature in FHT or contractions activity existed except bradycardia. 91% had cord pH<7.0 and 45% had base excess > 15 mEq/L. 73% infants required admission to the NICU although despite the acidemia none experienced seizures or multiorgan dysfunction. Conclusion: there is no one specific FHR or uterine activity pattern that indicates the onset of a uterine rupture, although variable and/or late decelerations occur before the onset of bradycardia.
Obara	VBAC: results in 310 pregnancies	JOG Res	24	129	98	Retrospective, 310 pts. with PCS, 69% (214) attempted VBAC and 43% (132) were successful. No maternal or perinatal deaths occurred. There were 2 uterine ruptures 0.9%. 2.3% of VBAC gave birth to neonates with 1 minute Apgar score of =6. None of the elective CS group had such complications.
Ola	Rupture of the uterus at the Lagos University Teaching Hospital, Lagos, Nigeria	WestAfrJMed	17	188	98	Incid. of ruptured uterus was 5.01/1000 deliveries. Poor prenatal care, CPD, PCS and grand multiparity were major etiological factors.
Phalen	Intrapartum fetal asphyxial brain injury with absent multiorgan system dysfunction	JMatFetMed	7	19	98	Case report, 14 cases of severe fetal brain injury with absent multiorgan system dysfunction (MSD) All infants were Dx with hypoxic-ischemic encephalopathy in the neonatal period and went on to have permanent CNS injury. 43% of the 14 cases involved uterine rupture, 36% involved prolonged FHT deceleration and one each cord prolapse, fetal exsanguination and maternal cardia arrest. All infants were later Dx with cerebral palsy.
Phelan	Point/Counterpoint: II. The VBAC “Con” game	OGS	53	662	98	Editorial/Debate with Bruce Flamm. I do not advocate a policy of “once a CS, always a CS” rather that if a VBAC is to be performed, the patient should be better informed. We must understand that fetal brain injury can occur fairly quickly in cases of uterine rupture. Advocates “crash CS drills”. The second issue is what to tell the patient of the potential risk of fetal brain damage. According to Dr. Flamm, the use of the phrase “brain damage” would have a chilling effect on the VBAC rate and thwart any efforts to reduce the overall CS rate. Ultimately, the patient needs to be fully informed because it is she and her baby that would undergo the risks. Dr. Flamm may be right about the balanced consent form should not include the phrase about death or permanent brain injury. I would also agree very few people, except managed care organizations, would put a bullet in a 100 chamber revolver, spin the chamber, place the gun against the child’s head and pull the trigger.

Phelan	Uterine activity patterns in UR: a case control study	OG	92	394	98	Case control, cases of women with UR during a TOL resulting in a neurologically impaired infant. Controls were a successful VBAC or a vaginal delivery with no PCS. Looked at contraction pattern, tetany and hyperstimulation. Results: 18 ruptures studied. Conclusion: uterine activity patterns and oxytocin use does not appear to be assoc. with the occurrence of intrapartum UR.
Roland	Perinatal hypoxic-ischemic thalamic injury: clinical features and neuroimaging	Ann Neuro	44	161	98	Case reports of 20 newborns with moderate to severe acute hypoxic-ischemic encephalopathy. 16 of the 20 had documented profound hypoxic-ischemic insult by umbilical cord prolapse, uterine rupture or massive placental abruption.
Sciscione	Uterine rupture during preinduction cervical ripening with misoprostol in a patient with a previous CS.	Aust NZ JOG	38	96	98	Case report of uterine rupture in a patient with a previous LTCS, in which transvaginal misoprostol was used for preinduction cervical ripening.
Shachar	High risk pregnancy outcome by route of delivery	CurrOpinOG	10	447	98	Review of preferred route of delivery for 3 high-risk pregnancies: multiple pregnancy, VBAC and macrosomic infants of gestational diabetics. The most common feature of all is the lack of information, based on large prospective controlled studies, available to the treating physician for choosing the delivery route.
Silberstein	Routine revision of uterine scar after CS: has it ever been necessary?	Eur JOG	78	29	98	Longitudinal study of 3469 VBAC , all had uterine exploration immediately after delivery. The detection rate of uterine scar dehiscence or rupture was 0.23%. Only one woman with complete uterine rupture needed immediate laparotomy for severe hemorrhage. Conc. the benefit of routine uterine exploration is doubtful.
Swaim	Umbilical cord blood pH after PCS.	OG	92	390	98	Retro, 3 gps, ERCS (n=113), CS after TOL (n=58) and successful VBAC (n=135). Found no sig. differences but "sample size requires other studies.
Traynor (Northwestern)	Maternal hospital charges assoc. with TOL versus ERCS.	Birth	25	81	98	Retro, compared costs of TOL with the costs of ERCS. TOL was assoc with a hosp charge of 5820 compared to 6785 for ERCS.
West	Woman in labor can withdraw consent for VBAC at any time. Schreiber v. Physicians Insurance Co of Wisc	JhealthcRisk Manag	18		98	
Wing	Disruption of prior uterine incision following misoprostol for labor induction in women with PCS	OG	91	828	98	Case report of disruption of uterine incision found in two of 17 misoprostol Rxed women. The first women underwent a repeat CS at 42 weeks gestation because of fetal tachycardia and repetitive late decels-a 10-cm rent in the anterior myometrium was discovered. The second underwent induction for fetal growth restriction. A loss of fetal heart tones and abnormal abdominal contour prompted emergency CS, a 8-cm longitudinal defect was found. Conc.-when misoprostol is used in women with PCS, there is a high frequency of disruption of prior uterine incision.
Bennett	UR during induction of labor at term with intravaginal misoprostol	OG	89	832 - 3	97	Case report, 34 yo multip at 39 weeks gestation. 5 hours after administration of the second 25-microgram dose, fetal bradycardia prompted emergency CS. Hysterectomy and LSO were necessary to control bleeding from a 15-cm posterior uterine wall rupture.
Boulvain	TOL after CS in sub-Saharan Africa: a meta-analysis	BJOG	104	1385	97	Meta-analysis of 17 published reports

Bowes	Editorial	OGS	52	69	97	The problem of VBAC is essentially one of playing the odds. If a pt chooses TOL and is successful, they win-minimal morbidity, short stay and low cost. If VBAC is not successful, they lose: repeat CS after a long labor with increased risk for high morbidity, prolonged stay and high cost. On the other hand, if they choose repeat CS they play a sure thing: low morbidity, slightly longer stay and moderate cost. "I encourage counseling patients about VBAC from a perspective of what is good for the patient rather that what is good for the hospital cesarean section rate."
Casanova	Vesico-uterine fistula occurring after a normal labor in a patient with a scarred uterus.	JgynOIbBiolRepro	26	637	97	Case report of vesico-uterine fistula occurring after VBAC.
Chapman	One versus 2 layer closure of a low transverse CS: the next pregnancy	OG	89	16 - 8	97	Prospective, 906 pts. randomly assigned to wither one or two layer closure. 164 had subsequent pregnancy and delivery. The demographics were similar for one and two layer closure
Dilke	Role of self-efficacy in birth choice	J Perinat Neonat Nurs	11	1- 9	97	74 pregnant women completed a self-administered questionnaire. Results found that women choosing ERCS had lower self-efficacy scores suggesting the need for further research.
Dyack	VBAC in the grand multiparas following previous LTCS.	JOG Res	23	219	97	Retro., 5 year period, eval. pts. with 6 or more previous deliveries and with a PCS were identified. 85 women with combo of grandmultiparity and a PCS scar were found. 45 attempted TOL, 27 (60%) were successful. There was a relatively high incid of serious complications. Conc.-VBAC can be achieved in some grand multiparas with a PCS. There is an increased risk of serious complications The labor should be closely supervised and early intervention arranged if there is not smooth rapid progress.
Fla. Agency for Health Care Admin.	VBAC rate reflects the % of women who have a vaginal birth after having a baby by cesarean.	The Miami Herald			97	%VBAC 1990 92 94 95 Dade Co. 22.5 23.5 29.2 28.6 Florida 23.3 27.7 33.5 34.6 %C-Section rate 90 91 92 93 94 95 (est) 96 (est) U.S. 23.5 23.5 23.5 22.8 22 20.8 20.6 Florida 26.5 25.2 25.1 24 23 22.8 22.7
Flamm	Once a CS, always a controversy.	OG	90	312-5	97	In the 1980s VBAC grew in popularity and the pendulum began to swing away from routine ERCS. Recently the wisdom of this transition has been questioned. As the 20th century comes to a close, the treatment of the patient with PCS remains controversial.
Flamm	Prostaglandin E2 for cervical ripening: a multicenter study of patients with PCS.	Am J Peri	14	157 - 60	97	Starting in 1990, all pts. with PCS were eval. at 10 California hospitals. 5022 pts., 453 (9%) received PGE2 gel. There ws no sig difference in the incid of UR between the {GE2 gp and the controls. Indicators of maternal and perinatal morbidity were not sig higher in the PGE2 gp. The use of PGE2 gel for cervical ripening appears to be relatively safe in pts. with PCS.
Fraser	Randomized controlled trial of a prenatal VBAC education and support program. Childbirth alternatives post - cesarean study group	AJOG	176	419	97	Assess whether a prenatal education program increases success of VBAC. Measured motivation and separated into 2 gps: one given individual instruction and the other given pamphlet. Conc.-there were no sig differences between the individualized instruction group and the brochure group.

Guleria	Pattern of cervical dilatation in previous lower segment CS pts.	Jindian Med Assoc	95	131	97	100 pts. attempting VBAC prospectively studied with partograph. The mean initial dilatation rate (IDR) and average dilatation rate (ADR) for those successful (84 patients) was 0.88 cm/hour and 1.26 cm/hour respectively. The IDR for those requiring CS was 0.44 cm/hr and the ADR was 0.42 cm/hour. Hence, ADR in cases who required repeat CS was significantly slower.
Harrington	VBAC in a hospital-based birth center staffed by certified nurse-midwives.	J Nurse Midwifery	42	304 - 7	97	Retro., 303 pts. with PCS undergoing TOL compared with control gp. Intrapartum transfer for medical management was necessary in 26 study patients (8.7%) and in 10.4% of controls. The overall rate of VBAC was 98.3 ws not sig different from controls vaginal rate of 99.3%. (There was a high percentage of prior vaginal deliveries along with history of PCS in study group). Conc.-in selected, low-risk patients with PCS, a TOL may be managed safely and effectively by certified nurse midwife in a hospital setting.
Holt	Attempt and success rates for VBAC in relation to complications of the previous pregnancy.	Paediatr Perinat Epi	11 sup	63	97	Looked at first-born CS and second liveborn (n=10,110). Overall, 64% of the cohort attempted VBAC and 62% of those were successful.(overall VBAC rate of 40%). Women with fetal macrosomia, CPD, prolonged labor, diabetes or placental problems in the first pregnancy were less likely to attempt TOL. Women with hx of induced labor, herpes, fetal distress or breech presentation in first pregnancy were more likely to attempt VBAC. Approx. _ of women with prior macrosomia, labor problems and chromic medical conditions succeeded in VBAC. Approx. _ of pts. with previous breech or placental problems succeeded.
Hook (Case Western)	Neonatal morbidity after ERCS and TOL.	Pediatrics	100	348 - 53	97	Retro. All mothers who underwent PCS and delivered singleton infants at term were identified. Neonatal outcomes were compared between infants delivered by ERCS (#497) and those delivered by TOL (#492). Also compared were those successful with TOL (#336) and failed TOL (#156). A cohort of routine vaginal delivery was identified also. Results: Infants delivered by ERCS had an increased rate of transient tachypnea compared with TOL. Compared with routine delivery the odds ratio of transient tachypnea was 2.6. In addition, 2 infants delivered by ERCS had RDS. Infants delivered after TOL had an increased rate of suspected and proven sepsis (5% suspected for TOL vs 2% for ERCS, 1% proven sepsis for TOL vs 0.1% proven sepsis for ERCS). Compared with successful TOL, infants of failed TOL had more neonatal morbidity and had a longer hosp. stay. The odds ratio of developing respiratory illness after failed TOL was 2.1, for suspected sepsis was 4.8 and for proven sepsis was 19.3. Conc. Infants born by ERCS are at increased risk for developing respiratory problems. TOL is associated with increased rates of suspected and proven sepsis. This appears to be limited to those infants delivered by CS after failed TOL.
Hoskins	Correlation between maximum cervical dilatation at CS and subsequent VBAC.	OG	89	591 - 3	97	retro., compared indications for CS and dilatation at time of CS with success rate at VBAC, 1917 pts. Indications for initial CS=malpresenatation-5.1%, fetal distress-14.9% and arrest disorders-80%. Success rates for VBAC were: Malpresentation-73%, fetal distress-68%. Arrest disorders with dilatation at time of CS 5 cm or less=67%, 6-9 cm dilated 73% **but only 13% if pt fully dilated at time of PCS**. Conc.-pts. who attempt VBAC may be counseled that PCS at full dilatation is association with a reduced chance of success.

Kattan	Maternal urological injuries associated with vaginal deliveries: change of pattern	Int Uro Nephrol	29	155 - 61	97	Retro. With recent introduction of VBAC the pattern of maternal urological injuries associated with vaginal deliveries have changed. 7 females with vaginal delivery had major urologic injury 1992-1994, 4 of which have history of PCS. These included rupture of the posterior bladder wall, trigone and bladder neck. Distal ureteric and urethral injuries as well as bladder contusion were also encountered. 2 patients developed vesico-uterine and vesico-vaginal fistulas. The presence of gross hematuria, incontinence and flank pain should indicate full urological evaluation.
Longo	Consumer reports in health care. Do they make a difference in patient care?	JAMA	278	1579	97	Retro. of hospital behavior using both primary survey and secondary clinical data by Missouri Dept. of Health about reports to the consumer. Reports were issued in 1993 to all Missouri hospitals providing OB care (90). Examined change in hospital care provided by clinical outcomes including VBACs. Conclusion: public release of consumer reports may be useful not only in assisting consumers but also in facilitation improvement in the quality of hosp. services offered and care provided.
Martin	The case for TOL in the patient with a prior LVCS.	AJOG	177	144	97	Review of recent OB literature, 10 studies included information about LVCS were included, 372 pts., 306 (82%) of which had a successful VBAC. 4 UR occurred (1.05%). Conc.-the patient with one prev non-extended low vertical CS should be considered as a candidate for VBAC. "The same care, counseling and caution should be exercised for this patient as for one with a prior LTCS".
Miller	Intrapartum UR of the unscarred uterus.	OG	89	671 - 3	97	LAC-USC, 13 cases of UR in unscarred uterus, 3 from motor vehicle accidents. The incid of UR in an unscarred uterus was 1:16,849 deliveries. Association. factors: 4 cases used Pitocin, 3 used prostaglandin, 3 cases used vacuum assisted delivery, 2 cases of grandmultiparity and 2 cases of malpresentation. Intervention was prompted by fetal bradycardia in 7 and hemorrhage in 3. Six patients had severe abdominal pain, 5 had maternal tachycardia and 2 had severe hypotension. Neonatal outcomes were normal in 9.
Odeh	Evidence that women with a history of CS can deliver twins safely	Acta OG Scand	76	663	97	Retro. of all twins gestations 1970-1993, 36 were eligible for study, 25 were allowed a TOL. 80.9% delivered vaginally and 19.1% had CS. Hospitalization was 4.4 days versus 8.0 days for ERCS. Transfusions were 9.5% versus 26.6% (TOL versus ERCS) Infections were 9.5 versus 46.6. there was no scar dehiscence. Conc.-vaginal delivery of twins after one PCS may be considered in appropriate cases.
Paterson (London)	Caesarian section: every woman's right to choose?	Cur Opin OG	9	351	97	Until recently, doctors and patients have been united in wanting lower CS rates. This is changing and the concept of a more liberal patient-centered choice is gaining credence. CS are no longer black and white decisions, but are becoming increasingly discretionary, based on maternal choice, their increasing safety for the mother and baby, and recognition of the pelvic damage associated with vaginal birth.
Perveen	Obstetrical outcome after one PCS.	JOG Res	23	341	97	Prospective study of TOL after one PCS. A total of 2,447 deliveries of which 167 had one PCS. 112 (67%) had TOL and 72 (64%) were successful. The success would be much higher if a fixed protocol could be applied to all the patients. 46% of pts. with past indication of CPD delivered vaginally.
Philippe	Transvaginal surgery for uterine scar dehiscence.	Eur JOG Repro Bio	73	135-8	97	Proposal of a transvaginal technique for suturing a dehiscence.
Roberts	TOL or repeat CS . The woman's choice	Arch Fam Med	6	120	97	MEDLINE search, data extracted from 292 article. Maternal outcomes showed TOL increased the risk of UR, ERCS increased the risk for infection and bleeding. Infant outcomes differed only for 5 minutes Apgar scores of less than 7, which were more likely for TOL. Costs were 1.7 to 2.4 times > for ERCS. Conc.-a woman should be given information on both delivery methods and encouraged to undergo TOL but her preference for ERCS should be respected.

Rowbottom	UR and epidural analgesia during TOL	Anaesthesia	52	486	97	Case report of UR in a pt with epidural. The pain of UR was not masked by the addition of fentanyl 25 micrograms to bupivacaine 0.25% but was relieved by bupivacaine 0.375% 6 ml.
Schimmel	Toward lower CS rates and effective care 5 years outcomes of joint private OB practice	Birth	24	181	97	Statistical analysis of a joint obstetrical practice in California, 1991-95, 1303 consecutive deliveries, Primary CS rate of 6.5%, total rate of 9.1%. 72% of patients with a PCS delivered vaginally, success rate for attempted VBAC was 83.5%. Instrumental deliveries happened in 2% and third/fourth degree lacerations in 1.3%.
Schuitemaker	Maternal Mortality after CS in The Netherlands	Acta OG Scand	76	332	97	Nationwide confidential enquiry into the causes of maternal death. The risk of dying from a vaginal delivery was 0.04/1000 vaginal births versus a direct risk from CS of 0.13/1000 CS.
Scott	Avoiding labor problems during VBAC	ClinOG	40	533	97	Review article, Quotes uterine rupture rate as follows: classical scar or t-incision 4-9%, low vertical incision 1-7%, LTCS 0.2-1.5%. The rate of repeat rupture is 6% if rupture was in lower uterine seg, if scar included upper segment of the uterus the rate of repeat rupture was 32%.
Sieck	VBAC: a comparison of rural and metropolitan rates in Oklahoma	JOklaStMedAssoc	8	444	97	Retro compared VBAC in rural and urban settings. Urban rate of TOL was 46% with success of 36% compared with rural of 30%TOL and 18% success.
Spaans	TOL after PCS in rural Zimbabwe	EJOGRB	72	9	97	Case control, 281 pts. with PCS attempting VBAC. No ERCS were performed, 44% were successful in VBAC, one UR occurred. Perinatal and maternal outcome did not differ between cases and controls. A hx of multiple PCS and CS for CPD increased the risk for a repeat CS. Conc.-a policy to allow all women a TOL after PCS did not inc adverse pregnancy outcome.
Stalnaker	Characteristics of successful claims for payment by the Florida Neurologic Injury Compensation Association Fund	AJOG	177	268 - 71	97	The Florida Birth related Neurological Injury Compensation is a no-fault alternative to litigation for catastrophic neuro. birth injury. 64 cases reported on. 45 were delivered by CS and 15 of the 19 vaginal deliveries were operative. A persistent nonreassuring fetal heart rate tracing was seen in all. The 5 minute Apgar score was < = 6 in 91% and the 10 minute was <= 6 in 86%. 17 women presented to L+D with a nonreassuring pattern. **Nine attempts at VBAC led to a uterine rupture, 7 of which were either inductions or augmentations against an unfavorable cervix**. 45% of deliveries were associated with MSAF. there were 3 shoulder dystocias and 4 infants with group B strep. In 8 cases (12.5%) there appeared to be a breach of published standard of care.
Turner	Delivery after one previous CS	AJOG	176	741	97	Historical, incid of Cesarean Section has inc from 1:20 in 1970 to 1:4. Elective repeat Cesarean Section has been a major contributor to that inc. Cragins "rule" (New York Medical Journal 1916) of once a Cesarean Section always a Cesarean Section was during a time when a classical incision was made. It was in 1921 that Kerr and Holland recommended the use of transverse. Management in Dubin-accurate US determination of age and placenta localization. Avoid induction if possible, EFM but do not use IUPC, epidurals all right, **OCYTOCIN IS USED WITH EXTREME CAUTION BECAUSE OF CONCERN OF RUPTURE OF UTERUS**. The single most important predictor of success is previous vaginal delivery. Even in a modern OB unit, rupture is assoc with significant maternal and fetal mortality and morbidity including transfusion and hysterectomy. 10 year review at Coombe hospital in Dublin, 65,488 deliveries, 15 cases or uterine rupture. 13 of 15 ruptures occurred in multigravidas with previous Cesarean Section. **10 of 15 HAD LABOR INDUCED AND 13 PTS. RECEIVED PITOCIN.** In contrast, Pitocin enhancement of spon labor is rarely assoc. with rupture.

Unuroa	Major injuries to the urinary tract in associated. with childbirth	East Afr Med J	74	523	97	Retro., 48,693 deliveries, 4622 CS giving a CS rate of 9.5%.. Of 10 cases of severe bladder injuries, 7 occurred in assoc. with ruptured uteri and 3 at repeat CS.
Adair	TOL in patients with a previous lower uterine vertical CS	AJOG	174	966-70	96	Retro, U of Fla., 77 pts with prior LVCS, 14.3% had repeat CS compared with 9% of the controls. One pt in the PCS gp had a uterine rupture. Conclusion: a TOL in women with previous low vertical CS results in an acceptable rate of vaginal delivery and appears safe for both the mother and baby.
Bickell	Effect of external peer review on CS rates: a statewide program	OG	87	664	96	NY, 45 of 165 active delivery services were reviewed. Conc.: this joint specialty society and health dept. peer review had no apparent impact on CS rates.
Catanzarite	US Dx of traumatic and later recurrent UR.	AJPeri	13	177	96	Case report of traumatic transverse fundal UR with fetal death followed by recurrent rupture during the subsequent (twins) pregnancy. UR was sonographically Dx after an auto accident. UR was again Dx sono. based on the extrusion of the BOW through the uterine incision without fetal distress. Emergency CS was done with good outcome.
Chervenak	An ethically justified algorithm for offering, recommending and performing CS and its application in managed care practice.	OG	87	302	96	Ethical discussion about CS, etc and what to offer the patient under what circumstances.
Chin	UR during labour in a primigravid	Aust NZ JOG	36	210-2	96	Case report of incomplete UR in a primigravid who had no previous instrumentation to the genital tract. UR manifested by fetal bradycardia.
Clark	State variation in rates	Stat Bul Metrop Insur Co	77	28	96	There is wide variation among states in rates of CS and VBAC. In general, the south has the highest CS rate and the west the lowest. Louisiana had highest CS rate of 27.7% in 1993 and Alaska the lowest with 15.2%. Louisiana had the highest primary rate of 19.6 and Wisconsin lowest at 10.6. Most states had a substantial inc in VBAC rates. CS rates were lowest for mothers under 25 having second birth in Alaska and highest for mothers >35 having their first child in Mississippi.
Davies	VBAC: physicians' perceptions and practice	JRM	41	515	96	Chart review, found that if all pts. who were appropriate for VBAC attempted same, their hosp. CS rate would have dropped from 14.9 to 13.5%. "All patients eligible for a TOL should be strongly encouraged to do so regardless of their previous indication for CS."
Goodlin	Anterior vaginotomy: abdominal delivery without a uterine incision	OG	88	467	96	13 anterior vaginotomies were done when the vagina had advanced during prolonged second stage. The procedure appears safe, although one pt had a postpartum bladder flap hematoma and one had gross hematuria. 3 had pp. endometritis and one required a blood transfusion. "requires further study"
Grubb	Latent labor with an unknown uterine scar	OG	88	351	96	Term mothers with hx of one or more PCS with unknown scar in early labor were randomized to nonintervention (discharged after 4 hours of no change in Cx) 101 and intervention (admitted, contractions that persisted for 4 hours without change were augmented with Pitocin) -96 patients. Results: Intervention had a statis. sig. higher rate of uterine scar separation (5 versus 0%). There were no diff. in length of active labor or incid of CS (16 versus 17%). conc.- the augmentation of ineffective contractions in latent labor does not inc the rate of CS but it is more likely to result in scar separations.
Kildea	Trial of scar-team midwifery makes a difference	J Aust Coll Midwives	9:3	21-2	96	Case report of two PCS pts. (one with 2 PCS and the other with 3 PCS), one had twins. Physicians were not amenable to VBAC, certified nurse midwives were and delivered them.
Lagrew	Decreasing the CS rate in a private hospital: success without mandated clinical changes	AJOG	174	184	96	Retro, deliveries 1988-94. Instituted a program of increasing awareness, confidential provider feedback and more aggressive laboring techniques. Results overall CS rate fell from 31.1% to 15.4%, primary fell 17.9% to 9.8%. The drop in repeat CS rate was accounted by an increase VBAC.

Lau	A study of patients' acceptance towards VBAC	Aust NZ JOG	36	155	96	99 pts. with PCS. Only 53% would accept VBAC if told that chance of success was 70%. A history of vaginal delivery and negative feelings towards previous operation were positively associated with acceptance ot VBAC. Convenience of ERCS and fear of vaginal delivery were the commonest reasons for refusal.
Learman	Predictors of repeat CS after TOL: do any exist?	JACS	182	257	96	LAC-USC, 175 consecutive pts who underwent TOL, 85% delivered vaginally, Pts who had labor included and pts with high fetal station on admission were sig. more likely to require repeat CS (67% and 75% respectively) A subgroup of induction and macrosomia only had 25% successful VBAC. Conc.= until risk factors with high predictive value for repeat CS are identified, all eligible pts should be encouraged to undergo a TOL.
Lynch	UR and scar dehiscence. A 5-year survey.	Anes Intestive Care	6	699-704	96	27 cases of UR reported out of 31,115 deliveries for an incid of .086%. there were no maternal deaths but fetal mortality occurred in 5 of the 27.
Martins	VBAC	Clin Perinat	23	141	96	The VBAC rate continues to rise due to both national organization recommendations and trials spanning 10 years. Broadening eligibility criteria and investig. factors influencing the rate should place us on the glide path to reduction of the overall CS rate by 2000.
Mathelier	Radiopelvimetry after CS.	JRM	41	427-30	96	70 postpartum pts. who had CS (various indications), got radiopelvimetry before discharge. The pelvis was considered adequate in 45.7% and inadequate in 54.2%.
McMahon	Comparison of TOL with an elective second cesarean section	NEJM	335	689	96	Population based longitudinal study of 6138 women in Nova Scotia with hx of PCS and delivered another child. The relevant issue is not risks of successful vaginal birth after CS but the risks of TOL. A total of 3249 underwent TOL and 2889 had an elective CS (of the TOL group, 1030 had a previous vaginal delivery, either before or after PCS). There were no maternal deaths. The overall rate of maternal morbidity was 8.1% (1.3% major-hysterectomy, UR or operative injury, 6.9% minor-fever, blood transfusion or abdominal-wound infection). The overall rate did not differ sig., major complications were nearly twice as likely among women undergoing a TOL. Conc.-among preg. women with PCS, major maternal complication are twice as likely among those whose deliveries are managed with a TOL as among those who have elective CS.
Miller	Declining CS rates: a continuing trend?	Health Reo	8:1	17-24	96	Canada, A major factor in the downturn of CS rates has been a steady increased in VBAC. From 1979 to 1993 the VBAC rte rose from 3 to 33%. In 1993, the CS rate ranged from 15% in Manitoba to 22% in New Brunswick. The VBAC rate ranged from 16% in New Brunswick to 42% in Alberta.
Miller (LACUSC)	VBAC in twin gestation	AJOG	175	194	96	Retro., 210 sets of twins with hx of PCS, 44 attempted TOL with no increase in maternal or perinatal morbidity or mortality.
Ouzounian	Amnioinfusion in women with PCS: a preliminary report	AJOG	174	783-6	96	Retro review, 936 women had amnioinfusion for oligo., MSAF and variable decelerations. Of these, 122 had PCS. Conc: amnioinfusion is safe in PCS.
Paul LAC-USC	Editorial: Toward fewer cesareans sections—the role of a trial of labor	NEJM	335	735	96	Editorial to McMahon article in NEJM 335:889, 1996.
Phalen	Uterine activity patterns in UR patients: a case control study (abst)	AJOG	174	358	96	
Phelan	VBAC: Time to Reconsider?	OBG Management		62	96	Editorial article about risks of VBAC, case report of successful litigation about lack of consent for VBAC and complications. Suggested VBAC consent form outlined. Issues commonly raised in uterine rupture lawsuits: informed consent, Pitocin use, CS indicated prior to UR (labor curve, FHT pattern), Dx of UR (maternal and/or fetal Sx) and managed care environment. Proposed causes of UR: type of incision, Pitocin, labor and placenta.

Porreco	The Cesarean Birth Epidemic: Trends, Causes, and Solutions	AJOG	175	369 - 374	96	
Robson	Using the medical audit cycle to reduce CS rate	AJOG	174	199	96	Retro., of all deliveries 1984-1988, developed strategies for labor management directed at the primary indication for CS (dystocia). The effect of strategies were then prospectively studied 1989-92. 21,125 deliveries were studied. After management change the overall CS rate was decreased from 12 to 9.5%. Applying principles of early Dx and Rx of dystocia resulted in a decrease in the CS for dystocia (7.5-2.4%).
Rooney	Is a 12% CS rate at a perinatal center safe?	J Perinat	16	215 - 9	96	10 years of deliveries 1983-1992 and 5 years of mortality and morbidity 88-92 were compared with national statistics. the CS rate was on avg. 12.5%, the forceps and VAD were consistently less than 5%. The nurse midwife service delivered approximately 36%. Conc.- the lowest safe CS rate is not known; it will undoubtedly vary with location and patient mix. Our rate has been accomplished through a vigorous prenatal care program. excellent perinatal and infertility services, a vigorous program of VBAC and a competent nurse-midwifery service.
Rozenberg	US measurements of LUS to assess risk of defects of scarred uterus	Lancet	347	281	96	Prospective observational, 642 pts with PCS had US at 36-38 wks separated into 4 gps on basis of LUS thickness. Overall freq. of defective scars was 4% (15 UR, 10 dehiscences). The freq. of defects rose as thickness decreased. No defects if thickness was 4.5 mm, 2% with thickness 3.6-4.5, 10% with values 2.6-3.5 and 16% when thickness was 1.5-2.5. Conc-in hosp where repeat CS is norm, encourage TOL with thickness 3.5 or greater.
Soltan	Pregnancy following rupture of the pregnant uterus	IJOG	52	37	96	Retro review found 11 cases of ruptured uterus, 6 of whom occurred in pts with previous ruptured uterus. 2 patient were primigravids, fetal heart rate abnormalities were observed in all the UR in labor.
Suner	Fatal spontaneous rupture of a gravid uterus: case report and literature review of UR	J Emerg Med	14	181	96	Case report of UR, 38 y.o. gravid presented to ER in cardiac arrest 24 hours after an initial complaint of abdominal pain.
Weinstein	Predictive score for VBAC	AJOG	174	192	96	Retro, 10 year, VBAC after one PCS. 368 (78.1%) attempting VBAC were successful and 21.9% had repeat CS. Pos. predictors were malpresentation, PIH, Bishop score < 4. Hx of CPD and FTP did not demonstrate predictive value (63.8% with those Dx were successful). Macrosomia and IUGR tended to decrease the chances of VBAC.
Weinstein	VBAC: current opinion	IJGO	53	1	96	Current literature attests to the merit of TOL. Some controversies remain: can women with 2 or more CS undergo TOL, or prostaglandins for induction.
Zisow	UR as a cause of shoulder dystocia	OG	87	818	96	Case report, G4P2 adm for labor induction. FHT normal until full dilation when fetal bradycardia developed and persisted until delivery. With the use of forceps, vtx delivered but head retraction was encountered, attempts at delivery unsuccessful requiring a CS. Findings were body anterior to the already contracted, anterolaterally ruptured uterus. An abdominally assisted vaginal delivery was accomplished.
Zorlu	Vaginal birth following unmonitored labor in pts. with PCS.	Gyn OB Invest	42	222 - 6	96	Retro., 165 pts. with PCS who delayed coming to the hospital were reviewed. 71 were allowed to continue to labor and 62 were successful. The overall rate of scar separation was 3.6% Other than scar separation and febrile morbidity, no maternal morbidity was observed. 98.4% of infants has 5 minute Apgar scores of >= 7.
AAFP Task	TOL vs. elective repeat CS	AFP	52	1763	95	Meta analysis, about 70% of TOL can expect success. TOL was assoc. with a sl. inc risk of UR (0.24%) and a dec. risk of infection and fever and postpartum bleeding. Financial cost of CS was 1.66 to 2.4 greater than the cost of TOL. http://www.aafp.org/family/pracguid/vbac.html

ACOG	Fetal Heart Rate Patterns: Monitoring, Interpretation, and Management	ACOG Comm. Op.	207		95	FHR evaluation should be provided for all patients in labor to detect complications resulting from alterations in fetal oxygenation.
ACOG	Induction of Labor	ACOG Comm. Op.	217		95	(replaces #157)
Adair	A TOL complicated by UR following amnioinfusion	SMJ	88	847	95	Case report of UR following amnioinfusion in a TOL. "Demonstrates the need for careful attention to amnioinfusion volumes and administration."
Adair (U of Fla. Jacksonville)	Labor induction in pts with PCS	AJPeri	12	450	95	Retro, all pts with PCS requiring Pitocin, 160 pts, 69% had VBAC. Women with hx of PCS had a higher incid of operative vaginal del, prolonged first and second stages, rate and maximum dose of oxytocin infusion. There was one UR. "Labor induction with PCS results in an acceptable rate of vaginal del and appears safe for both mother and fetus."
Asakura	More than one PCS: a 5 year experience with 435 pts	OG	85	924-929	95	Record review of 435 pts with > 1 PCS compared with 1206 pts with one PCS. Uterine wound separation occurred in 9/435 versus 16/1206 (not sig.). VBAC was less successful with more than one PCS (64% versus 77%). Important adverse outcomes were infrequent and not related to the number of PCS.
Burns	The effect of physician factors on the CS decision	MedCare	33	365-82	95	Patient factors appear much more important than both physician and hospital factors.
Chen	a 10-year review of UR in modern OB practice.	Ann Acad Med Singapore	6	830-5	95	Retro., 26 cases of proven UR. Clinical presentations included abnormal FHT (25%), bloody amniotic fluid (20%) for pts. with a scarred uterus. Those with an unscarred uterus presented with postpartum hemorrhage (50%) and shock (33%). there was one maternal death (3.8%) and the overall incid of fetal loss was 7.4%.
Chez	Cx ripening and labor induction after PCS.	COG	38	287	95	Preponderance of data indicates that: 1. If there is no contra to spon cx ripening there is no contra to use of prostag. gel or tents. 2. If there is no contra to spon labor, there is no contra to the use of oxytocin in pts with PCS.
Clarke	Changes in CS in the US 1988 and 1993	Birth	22	63-7	95	CS rate for 1993 in the US was 22.8% with a primary rate of 16.3%, which was stable during 88-93. The VBAC rate doubled from 12.6% to 25.4%. Even if VBAC rates increase at the same rate as in the past, the goal of CS rate of 15% by 2000 will no be met without reducing primary rate by 50%.
Gates	Think globally, act locally: an approach to implementation of clinical practice guidelines	Jt Comm J Qual Improv	21	71-84	95	7-step process for implementing CQI-continuous quality improvement as applied to VBAC.
Hamrick - Turner	Gravid UR: MR findings	Abd Imag	20	486	95	Case report of MR of uterine dehiscence.
Khan	The partograph in the management of labor following PCS	IJOG	50	151	95	236 pts attempting VBAC, a 1 cm/hr line was use to indicate an alert line on the partogram. There were 5 time zones-A=area to the left of alert line, B=0-1 hr after alert line, C=1-2 hr after line, D=2-3 hrs after alert line and E and F=>3 hrs. 55 pts ended with repeat emergency CS (23%) with 7 (2.3%) UR. Of the 181 successful VBAC, 83% occurred within 2 hr after the progress of labor had crossed the alert line (zones A-C). Conc-in women attempting VBAC, the partographic zone 2-3 hr after the alert line represents a time of high risk of UR.
Markos	Ultrasonographic Dx of uterine rent at 33 weeks gest	AJOG	172	224 - 6	95	Case report, Hx of uncomplicated D+C for incomplete was seen at 33 weeks gestation c/o decreased fetal movement and intermittent abdominal pain for one week. US demonstrated oligohydramnios and a fundal uterine rent continuous with a large fluid-filled cystic mass. Laparotomy revealed a R cornual uterine rent with hourglass amniotic sac. A healthy infant was delivered by CS.

Miklos	Vesicouterine fistula: a rare complication of VBAC	OGsup	86	638	95	Case report of pt who developed vesicouterine fistula during delivery after PCS. An anterior uterine wall defect was noted immed after the delivery, continuous bladder drainage was unsuccessful. and surgical correction was necessary.
Miller	VBAC: a 5-year experience in a family practice residency program.	Jam Brd FP	8	357	95	National objective for CS rate is 15% overall with a primary rate of 12% and a VBAC rate of 35%. In 1991 the overall rate nationally was 23.5%, 17% and 24.2% respectively. Retro study of 996 fam. practice deliveries, 98 had PCS with 87 eligible for TOL, 64% accepted a TOL with 77% success.
MMWR	Rates of CS--US 1993	MMWR Morb Mort Wkly Rpt	44	303 - 7	95	
Naef	TOL after CS with a lower-segment, vertical uterine incision: is it safe?	AJOG	172	1666-74	95	10 year period, all lower segment CS (whether LT or LV) were considered appropriate for VBAC attempt. 1137 pts had LVCS, 262 were subsequently delivered of 322 live born infants (174 or 54% attempted VBAC and 83% of them were successful-144 of 174)PPH occurred more often in the TOL gp but there was more endometritis in the repeat CS gp. There were 2 uterine ruptures (1.1%) in the TOL gp and none in the repeat CS gp. Neither mother experienced fetal extrusion or adverse outcome for mother or baby. Conc-prior LVCS can undertake a TOL with relative maternal-perinatal safety with risks comparable to those of previous LTCS.
Paul	CS: how to reduce the rate	AJOG	172	1903-11	95	LAC-USC CS rate peaked at 25% and is now in modest decline. Target rate is 15% by 2000 with 13% primary and 3% repeat. Major indications for CS are prev. CS-8%, dystocia-7%, breech-4%, and fetal distress 2-3%. The major areas of reduction must occur in the PCS and dystocia. An expanded TOL and VBAC will produce further reductions (Europe has a 50% VBAC rate versus 25% in US) Even if a 50% VBAC rate occurs, the national goals are unachievable.
Saglamtas	Rupture of the uterus	IJOG	49	9	95	Birth records of 58,262 deliveries examined for years 1990-92. There were 40 ruptures for a frequency of .068% (1/1457). 30 had previous CS. Fetal mortality was 32.5% and no maternal deaths were reported.
Segal	Eval. of breast stim. for induction of labor in women with a PCS and in grand multiparas	Acta OG Scand	74	40 - 1	95	Retro., from 135 pts in who labor was induced with breast stim (PCS and grandmultips). Success rate in achieving vag. del. was 84%. Conc-breast stim. is efficacious and safe.
Sweeten	Spontaneous rupture of the unscarred uterus	AJOG	172	1851-56	95	Case report of 2 uterine ruptures in a previously unscarred uterus. Both received low dose Pitocin, bradycardia and uterine hyperstimulation occurred at onset of second stage of labor.
Thorp	The Effect Of Maternal Oxygen Administration During The Second Stage Of Labor On Umbilical Cord Gas Values: A Randomized Controlled Prospective Trial	AJOG	Feb	465 - 474	95	Maternal oxygen administration > 10 min. resulted in deterioration of cord blood gas values at birth.
van Alphen	Recurrent UR Dx by US	USOG	5	419	95	Case report of recurrent UR. Pt had hx of left cornual uterine rupture which was repaired. US during subsequent pregnancy showed no signs of dehiscence until pt presented with Sx. US at that time revealed protrusion of the membranes at the fundus.
van Roosmalen	CS birth rates worldwide. A search for determinants	Trop Georg Med	47	19-22	95	

Videla (Lackland AFB - Hankins)	TOL: a disciplined approach to labor management resulting in a high rate of vag. del.	AJPeri	12	181	95	Overall CS rate at their institution was 9%. Labor management inc encouragement of TOL, Pitocin when indicated, epidural analgesia only after entering the active phase and continuous fetal monitoring. 713 pts had PCS, 588 attempted TOL and 517 (88%) were successful. 4 UR occurred, one received Pitocin.
Williams Seattle	Preinduction prostaglandin E2 gel prior to induction of labor in women with PCS.	GynObInvest	40	89	95	Retro cohort compared 117 women with one PCS with control. Received 0.5 mg of intracervical prostaglandin E2. Overall VBAC had a higher CS rate as compared with control. Overall, the efficacy and safety is comparable to that observed in nulliparas.
ACOG	ACOG Committee on Ob:Maternal and Fetal Medicine.				94	Committee opinion: Guidelines for vaginal del. after PCS
ACOG	Fetal Distress and Birth Asphyxia	ACOG Comm. Op.	137		94	
ACOG	*PRECIS V: An Update in Obstetrics and Gynecology*			193 - 4	94	The most common sign of UR is an abrupt change in FHR, incl. brady. or prolonged decel.; therefore, plans for appropriate management, rapid diagnosis and immediate intervention should be in place prior to undertaking a TOL.
ACOG	Vaginal Delivery After a Previous Cesarean Birth	ACOG Comm. Op.	143		94	"...plans for rapid diagnosis and appropriate intervention should be in place prior to undertaking a trial of labor." TOL should occur in a hospital responsive to acute intrapartum emergencies. (replaces #64)
Behrens	Induced labor with prost. E2 gel after PCS	Gebertshilfe	54	144	94	385 TOL induction, 161 received prost. E2 gel with 84.9% success after one PCS and 70% after 2 PCS.
Chapman	The value of serial US in the management of recurrent uterine scar rupture	BJOG	101	549 - 51	94	
Chattopadhyay	Planned vaginal delivery after 2 PCS	BJOG	101	498 - 500	94	Prospective, 115 pts. with 2 prev. CS who underwent TOL compared with 1006 who had repeat CS. 89% delivered vaginally, 68% had spon labor and the remainder had prostaglandin E2. Augmentation of labor was required in 28%. There were no scar dehiscences in those who delivered vaginally, there was dehiscence in the failed TOL and one woman required hyst. Conc.-TOL in pts. with 2 prev. scars appears a reasonable option.
Cowen	TOL following cesarean delivery	OG	83	933	94	Prospective, 593 pts. with PCS and TOL, 478 were successful (81%) 67 were induced and 46 had VBAC, 167 received augmentation and 117 delivered. 5 patients experienced **true uterine rupture (0.8%)** resulting in severe neurologic sequelae in one infant. The only consistent indication of UR was an abrupt and prolonged fetal bradycardia.
Ewen	Bladder laceration assoc. with uterine scar rupture	Br J Urol	73	712 - 3	94	
Fawcett (U of Penn. School of Nursing)	Responses to VBAC	JOG Neonatal Nurs	23	253 - 9	94	32 pts. who underwent VBAC tested by the Roy Adaptation Model of Nursing. Conc: The women reported both positive and negative aspects of childbearing. The results show a need for high quality nursing and obstetrical care with emphasis on relief of pain and the provision of support and information.
Flamm	ERCS versus TOL: a prospective multicenter study.	OG	83	927 - 32	94	7229 pts. with hx. of PCS, 5022 had TOL and 75% were successful. The rate of uterine rupture was <1% and there were no maternal deaths related to UR. The hosp. length of stay, transfusion and pp fever were all higher in repeat CS group. Conc-Neither repeat CS nor TOL is risk free; however, with careful supervision, TOL eliminates the need for a large proportion of repeat CS.
Furbetta	Vesicouterine fistulae as complications of repeated CS	IJOG	5	240 - 6	94	

Gardeil	Uterine Rupture in pregnancy reviewed	Eur JOG Repro Biol	56	107-110	94	Ireland, Review, 1982-1991, excluding cases of asymptomatic uterine scar dehiscence, there were 15 cases of UR in 65K deliveries for an incid of UR of 1 in 4,366 deliveries. There was no case of UR in 21K primigravidas. Only 2/15 occurred in pts without a uterine scar. 12/13 rupture after PCS occurred in the delivery immediately after the PCS. 3 of the 5 perinatal deaths were attrib. to the UR. 10/15 had their labor induced, 5/15 required hyst. 8/15 were Dx in labor and 7 Dx postpartum.
Granovsky - Grisaru (Israel)	The management of labor in women with more than one uterine scar: is a repeat CS really the only "safe" option?	J Peri Med	22	13 - 7	94	Prospective, 26 pts. with 2 or more PCS underwent TOL compared with a similar control group. 19 (73%) were successful, there were no cases of UR or perinatal loss. The maternal complication rate was lower in TOL.
Gregory (Cedars Sinai, LA)	Repeat CS: how may are elective?	OG	84	574 - 8	94	Reviewed 1885 CS in 1992. The hospital CS rate was 28.7%, 34% of which were repeat CS. Elective repeat was the leading indication followed by "other", dystocia, breech and fetal distress. In contrast, dystocia was the leading cause for primary CS followed by "other", fetal distress, breech. 15.6% undergoing repeat CS had absolute or relative contraindications to VBAC. Conc= current recommendations for lowering CS rates by inc. VBAC are based on aggregate data and do not recognize that some repeat CS are clinically indicated.
Holden	Vesicouterine fistula occurring in a women with PCS and 2 subsequent normal vag. del.	BJOG	101	354 - 6	94	Includes case report of vesicouterine fistula occurring spon as a complication of VBAC.
Hueston	Factors predicting elective repeat CS	OG	83	741-744	94	
Kaplan (Israel)	Routine revision of uterine scar after prior CS	Acta OG Scand	73	473	94	467 pts. with VBAC, in 414 the scar was examined transcervically and no dehiscence was detected. Suggest that routine exploration is not necessary.
King	Socioeconomic factors and the odds of VBAC.	JAMA	272	524 - 9	94	Retro. of 1989 NY states, 13,944 births in pts. with hx. of PCS, 22% were VBAC. The odds of VBAC increased with maternal education. Conc.-in addition to clinical factors, a mothers level of education, ethnicity and specific char. of the hospital affect the odds of VBAC.
Lelaidier	Mifepristone for labor induction after prev. CS	BJOG	101	501	94	Prospect study of 32 pts. with PCS and an unfavorable cx. Received either placebo or 200 mg mifepristone on days one and two of a 4 day observation. Conc.-induction of labor is facilitated in term women with PCS by the use of mifepristone. Safe and useful with no adverse events on the fetus or mother.
Miller (LAC / USC)	VBAC: a 10 year experience	OG	84	255 - 8	94	1983-1992 there were 164,815 deliveries at LAC/USC, 17,322 had hx. of PCS. TOL was attempted in 80% with one PCS, 54% with 2 PCS and 30% with 3 or more PCS. The success rate was 83% with one PCS and 75% with 2 or more. Uterine rupture was 3 times more common with 2 or more PCS. TOL yielded a 6.4% lower CS rate with the majority (5.5%) from one PCS. Among TOL there were 3 rupture related perinatal deaths and one maternal death. Conc.-substantial reduction of CS rate can be accomplished safely and efficiently by encouraging a TOL in women with one PCS.
Morton	Effect of epidural analgesia for labor on the cesarean delivery rate.	OG	83	1045 - 52	94	A meta analysis of published studies on above topic reveals a 10% increase in sections when epidural was used.
Moskovitz	Fetal heart rate monitoring casebook. UR and sinusoidal heart rate	JPeri	14	154-8	94	

Mushinski	Average charges for uncomplicated CS and vaginal deliveries	Stat Bull Metro Ins Co	75	27	94	During 1993, the average charge among Met Life insured's for a CS was $11,000 compared to $6,430 for vaginal delivery. Physician fees averaged $4,070 for CS and $2,740 for vaginal delivery.
Notzon	CS delivery in the 1980s: international comparison by indication.	AJOG	170	495	94	1990 overall USA CS rate was 24%, Sweden was 11% Previous CS and dystocia may be the sources of future reduction in CS rates in the US.
Penso	VBAC: an update on physician trends and pt perceptions.	Cur Op OG	6	417 - 25	94	The inc. VBAC can be attrib. to changing physician trends. Women approp for TOL include prev. LVCS, multiple incisions and unknown incision. "limited data show twins, breech and macrosomia not a contraindication". Increased use of Pitocin, ECV, epidural for pain relief and use of PGE gel for cx. ripening. Pt. resistance is still a major deterrent to further rise in VBAC rates.
Potrikovsky	Laparoscopic assessment of the integrity of the post CS uterine wall before a TOL. Transcervical Endoscopy Registry	JRM	39	464 - 6	94	52 pts who underwent endoscopic exam. of uterine scar prior to TOL. Scope inserted after ROM, 45 previous incision identified and normal, "compromised" scars were detected in 3 pts and scars were identified as vertical in 4 pts.
Ranzinger	Spontaneous rupture of a low transverse CS scar	SMJ	87	1001-2	94	Case report, uterine rupture occurs in less than 1% of preg. Case report of spontaneous rupture of a LTCS scar at 36 weeks gestation resulting in fetal death.
Sandmire	The Green Bay CS study. III. Falling CS birth rates without a formal curtailment program	AJOG	170j	1790 - 802	94	Observed CS rates at 2 G.B. hosp after 1990 CS study publication. Looked at 1986-1988 and 1990-1992. Total/Primary/Repeat declined from 13.3%/10.2%/8.6% to 6.8%/4.7%/3.4% respectively. Higher CS rates did not result in better perinatal outcome. Literature reports, residency training, CME attendance and liability risks were the major determinants of CS birth as perceived by the 10 physicians in the study.
Schachter (Israel)	External cephalic version after PCS--a clinical dilemma.	Int JGO	45	17 - 20	94	11 pts. with breech, hx. of PCS underwent ECV after 36 weeks utilizing ritodrine. All were successful, 6 pts. delivered vaginally and 5 had repeat CS. No scars showed signs of dehiscence. 3 of the 5 infants in the repeat CS gp weighed > 4,000 GMS whereas all the VBAC gp weighed < 3,500.
Stone	Use of cx. prostaglandin E2 gel in pts. with PCS	Am J Peri	11	309 - 12	94	Retro, 94 pts with PCS, compared to 866 nullips, both underwent preinduction cx. ripening with 2 mg PGE2 get intracervically. There were no sig. differences in duration of ROM, length of labor, rate/indications for CS, incid of MSAF, maternal or neonatal morbidity. There were no cases of uterine rupture in either gp. Conc-PGE2 gel may be used with the same safety and efficacy in pts with PCS as in nullips.
Turnquest (University of Louisville)	VBAC in a university setting	J Ky Med ASSOC	92	216 - 21	94	2757 pts., 282 had hx. of PCS, of the 259 eligible, 84% had TOL and 168/218 had VBAC. There were 6 cases of dehiscence and one uterine rupture. Maternal morbidity was higher in failed TOL pts. Prev. CPD or FTP did not preclude a TOL and 69% were successful.
Turrentine	Recurrent Bandl's ring as an etiology for failed VBAC.	Am J Peri	11	65	94	Case report of recurrent Bandl's ring in pt. attempting VBAC.
van der Walt (South Africa)	VBAC after one CS	Int J Gyn Ob	46	271 - 7	94	189 pts with hx. of one PCS studied, 44.9% delivered vaginally, 34.4% had a repeat CS during labor and 20.6% had elective CS. In subgroup of babies weighing >2500 GMS, 10.9% of mothers experienced morbidity related to trial of scar. Conc= VBAC accomplished less often in this pop compared with reports from developed countries but the procedure was equally safe.
Yasumitzu	Trial of VBAC for arrest disorders of labor: analysis of pts with well documented medical records	Asia-Oceania JOG	20	407-13	94	Prospective 6-year study of pts with PCS for arrest disorders. 45 pts with history, 28 had TOL with 75% successful. Differences were with different weights of first and second infant,

Zanconato (Mozambique)	Audit of UR in Maputo: a tool for assessment of OB care.	Gyn Ob Invest	38	151 - 6	94	Record review, 96 women with Hx of UR for prevalence of 1 UR in 424 pregnancies. 77% occurred after hospitalization with 22 cases rupturing elsewhere and transferred. Hx of PCS was 46%. Maternal mortality was 7.3% whilst perinatal mortality was 62.9%.
Ziadeh (Jordan)	Duration of labor in pts del. vaginally after one prev. lower segment CS	Int J Gyn Ob	45	213 - 5	94	Prospect., 84 pts with PCS for failure to progress had TOL. 58 were successful VBAC, the duration of 1st and 2nd stage of labor was similar, and there was no sig. difference in oxytocin requirements. Conc= pts with PCS for FTP have a duration of labor similar to primip. pts.
	Improving the timeliness of emergency C sect leads to improved care and inc MD satis	Qual Lett HJealthc L	5	6	93	To improve care, concerted effort made to eval reason for lack of response to stat c sect-delays invoked pt. prep, OR setup, pt. transport, lab delays. 88% made ACOG's 30 min
Abitol (NY)	VBAC: the patient's point of view.	Am Fam Phy	47	129	93	Interviewed pts. about VBAC and CS. Overall program had a 65% success with VBAC. 40% were not interested in VBAC-convenience and fear of prolonged labor were reasons given. 32% of successful VBAC were dissatisfied with the experience and would have preferred repeat CS.
Bolaji	Post cesarean section delivery	Eur JOB RepB	51	181	93	"World wide trend of VBAC reviewed", "watchful waiting is an essential virtue".
Boulot	Late vaginal induced abortion after a previous CS: potential for uterine rupture.	GOInvest.	36	87	93	23 pts. for late vaginal induced abortions with hx. of prev. CS, mean gestational age of 23.9 wks. RU 486 and prostag. used. 86.9% were del. vaginally, 3 required CS for lack of dilation. There was one rupture Rx conservatively.
Brody (Honolulu, HI)	VBAC in Hawaii. Experience at Kapiolane Medical Center	Hawaii MJ	52	38	93	483 attempted VBAC, 356 (73%) successful, majority of failures were for FTP. Incid. of scar separation was 1.04% (5/483). Pitocin was given in 47 patients, 30 del. vag.
Bussinger	VBAC in a rural private setting	Nebr Med J	78	358	93	
Clemenson	Promoting VBAC	Am Fam Phys	47	139	93	New data support the safety of VBAC. Physicians that provide standard OB care can also provide care for women attempting VBAC. Family physicians can play a major role in promoting VBAC in approp. patients.
Crane	Rx of OB hemorrhagic emergencies	Cur Opin OG	5	675	93	Review of management of hemorrhagic complications.
Elkady (Egypt)	A review of 126 cases of UR	Int Surg	78	231 - 5	93	Retro, 1979-88, 126 cases of UR in 46,207 del. for incid of 1/367. 43% were traumatic UR and 57% for spontaneous UR. Maternal mortality was 21% and perinatal mortality was 73%.
Flannelly	Rupture of the uterus in Dublin: an update	J Ob Gyn	13	440 - 443	93	78,489 deliveries, 27 cases of UR in multigravid, there were no UR cases in primigravidas. 8/48,718 unscarred uteri ruptured whereas 19/2842 previously scarred uteri ruptured (0.02% versus 0.7%). PPH was the most common sign of UR in the unscarred uterus, fetal distress was the most common findings in a scarred uterus. There were no maternal deaths, there were 12 perinatal deaths (45%).
Goldman (U of Montreal)	Factors influencing the practice of VBAC	AJ Pub H	83	1104	93	Case control, 635/2593 controls, found that higher likelihood VBAC if MD's CS rate less than 20%, high risk rate less than 5% and his age <54, Hosp tertiary referral and pt. have a low level of education.
Jakobi	Eval of prognostic factors for VBAC	JRM	38	729	93	261 pts. attempting VBAC, found 6 sig. factors predicting success (but abstract did not list them), 94.5% successful predicted but predictive value of failure was only 33%.
Jones	StORQS: Washington's statewide OB review and quality system: overview and provider evaluation.	QRB - Qual - Rev Bul	19	110 - 8	93	3 admin. databases, showed a high degree of variability across hosp. for CS, VBAC and forceps del.

Kline (St John's Mercy Medical Center, St. Louis, MO)	Analysis of factors deter. the selection of repeated CS or TOL	JRM	38	289	93	241 pts. with prev. CS: 120 had elective repeats, 121 attempted VBAC. More pts. opted for repeat if first was for FTP. More pts. in VBAC gp had first for fetal distress. Factors for attempt for VBAC were-81% pts. desire, 12% MD's advice+pts. desire and 7% just MD's advice. Reasons for repeat were 46% medical indications, 32% pts. desires and physicians advice, 13% physicians advice.
Lai	Del. after a lower seg. CS	Sing Med J	34	62	93	Retro., 130 pts. with prior CS, 76% were selected for trial of labor, 65% were successful. There was a 0.7% incid. of uterine dehiscence and a perinatal mortality of 10/1000 with no maternal mortality. CPD and prev. cx. dilation were not important prognostic factors.
Leung (LAC/USC)	Risk factors assoc. with uterine rupture during TOL after CS: a case control	AJOG	168	1358	93	Case control, 70 cases of uterine rupture, risk factors are excessive Pitocin, dysfunctional labor and hx. of 2 or more CS. Recog of active phase arrest disorder, despite adeq augmentation with Pitocin requires operative delivery.
Leung (LAC/USC)	Uterine Rupture after previous cesarean delivery: Maternal and fetal consequences.	AJOG	169	945	93	Retro., 106 cases of uterine rupture (7 charts incomplete -- 99 cases studied), 28 cases were complete fetal extrusion, 13 partial and 58 had no fetal extrusion. There was one maternal death. Complete extrusion was associated with a higher fetal mortality (14%) and morbidity. Sig neonatal morbidity occurred when >18 minutes elapsed between the onset of prolonged deceleration and delivery. Conc=maternal and neonatal complications in uterine rupture are low with prompt intervention.
MyersMt Sinai, Chicago	The Mount Sinai CS reduction program: an update after 6 years	SocSciMed	37	1219	93	F/u on program to reduce CS rates. Two prerequisites remain critical to reducing CS rates: must be accomplished without harm to mother or baby and a target rate was prospectively determined. They achieved rates of 10-12% without adverse outcome.
Norman	Elective Repeat CS: how many could be vaginal births	CMA	149	431	93	Retro., 313 pts., only 30% had TOL, (71% elig by guidelines of Nat Consensus Conf 1986 and 13% more elig by 1991), of 220 repeats only 11% had VBAC discussion noted in chart.
Raynor (Roanoke Rapids, NC)	Experience with VBAC in a small rural community practice.	AJOG	168	60	93	Retro., 67 pts. with hx. CS, 76% had TOL, and 61% were successful. 2 uterine ruptures occurred, neither assoc. with labor.
Rock	Variability and consistency of rates of primary and repeat CS among hospitals in 2 states.	Pub Heal Rep	108	514	93	New York & Illinois found wide variation in rates. Hosp CS rate was consistent during study.
Ryding	Investigation of 33 women who demanded a CS for personal reasons	Acta OG Scand	72	280	93	
Sato	UR during TOL in a case with a unicornuate uterus and a prev. CS	GO Invest.	36	124	93	Case report of uterine rupture during labor in a pt. with prev. CS and a unicornuate uterus. Conc.-do repeat in this circumstance.
Shalev	ECV at term using tocolysis	Acta OG Scand	72	455	93	Case reports of 55 pts with non vertex at 37-40 wks. 8 pts had PCS, 6 underwent ECV successfully with 2 of those successful in VBAC.
Socol (Northwestern U, IL)	Reducing CS at a primary private university	AJOG	168	1748	93	Northwestern hosp-had CS rate of 27% in 86 -- VBAC strongly encouraged. Individual physicians CS rates published and active management of labor standard, total/primary/repeats decreased 27%/18%/9% to 17%/10.6%/6.4%. (dec CS for dystocia and inc VBAC).
Soliman (Manchester University, Ontario)	CS: analysis of experience before and after the Nat. Consensus Conf.	CMAJ	148	1315	93	Compared 1982 with 1990, VBAC offered 93% more often in 1990, rate of vag. del. inc only 2.6% (reducing the CS rate by 8.7%). Induction of labor is currently the most important correctable predictor of CS rate, active management of dystocia, breech management and fetal distress diagnosis "need to be improved."

Stanco (LAC - USC)	Emergency peripartum hyst, and assoc. risk factors	AJOG	168	879 - 83	93	Retro and cohort, 1985-90. 123 cases of emergency peripartum hyst. (1.3/1,000 births) 61 for placenta accreta, 25 for uterine atony, 19 for unspecified bleeding and 14 for UR.
Thorp	The Effect of Intrapartum Epidural Analgesia on Nulliparous Labor: A Randomized, Controlled, Prospective Trial	AJOG	169	851 - 858	93	Nulliparas in spontaneous labor were randomized to epidural (n=48) or narcotic (n=45) analgesia. The only cesarean in the narcotic group was the only woman who opted out into the epidural group. The risk of cesarean with epidural was 50% at 2cm, 33% at 3cm, 26% at 4cm, and nil at 5cm. They stopped the study early on ethical grounds when the results became clear to the researchers.
Thubisi	VBAC: is X ray pelvimetry necessary?	BJOG	100	421	93	Prospective, controlled, 366 assigned x ray or no x ray at 36 wks. Conc= x ray pelvimetry is poor predictor of outcome and inc CS rate. (controls had much higher rate of successful VBAC versus x ray gp).
Tucker	TOL after a one or two layer closure of a LTCS	AJOG	168	545	93	292 pts, the incid of scar separation was low and not affected by the method of uterine closure. A LTCS closed in one continuous layer should not preclude a subsequent TOL.
Vedat (Turkey)	UR in labor: a review of 150 cases	Isr JMed Sci	29	639	93	8 year period, 150 cases of UR for incid. of 1/966 deliveries. 114 occurred in pts with PCS. Rupture of unscarred uterus is a more catastrophic event. Etio-grandmultips, CPD, fetal malpresentation and oxytocin stimulation of labor. 32.2% perinatal mortality but only 2% maternal mortality. Hyst. commonly performed.
Walton	VBAC. Acceptance and outcome at a rural hosp	JRM	38	716	93	Retro., 62 pts., 88% of those ultimately undergoing trial were successful.
Abraham (Israel)	Delay in Dx of rupture of the uterus due to epidural anes.	GO Invest	33	239	92	Case report of UR with epidural anes.
Arulkumaran (National Univ Hosp, Singapore)	Sx and Signs with UR,-value of uterine pressure monitoring	Aus NZ JOG	32	208	92	Retro., 1018 pts. with prev. CS, 722 (71%) had TOL with 70% success. there were 4 (0.55%) partial and 5 (0.69%) complete uterine scar rupture. All nine had oxytocin, 3 of the 6 with rupture Dx prior to del. had sudden reduction in uterine activity, one had scar pain and prolonged bradycardia, 2 had no signs or Sx.
Bakri (Saudi Arabia)	Preg. complicated by malaria, precipitate labor and UR	IJOG	38	231 - 3	92	Case report of pt with malaria, 3 PCS developing precipitate labor complicated by UR, stillborn, bladder and vaginal laceration necessitating hyst.
Blanco	PGE 2 gel induction of pts. with prev. LTCS (Texas Tech)	AJPeri	9	80	92	25 pts. with unfav. cx. and prev. LTCS compared with 56 prev. LTCS and labor. Groups comparable, no UR or UD.
Chelmow (New England Med Center, Mass)	Maternal and Neonatal outcomes after Pitocin aug. in pts. undergoing TOL after PCS	OG	80	966	92	Retro., 1975-90 pts. whose labors were augmented with Pitocin were compared with women with labor abn. managed without Pitocin. 504 TOL, 37% had labor abnormalities-34% of these received Pitocin. 58% of TOL were successful. In those since 1982, 73% had VBAC, 74% of pts. who received Pitocin del. vag. There were no mat deaths, UR or hyst. Conc Pitocin and epidurals safe for VBAC.
Chen (Taiwan)	UR: an 8 year clinical analysis and review of the literature	Chang Keng IHsueh	15	15 - 22	92	9 cases of UR for incid of 1 in 3871. 6 of 9 involved an intact uterus with the others having hx. of PCS. The common factor of UR in an intact uterus was injudicious use of a uterine stimulant whereas the common etio. of UR of a scarred uterus was a previous scar rupture or dehiscence. There was no maternal mortality but 33% fetal mortality (all in UR of intact uterus).
Dagher	Uterine and bladder rupture during vaginal delivery in a pt. with a PCS: case report	Urol Radiol	14	200 - 1	92	Case report.
Devoe	Prediction of "controlled" UR by the use of IU pressure cath	OG	80	626	92	Uterine. pressure measured during CS, did not help predict UR

Duff	Issues in OB, VBAC	Audio Digest	39		92	Tape presentation, 4% incid of CS in 1950, now is near 25% and 40% in some hosp. Reasons for increase: 46% repeat CS, 20% dec. in mid forceps, 15% inc. in Dx of fetal distress, 12% for breech presentation. Indications for CS now are: 30% dystocia, 35% repeat CS, 10% fetal distress, malpresentations, twins, prematurity, medical complications. VBAC risk of rupture is 0.5-3%, usually asymptomatic, risk of rupture is not increased with second CS. 70% of VBAC will be successful. VBAC management: continuous fetal monitor, effective analgesia (epidural OK), examination of scar after del (repair small defect in unstable patient or any defect > 4 cm. Risks of VBAC: scar disruption, infection, if CS required will have inc. blood loss, bladder and bowel injuries. Factors in success of VBAC: prior indication not CPD, previous successful VBAC, EFW < than prev. child.
Flamm	Should Electronic fetal monitoring always be used for women in labor for VBAC	Birth	19	31-5	92	
Gemer	Detection of scar dehis. at del. in women with prior CS	Acta OGS	71	540	92	Retro., 1023 pts. attempt VBAC, 475 del. vag., 13 cases of scar separation found at lap, only 1 found with manual exploration. i.e. manual exploration not justified with successful VBAC.
Holland (U of Miss.)	TOL after PCS: experience in the non Univ. level II regional hosp. setting	OG	79	936	92	Retro., Mississippi, 18,703 live births, 1574 had prev. CS (8.4%). 18% of these PCS's had TOL with success of 71%. One UD lead to hyst.
Hsu (Johns Hopkins)	Rupture of uterine scar with extensive bladder lac after cocaine	AJOG	167	129	92	Case of rupture with extensive bladder injury with cocaine.
Jackson (U of Utah)	Prenatal care for the normal patient	Cur Opin OG	4	792	92	Screening protocols for the low risk patient.
Lee (Minnesota)	Spon bladder and UR with attempted VBAC	JUro	147	691	92	Case present., gross hematuria while Pitocin aug, fetal distress.
Maymon (Israel)	Third- trimester UR after PG E2 use for labor induction	JRM	37	449	92	9 cases reported in English lit of rupture after PG E2, although is rare "no prostaglandin compound is exempt."
Miller (Sydney)	VBAC	Aus NZJOG	32	213	92	318 pts. with PCS, 193 (61%) had repeat, 125 (39%) had TOL with 64% success. UR rate was 0.8%.
Mor-Yosif	The Israel perinatal census	Asia Oceania J OG	18	139	92	60-80% success for TOL
Nguyen (U of Texas Med. Galveston)	VBAC at the U of Texas	JRM	37	880	92	242 underwent TOL, 76% successful, 1.7% had separation of the uterine scar. Prior breech had highest success-86%, use of epidural and Pitocin may inc success.
Norman (Sweden)	Preinduct cx. ripening with PG E2 in women with one prev. CS	Acta OGS	71	351	92	30 pts. attempt VBAC with PG E2, 27% had CS, 1 episode of hyper contractility, "can be used".
Nyirjesy	VBAC in rural Zaire	JRM	37	457 - 60	92	33 offered VBAC, 22 successful. There was a high rate of maternal morbidity but no long term morbidity. **The rate of uterine dehiscence was 9.1%**.
Pickhardt (U of Miss.)	VBAC: are there useful and valid predictors of success/fail?	AJOG	166	1811	92	No element identified as predictor of success/failure -- all should attempt.

Pridjian (U of Michigan)	Labor after prior CS	Clin OG	35	445	92	All PCS candidates for VBAC, needs full informed consent, management like any labor: monitoring, labor disorders Dx and Rx promptly, avoid uterine hyperstim. **UR has multiple presentations, however, most common are fetal bradycardia and variable decel**. Most UR can be repaired. Hx. of prior UR is not a contraindication to future children but may place at inc risk for repeat event.
Spalding	Del. through the maternal bladder during TOL	OG	80	512	92	2 cases of infant del. through the maternal bladder, one after UD and the other after vaginal rupture after TOL. Conc-standard and unique complications are reported with TOL.
Stone (Mt Sinai Medical Center, NY)	Morbidity of failed labor in pts. with PCS	AJOG	167	1513	92	Retro. 237 primip failed VBAC compared to 1582 nullig with failed TOL. results- there were no sig. differences in maternal or neonatal morbid except for the presence of thin MSAF in primary CS.
Strong (Phoenix, AZ)	Amnioinfusion among women attempting VBAC	OG	79	673	92	901 attempting VBAC, 18 received Amnioinfusion with no untoward effects.
Troyer	OB parameters affecting success in a TOL: designation of a scoring system	AJOG	167	1099	92	Chart review of 264 TOL, had success rate of 72.7%, , said that they had a scoring system but did not list in abstract.
Beckley (Birmingham, UK)	Scar Rupture in VBAC: the role of uterine activity measurement	BJOG	98	265	91	12 VBAC with UR reviewed. Uterine activity patterns disc.
Farmer (LAC/USC)	Uterine Rupture during trial of labor after PCS	AJOG	165	996	91	137 uterine rut (119,395 del., 9% had prev. CS, 69% attempt VBAC, 79% successful, VBAC had **UR rate of 0.8%** with additional 0.7% had bloodless scar separation. **The most common manifestation of UR is fetal brady**.
Flamm	External version after PCS	AJOG	165	370	91	Approx. 100,000 CS done in US for Breech, 56 pts. with HX. of PCS had ECV attempted with 82% success in turning-65% of these went on to have a vaginal del.. No serious mat or fetal comp. were assoc. with ECV
Flamm	VBAC: Low risk, not no risk	Cont OG	36	24	91	1/3 of CS are repeat, incid. of ruptured uterus is <1%, 6 rules to lower incid. of UR= 1. be sure incis is LTCS, 2. insist on continuous EFM, 3. Intervene quickly for suspicious monitor findings, 4. don't rely on internal pressure cath (changes of UR subtle or non existent), 5. Be cautious with Pitocin (7 of 8 UR involved Pitocin), 6. follow ACOG guidelines.
Granja (Maputo Mozambique)	Management of labor following CS in a developing country	Clin Exp OG	18	47	91	17% CS rate in 1989, 179 PCS pts., 52% VBAC. no mat deaths, 5 stillborns and one early neo. death in study group (PNM less than overall hosp PNM).
Heddleston	VBAC in a small hosp	Mil Med	156	239	91	30 month period, TOL was successful in 76% of pts with PCS
Iglesias	Reducing CS rate in a rural community hosp.	Can Med AJ	145	1459 - 64	91	The overall CS rate decreased in a community hosp from 23% to 13% CS rate in pts approp for VBAC dropped from 93% to 36%.
Johnson	TOL: a study of 110 pts	Jclin Anes	3	216	91	Studied whether epidural is unsafe for TOL. 110 pts attempting TOL offered epidural, 51/100 accepted. 67% overall were successful,. There were 2 complete uterine ruptures, neither had epidurals. Presentation was fetal distress rather than pain.
Jones (Fitzsimons Army Med Center, Colo)	Rupture of LTCS scars during TOL	OG	77	815	91	8 cases of UR occurring during period of 13 months at 5 hosp. Est incid. is 0.7% of planned TOL. Comp. include one neonatal death, 2 cases of severe neonatal asphyxia, 3 maternal bladder lac and one hyst.
Joseph (Ochsner)	VBAC: the impact of pt. resistance to a trial of labor	AJOG	164	1441	91	167 pts., 25% of pt. who were strongly encouraged to have VBAC had CS instead.

Kafkas (Turkey)	UR	IJOG	34	41 - 4	91	Retro, 41 cases from 1983-88 for an incid of 1 in 966 deliveries. 61% were in grandmultips, (there were no UR in primigravidas), 76% d/t CPD. Maternal mortality was 7.3% while fetal mortality was 83%. Midwife education, regular antenatal care and hospital deliveries are important factors in prevention.
Krishnamurthy	The role of postnatal x-ray pelvimetry after CS in the management of subsequent delivery	BJOG	98	716	91	331 women had x ray pelvimetry after CS, 248 (75%) had inadequate pelvimetry and 83 (25%) were normal. 76 of the inadeq. pelvimetry attempted TOL with 51 delivering vaginally. All 3 UR occurred in pts with adeq. pelvis. Conc-practice of x ray pelvimetry should be abandoned.
Lomas	Opinion leaders vs. audit and feedback to implement practice guidelines: del. after prev. CS.	JAMA	265	2202	91	Rand. control study, 76 MDs in 16 community hosp eval audit/feedback and local opinion leader education as methods of encouraging compliance with a guideline for VBAC. After 24 months, the TOL/VBAC rates in the audit/feedback gp were no different, but rates of VBAC were 46% and 85% higher respectively with MDs education by opinion leader and with opinion leaders. The overall CS rates were reduced only in the opinion leader education group. The use of opinion leaders improved quality of care.
Mock	VBAC in a rural West African hospital	IJOG	36	187	91	220 pts with hx of PCS, 66% had successful VBAC of those with TOL. Success correlated directly with the number of prior vaginal deliveries and inversely with the number of PCS. Maternal and fetal outcomes did not differ with TOL or no TOL.
MyersMt Sinai, Chicago	A successful program to reduce CS rates: friendly persuasion	QRB Qual Rev Bull	17	162	91	F/u on program to reduce CS rates
Pitkin	Once a CS?	OG	77	939	91	Editorial, the women with a uterine scar are not low risk, they require caution and thought in arriving at a plan of management
Pridjian (U of Chicago)	CS: changing the trends	OG	77	195	91	U of Chic, VBAC intro in 1982., has helped stabilize the overall CS rate in the face of a rising primary CS rate.
Rachagan (Malaya)	Rupture of the pregnant uterus -- a 21 year review	Aus NZ JOG	31	37	91	Review of UR in Malaysia.
Rosen (Sloan Hosp for Women)	VBAC: a meta- analysis of morbidity and mortality	OG	77	465	91	Included 31 studies with total of 11,417 TOL . **Intended route (VBAC vs. CS) made no difference about UR or UD**. Use of Pitocin, presence of recurrent indication or presence of unknown scar were not assoc. with UR or UD. VBAC had decreased maternal febrile mortality, but there was no difference in perinatal mortality.
Schiotz (Norway)	Rupt. of the uterus in labor An unusual case followed by US	Arch GO	249	43	91	Case report, VBAC with UR Dx by US postpartum with a large amt. of fluid in pelvis, confirmed by findings of fetal cells in fluid. Managed expectantly.
Scott (U of Utah)	Mandatory TOL after CS delivery: an alternative viewpoint	OG	77	811	91	**12 women experienced major UR during TOL** (11 prev. LTCS, 1 LVCS), 2 required hyst, one had serious post-operative complications.
Spellacy (U of South Florida)	VBAC: a reward/penalty system for national implementation	OG	78	316	91	Proposes incentive system that MD is paid more for vaginal birth and pt. assumes financial responsibility for hosp costs beyond a vag. del.
Stafford	The impact of nonclinical factors on repeat CS	JAMA	265	59-63	91	
Taffel	1989 US CS rate steadies, VBAC rate rises to nearly 1 in 5	Birth	18	73	91	1989 CS rate was 23.8% (was 24.7%, 24.4%, 24.1% the three prev. years.). The 1989 primary rate of 17.1% was not different than the three previous years. VBAC rate did change remarkably from 12.6% in 1988 to 18.5% in 1989.
Thorp	Epidural Analgesia and Cesarean Section for Dystocia: Risk Factors in Nulliparas	AJ Peri	8	402 - 410	91	Labor progress with and without epidurals at different dilations and stations. Epidural women were more likely to have oxytocin and cesareans for dystocia.

Thurnau (U of Okla)	The fetal- pelvic index: a method of identifying fetal- pelvic disproportion in women attempting VBAC	AJOG	165	353	91	Used fetal head and abd circ with the maternal pelvic inlet and midpelvic circ (x-ray), compared with Colcher-Sussman x-ray pelvimetry and US predict EFW >4000 gms. 52 pts. had a neg. pelvic index- 47 had VBAC, 5 had CS, all 13 with positive index failed to progress in labor. Neither of the other two tests proved accurate.
van Roosmalen	VBAC in rural Tanzania	IJOG	34	211	91	137 pts with PCS and had TOL, 87 successful, 6.7% had scar rupture
Bider (Israel)	The use of Pitocin after a PCS -- a review and report on a series	Arch GO	247	15	90	Review of the lit and summary of their experience.
Chazotte (A. Einstein, NY)	Labor patterns in women with PCS	OG	75	350	90	Case control study on patterns of labor progress and incid. of dysfunctional labor in pts. with PCS. 68 pts. had matched controls. Labor disorders were present most freq. in the PCS gp with no prior vag. del. (42%) versus 14% with prior vag. del.
Chazotte (A. Einstein, NY)	Catastrophic complications of previous CS	AJOG	163	738	90	711 pts., **2.4% had extremely serious comp**. 9 uterine rupture (5 in labor), 2 cases of previa, 5 of accreta. The nature and freq. of comp. emphasize potential seriousness.
Coltart (Queen Charlotte's Maternity Hosp.)	Outcome of second preg. after previous LTCS	BJOG	97	1140	90	195 pts. attempting VBAC, 79% delivered. Pts. who went into labor spon had sig. better chance of del.
Egwuatu (Nigeria)	Vag. del. in Nigerian women after PCS	IJGO	32	1	90	154 pts. with PCS, repeat CS done in 33.8%, 102 attempted VBAC, 71.6% successful. **UR occurred in 5 (4.9%)** with the loss of 2 babies, there was no maternal loss.
el Gammal	Breech vaginal delivery after one CS: a retro. study	IJOG	33	99	90	Retro., 86 pts. with PCS and breech, 33 given a chance at VBAC (abstract truncated).
Flamm	*Birth After Cesarean*				90	Classic text on VBAC. pub: Prentice-Hall.
Flamm (Kaiser)	VBAC: results of a 5 year multicenter collaborative study	OG	76	750	90	5733 attempt VBAC, 75% successful. There were no maternal deaths, perinatal mortality was not sig. different from the general OB population.
Goldman (U of Montreal)	Effects of patients physician and hospital characteristics on the likelihood of VBAC	CMAJ	143	1017	90	Case control, 400 VBAC comp. with 1600 elect repeat CS, those successful were likely to be taken care of by high risk spec and at tertiary facilities (perception if VBAC is a high risk proposition).
Hansel	VBAC after 2 or more CS: a 5 year experience	Birth	17	146	90	Retro., 170 pts. with 2 or more prev. CS, 35 had TOL, 77% had successful vag. del. No increase in maternal or fetal morbid or mortality was assoc. with labor.
Harlass (Madigan Army Medical Center, Tacoma, WA)	The duration of labor in primip undergoing VBAC	OG	75	45	90	Retro., 73 successful VBAC studied, Conc: primips attempting VBAC have a similar labor to that of a Primig.
Kirk (Oregon)	VBAC or repeat CS: medical risks or social realities	AJOG	162	1398	90	160 pts., 1/2 indicated themselves as primary decision maker.
Klungsoyr (Ethiopia)	UR Rx with suture	Acta OG Scand	69	93 - 4	90	1983-85, 63 pts in labor with UR were Rx mainly with suture of the uterus. None of those operated on died, recommend suturing as the Rx. of choice.
Lazarov	Rupture of the uterine cicatrix in VBAC	Akush Ginekol	29	15	90	740 deliveries after one or more PCS, 420 retrospective and 320 prospective. 59% underwent repeat CS, 304 delivered vaginally with 4 uterine ruptures.

McClain	The making of a medical tradition: VBAC	Soc Sci Med	31	203	90	Interviews with 100 women showed that the choice of CS versus VBAC was largely influenced by respondent's interactions with physicians and their remembrance of the previous CS, their ethnic background, etc.
Meehan (Univ. College Galway, Ireland)	True rupture/scar dehiscence in VBAC	IJGO	31	249	90	1498 pts. with hx. of prev. CS, 844 attempted VBAC while the remaining 654 had repeats as they had 2 prev. CS. **8 true ruptures and 22 scar dehiscence were found**. Regional analgesia and Pitocin had no effect on rate of rupture. Rupture occurred most freq. in the initial trial of labor. There were 4 perinatal deaths assoc. with true rupture. 5 true ruptures were found in the TOL gp (1:169) with the loss of 3 babies. One further stillborn was in mother with classical scar before labor. 2 pts. had their rupture repaired and were del. by CS next preg. There were no maternal deaths in TOL gp, one in el. CS group.
Mor-Yosef	Vaginal Deliver following one previous CS	Asia Oc JOG	16	33	90	Survey, 22,815 deliveries. The overall CS rate was 9.6%. 55% of pts with one PCS delivered vaginally. Rupture of the uterus occurred in 1.2% with PCS versus 0.03% with intact uterus. There were no fetal or maternal mortality.
Phelan	UR	Clin OG	33	432 - 7	90	UR is a sudden, unforeseeable event that carries a high rate of maternal and perinatal mortality. When Dx. is suspected, prompt surgical intervention with an experienced pelvic surgeon and blood product replacement should be considered. Repair is a reasonable consideration. In those pts with repair, early delivery after fetal maturity would appear prudent. Fetal distress is the most common sign of UR and freq. precedes any other clinical manifestation.
Rosen (Sloan Hosp)	VBAC: a meta- analysis of indicators for success.	OG	76	865	90	Antic a greater than 50% success rate for del.
Sakala	Epidural analgesia. Effect on the likelihood of a successful TOL after PCS	JRM	35	886 - 90	90	
Sakala	Oxytocin use after PCS: why a higher rate of failed TOL?	OG	75	356	90	Retro., 1984-1986 237 pts. with HX. of PCS had TOL of which 73 received Pitocin which were compared to 164 who did not. Success was 68% in Pitocin gp and 89% in no Pitocin gp.
Sanchez - Ramos	Reducing CS at a teaching Hosp	AJOG	163	1081	90	Univ. Med Cent Jacksonville FL, department wide effort to reduce CS rate began in 1987. Overall rate declined from 28% in 1986 to 11% in 1989. Decreasing # of repeat CS played a major role. In 1986 32% of PCS had a TOL by 1989 84% had TOL (in 1986 65% successful, 1989 83% were successful) Changes in eval and management of dystocia and fetal distress played a role (14% to 4%) Reduction accomplished without compromising neonatal outcomes.
Adams	Intrapartum UR	OG	73	471-3	89	Case report of intrapartum UR in pt who was DES exposed who had no known predisposing factors for UR.
Chua (Singapore)	TOL after prev. CS: OB outcome	Aus NZ JOG	29	12	89	305 pts. with LTCS scar, 207 allowed TOL, 63% successful with recurrent indic., 73% for non recurrent indication. There were 3 UD (Pitocin protocol not followed).
Eriksen (Wright Patterson AFB, Ohio)	VBAC: a comp. of mat/neon morbid. to elective repeat LTCS	AJPeri	6	375	89	Retro., 141 pts. elig, 73 attempt VBAC, 81% successful with no sig. difference in morbid compared with ERCS except estimated blood loss and days in hosp.
Flamm (Kaiser)	VBAC: is suspected fetal macrosomia a contraindication?	OG	74	694	89	Eval. 301 pts. with birthweight >4000 undergoing TOL/VBAC.. In the birth range 4-4499 gms. 58% delivered vaginally, in >4500 gms. 43% del. vag.. No sig. differences in peri/mat morbidity were found.

Guerdan (Beaver, PA)	VBAC in a community hosp: a family practice residency experience	J Am Board FP	2	169	89	106 pts. with Hx. of prev. CS, 16 attempted VBAC, 13 delivered.
Hangsleben	VBAC program in a nurse midwifery service 5 years exp	J nurs Midw	34	179	89	Management similar except close fetal monitoring, IV and lab studies. 53 attempted VBAC., 83% successful.
Klein (Austria)	Diagnostic potential of cardio-tocography for uterine rupture	Acta OGS	68	653	89	3 pts. with silent uterine rupture. Dx not made until surgery even with cardiotocography.
Lonky	Predication of CS scars with US imaging during preg.	JUSMed	8	15	89	46 PCS and 30 controls had US of scar.
Maouris (Queen Charlotte's, London)	Successful vag. delivery after CS scar rupture: a case report	Clin Exp OG	16	1	89	Case report of successful vaginal del. in pt. with prev. UR.
Meehan (University College, Galway, Ireland)	Del. following CS and perinatal mortality	AJ Peri	6	90	89	Retro., 1972-1982, 1498 pts. with PCS anallysed, 44% had repeat CS, 56% had TOL. 83% had successful vag. del. and 17% had emergency repeat CS. There were 46 perinatal deaths giving a perinatal mort rate of 30.3/1000. It was lowest in the elect repeat gp=10.6/1000, the PNM in the TOL gp was twice as high. (overall PNM overall hosp pop was 22.5/1000) 4 deaths in assoc. with UD.
Meehan (University College, Galway, Ireland)	TOL following prior section; a 5 year pros study	Eur JOGRB	31	109	89	Prospect, 506 TOL, 79% successful with one UR(0.2%). Induction was performed in 127 pts. with 74% successful., Pitocin was given for induction/augmentation in 162 pts. with 80% successful with one UR and 4 UD-bloodless.
Meehan (University College, Galway, Ireland)	True rupture of the CS scar: a 15 year review 1972-1987	Eur JOGRB	30	129	89	2434 pts. with prev. CS scar, 45% were sched for repeat(2 or more prev., recurrent) TOL was undertaken by 55% and 81% achieved vag. del.. Regional anes. employed in 26% and Pitocin in 26%. There were 6 true scar rupture(0.44%) resulting in 1 stillborn, 2 neonatal deaths with no maternal death. There were 4 uterine ruptures in pts. sched for repeat(0.37%) 1. classical scar rupture with fresh stillborn, 2 with placenta praevia/percreta with bladder involvement both resulting in maternal death, 1 with placenta previa accreta.
Meehan (University College, Galway, Ireland)	Update on VBAC: a 15 year review 72-87	IJGO	30	205	89	2434 prev. CS, 1350 permitted TOL, 31% had induction of labor and 32% had augmentation of labor. Period 72-82 compared to 82-87 had falling UR rate from .6% to .2% and elimination of procedure related perinatal death. 2 maternal deaths in repeat CS gp, none in VBAC.
Nielsen (Sweden)	Rupture and dehiscence of CS scar during preg. and delivery	AJOG	160	569	89	Prospect, 10 years, 2036 pts. with hx. of CS, TOL allowed in 1008 and 92,2% were successful. They had uterine rupture rate of .6% versus .4% for total gp. "rupture did not cause serious complications". Uterine dehiscence rate was 4%. "Vag. del. is safest route of del. for these pts.."
Novas (Mt Sinai Hosp, Chicago)	OB outcome of pts. with more than one prev. CS	AJOG	160	364	89	Retro., 69 pts. with more than one prev. CS, 36 had TOL, 80% successful. 20 of the 69 had 3 or more prev. CS, 9 had TOL and 8 delivered vag.. Conc is that it is safe even with more than one PCS..
O'Connor (Dublin)	Preg. following simple repair of UR	BJOG	96	942 - 4	89	18 preg. in 15 pts who had a simple repair of an UR. 17 had successful outcomes and there was no case of recurrent UR.
Ophir (Israel)	Breech present after CS: always a CS?	AJOG	161	25	89	Retro. 71 breech del. after prev. CS 34% had elective repeat CS, 66% had TOL with 79% del. vaginally. Neonatal morbid did not differ, mat morb higher in CS gp.

Phelan	Delivery following CS and perinatal mortality	AJPeri	6	90	89	Editorial.
Phelan (LAC/USC)	Twice a CS, always a CS	OG	73	161	89	USC, Retro., 1088 pts. with 2 prev. CS, 501 underwent TOL and 69% del. vaginally. The overall UD rate(for all VBAC) was 3%, the rate for this gp was 1.8% versus 4.6% in those who did not attempt VBAC. Overall, Pitocin was used in 284(57%) and was assoc. with a UD rate of 2.1% versus 1.4% in no Pitocin gp. Conc: TOL in 2 prev. CS reasonable.
Rodriguez	Uterine rupture: are IUP catheters useful in the Dx?	AJOG	161	666	89	
Sarno	VBAC . TOL in women with breech presentation	JRM	34	831	89	
Strong (USC)	VBAC in the twin gestation	AJOG	161	29	89	56 pts. with twins and prev. CS, 45% attempted VBAC, 72% were successful, **4% had dehiscence**(compared to 2% in with singleton preg.).
vanAmeron (Hinsdale, IL)	VBAC in an HMO	HMO Pract	3	104	89	Acceptance has been slow in community. All pts. offered, 72 candidates, 66 attempted TOL, only 4 required CS.
Veridiano (SUNY)	VBAC	IJGO	29	307	89	Retro. 194 pts. with PCS offered VBAC, 151 del. vag. (79%) successfully.
Yetman (USN, Portsmouth, VA)	VBAC: a reappraisal of risk	AJOG	161	1119	89	3 year, Retro., 61% successful VBAC, infants weighing >3720 GMS were less likely to be successful, **Scar separation rate was 1.79%,** one pt. had CS/Hyst, 2 perinatal deaths-both at greater than 40 wks(perinatal mortality rate of 8.9/1000). Pts. should be counseled, EFW should play a part in decision.
ACOG	Guidelines For Vaginal Delivery After A Previous Cesarean Section	ACOG Comm. Op.	64		88	30 min. rule **superseded: replaced by #143**
Chattopadhyay (King Saud Univ.)	VBAC: management debate	IJGO	26	189	88	1847 pts. with prev. CS, 94% attempted VBAC with one prev. CS, 4% with 2 prev. CS. VBAC successful in 51% with one prev. CS, 36% successful with prev. indication of CPD. 0.9% had uterine scar dehiscence.
Clarke (Utah Valley Regional Perinatal Center, Provo, Utah)	Rupture of the scarred uterus	OGCLNA	15	737	88	Review. Bulk of literature indicates that "scar separation following a LTCS is not a sig. problem in clinical OB". Rupture is not higher than in none scarred uterus. "maternal and fetal morbidity should be negligible" Pitocin and epidurals can be used. Most separations will be heralded by variable decels. The detection of a scar separation in a non-bleeding pt. does not appear to mandate repair. "The uncertainties about future delivery must be explained to those unrepaired pts.."
Davies	Trial of scar	BJ Hosp Med	40	379	88	
Duff	Outcome of TOL in pts. with single PCS for dystocia	OG	71	380	88	prospective, 131 pts. with one PCS for dystocia studied, 68% had successful TOL compared to 81% success when first for other indications. There was one UD. Conc approx. 2/3 of pts. with hx. of PCS for dystocia will del.
Flamm (Kaiser)	VBAC: results of a multicenter study	AJOG	158	1079	88	4929 pts. with prev. CS, 1776 tried VBAC, 74% were successful. No mat/fet mortality related to rupture.
Halperin	Classical versus LTCS for preterm CS: maternal complications and outcome of subsequent pregnancies.	Br JOG	95	990 - 996	88	A previous classical incision is assoc. with a rate of rupture of 12%.
Lenkovsky	Vesicouterine fistula: a rare comp of CS	J Uro	139	123 - 5	88 .	

Martin	VBAC: the demise of routine repeat abdominal delivery	OGCNA	15	719	88	Review of the state of VBAC versus repeat CS.
McKenna	VBAC. A safe option in carefully selected patients	Postgrad Med	84	211	88	TOL has been demonstrated to be a safe and reasonable alternative to repeat CS in carefully selected patients. If TOL were offered to 1/2 of eligible pts. and the success rate were only 50%, the CS rate would be reduced to 19% for a total cost savings of 200,000,000.
Meehan (Univ. College Galway, Ireland)	Trial of scar with induction/oxy in del. following PCS	Clin Exp OG	15	117	88	10 year period, 1498 pts. with one or more PCS, TOL was undertaken in 844 (56%). 65% of the TOL had some form of Pitocin, 83% del. successful. There was no inc UR or UD. There was a 50% mortality with UR with incid. of UR of 1:169.
Michaels	US Dx of defects in the scarred lower uterine segment during preg.	OG	71	112	88	Prospect, found incid. of 20% defects Dx on US.
Myers Mt Sinai, Chicago	A successful program to lower cesarean-section rates	NEJM	319	1511	88	Describes a program to lower cesarean section rate requiring a second opinion, objective criteria for the 4 most common indications for CS and a detailed review of all CS and individual physicians' CS rate. The CS rate fell from 17.5% to 11.5%. Primary CS rate fell from 12% to 6.8%. There was also a fall in repeat CS rates but these were not sig.
Ollendorff (Northwestern U, IL)	VBAC for arrest of labor: is success determined by maximum cx. dilatation during prior labor?	AJOG	159	636	88	review of 229 attempted VBAC, eval those with hx. of CPD and FTP for max cx. dil, found cx. dil at time of PCS was not good predictor.
Osmers (Germany)	US detection of an asympt. UR due to necrosis during 3rd trim.	IJGO	26	279	88	Case report of US Dx of UR, confirmed by surgery.
Placek	1986 CS rise; VBAC inch upward	AJ Pub H	78	562 - 563	88	
Placek	VBAC in the 1980s	AJ Pub Health	78	512	88	1980-1985, National Hospital Discharge Survey data, only 3.4% of mothers in 1980 had a VBAC, this increased to 6.6% in 1985. Between 80-85, 1.4 million repeat CS were performed, data suggests that 500,000 could have been VBAC, saving surgical fees and 1.2 million days of hospital stay.
Pruett	Unknown uterine scar and TOL	AJOG	159	807	88	393 pts had TOL after PCS, 300 with unknown scar, 88 with LTCS and 5 with LVCS. Conc: there was no diff. in known and unknown scar in maternal/fetal morbidity(nor in one layer versus two layer closure)
Pruett (Baylor)	Is vaginal birth after 2 or more CS safe?	OG	72	163	88	55 pts. with hx. of 2 or more prior CS underwent TOL.(42 incis. unknown, 11 LTCS, 2 LVCS) 45% had successful vaginal del.. and 55% received Pitocin. The incid. of vag. del. was sig. lower in gp receiving Pitocin. 3 pts. had scar separation, 2 had hyst.
Schneider	TOL after PCS. a conservative approach	JRM	33	453	88	339 underwent TOL, 60% successful. There were no UR or UD.
Targett (Mercy Hosp, Melbourne)	CS and trial of scar	Aus NZ JOG	28	249	88	Retro., 16 year, overall CS rate was 13% with 39% being repeats of the 4,892 pts. with prev. CS, 1577(32%) were allowed to labor and 1197(76%) were successful. 13 pts. sustained a uterine rupture and 2 infants died.
Al-Sibai (Saudi Arabia)	Emergency Hyst. in OB- a review of 117 cases	Aust NZ JOG	27	180 - 4	87	117 cases of emergency OB. hyst. performed between 1976-85. Indications were: 53.8% for UR, 20.5% for intractable PPH, 7.7% for placenta accreta, 7.7% for placenta previa, 4.5% for hemorrhage at time of CS, 3.4% for Couvelaire uterus and 2.6% for abdominal preg. There was a 5.1% mortality.

Amir	TOL without oxytocin in pt. with a PCS	AJPeri	4	140	87	557 pts. with PCS, 261 had TOL , none received Pitocin, 215 (82%) were successful. When 1o was for CPD, 67% delivered. Epidural proved safe and effective. Pitocin should be reserved for selected pts. with well defined indic.
de Jong (South Africa)	TOL following CS- a study of 212 pts.	IJGO	25	405	87	rural hosp, 52% VBAC.
Farmakides	VBAC after 2 or more CS	AJOG	156	565	87	Report of 57 with 2 or more CS.
Fedorkow	Ruptured uterus in preg.: a Canadian hosp. experience	CMAJ	137	27	87	15 cases of UR in 52,854 deliveries. 7 had hx. of prev. CS, long obstructed labor did not appear to play a part, UR repaired in 11 pts., 4 had hyst.
Flamm (Kaiser)	Pitocin during labor VBAC, results of a multicenter study	OG	70	709	87	1776 pts. attempting VBAC, 485 received Pitocin. no sig. differences found in comparison. Conc Pitocin is safe.
Lao	Is X-ray pelvimetry useful in TOL after CS	Eur JOG	24	277	87	445 pts. attempt VBAC, the incid. of successful. TOL is not related to the measurements of the pelvis.
Lao	Labor induction for planned vag. del. in PCS Hong Kong	Acta OGS	66	413	87	137 pts. with PCS had induction for TOL, rates of repeat similar to those in spon labor, there were no serious fetal or maternal comp.
McClain (Med Anth Prog, U of C, SFran)	Pt. decision making: the case of del. method after PCS	Cult Med Psyc	11	495	87	About 2/3 of prev. CS attempt VBAC with 1/3 still choosing repeat CS. 100 pts., describe social motives for decision VBAC/repeat, negotiation strategies that pts. use with physicians to gain decision making power and to reduce uncertainty surrounding L+D.
Molloy	Del. after CS: review of 2176 consecutive cases	BMJ	294	1645	87	Retro., 2176 pts. with prev. LTCS, 18% had el. repeat CS, 1363 spon labor (301 received Pitocin to augment), 418 had induction of labor. 91% del. vaginally. Those with prev. vag. del. were more successful, Those whose CS done before 4 cm dil were less likely to be successful, Those requiring Pitocin less likely to be successful, UR was 0.45% of the pts. allowed to labor. Induction of labor does not inc risk of UR or CS.
Phelan (LAC/USC)	VBAC	AJOG	157	1510	87	Prosp., 2708 pts. with hx. of prev. CS, 1796 attempted VBAC, 81% successful, (1 prev. 82%, 2 prev. 72%, 3 prev. 90%)rupture rate similar .3% to .5%, dehis. rate similar 1.9% comparing VBAC vs. Repeat CS, benefits outweigh the risks.
Schneider	TOL in pts. with PCS and an intervening vag. del.	Aus NZ JOG	27	178	87	202 pts. having one vag. del. after prior CS were followed up. 103 TOL were carried out, 85.4% were successful. There was no fetal loss or sig. mat or neon morbidity.
Shiono	Recent Trends in CS and TOL rates in the US	JAMA	257	494	87	1979 2% attempted VBAC, 1984 8% attempted VBAC. Rates ranged from 2% in small hosp to 25% in larger hosp. 50% of TOL were successful. CS rates rose from 14% in 79 to 19% in 84.(based on questionnaire sent to 538 hosp, 87% responded)
Silver	Predictors of vag. delivery in pts. with PCS: who require Pitocin	AJOG	56	57	87	
Silver	When does a statistical fact become an ethical imperative?	AJOG	157	229	87	TOL is a safe and effective management alternative but remains underused. Discussed the ethical implications of “utility ethics”, “informed consent” and “universal equality”. Such considerations suggest that there is a professional (ethical) responsibility to increase the application of TOL.
Silver	Predictors of vaginal delivery in patients with PCS who require oxytocin	AJOG	156	57	87	Prospective analysis of 98 consecutive patients with PCS who received oxytocin while attempting TOL (34 inductions and 64 augmentations). The overall success rate was 59% Found that oxytocin during TOL was effective in the majority of patients and that an early response during augmentation was predictive of success.
Stovall (U of Tenn.Memp)	TOL in prev. CS pts. excluding classical CS	OG	70	713	87	"T" and classical incis. excluded, 272 underwent TOL/VBAC, Pitocin and epidural used as needed, 76.5% success. 1 UR occurred. Pitocin and epi safe.
Eden	Rupture of the preg. uterus: a 53 year review	OG	68	671	86	Duke, Retro., 1 UR per 1424 deliveries.

Finley	Emergent CS in pts. undergoing a TOL with LTCS scar	AJOG	155	936	86	Retro., 1156 attempt VBAC 1.6% had emergency del. rate not different for those without a scar
Hadley	Eval. of the rel. risks of TOL versus elective repeat CS	AJPeri	3	107	86	Retro. of attempted VBAC, 171 pts., 75 offered TOL-40 agreed and 35 had elective repeat. 32/40 (80%) were successful Previous CPD had lowest acceptance rate.
Tancer	Vesicouterine fistula. A review	OGS	41	743 - 53	86	Review, majority resulted from surgical trauma during LTCS.
Clark	Placenta previa -accreta and PCS	OG	66	89	85	
Horenstein	PCS: the risks and benefits of Pitocin use in TOL	AJOG	151	564 - 569	85	
McClain	Why women choose TOL or repeat CS	J fam Prac	21	210	85	
Megafu	Factors influencing maternal survival in UR	IJOG	23	475 - 80	85	Commonest cause is obstructed labor in multip. There has been no rupture in primigravida. UR following PCS is also common. (no numbers given).
Nielsen	X-ray pelvimetry and TOL after PCS: a prospective study	Acta OGS	64	485	85	
Paul	Trial of labor in the pt. with a prior CS	AJOG	151	297	85	Prospect, 1208 pts. with prev. CS, 751 attempted VBAC, 82% success, no mat/fet mortality attrib to birth process, 38% received Pitocin. Rupt/dehis. similar.
Rahman (Libya)	UR in labor. A review of 96 cases	Acta OG Scand	64	311 - 5	85	1977-80, 96 cases of UR for incid of 1 in 585 deliveries. 20 occurred in pts with PCS, UR in the unscarred uterus is a more catastrophic event. There is a marked difference in both maternal and fetal outcome between UR in scarred and unscarred uterus. Increased risk is PCS, high parity, CPD, malpresentation, oxytocin and unwise OB interference. 75% perinatal mortality but only 5% maternal mortality. Repair of the uterus and sterilization should only be performed when the UR is simple and transverse in the lower uterine seg.
Beall	VBAC in women with unknown types of scar	JRM	29	31-35	84	
Boucher	Maternal Morb. as related to TOL after PCS: a quant. review	JRM	29	12 - 16	84	Retro., 873 pts. with PCS. TOL was found to be safe.
Clark	Effect of indication for prev. CS on subseq. del. outcome in pts. undergoing TOL	JRM	29	22	84	308 pts. underwent TOL, pts. with prev. indic. of breech had highest successful. (84%), CPD/FTP lowest (64%).
Eglinton	Outcome of a TOL after PCS, LAC/USC	JRM	29	3	84	In the US, 90% of PCS. undergo a repeat CS in 1984. This is a study of 871 pts. with PCS, 35% were permitted a TOL, 204 (78%) were successful. 22 perinatal deaths occurred in the 871 pts., none directly attributable to the TOL. There were 3 UR, one directly attributable to the TOL. 7 hysts were done, None attrib to TOL.
Flamm	Vag. Del. Following CS: Use Of Oxytocin Augmentation And Epidural Anesthesia With Internal Tocodynamic And Internal Fetal Monitoring	AJOG	Mar 15	759 - 763	84	
Horenstein	Oxytocin use during a TOL in pts. with PCS	JRM	29	26	84	Retro., 1980, 308 pts. attempted VBAC 18.8% received Pitocin for induction or aug. of these 53.4% were successful, 84% of spon labor pts. were successful. There was no sig. difference in complications between the Pitocin gp and spon labor

Phelan	PCS birth: TOL in women with macrosomic infants	JRM	29	36-40	84	140 pts. with a macrosomic infant(>4,000 GMS) were given a TOL, 94(67%) delivered vaginally. The most common indic. for CS was CPD, the dehiscence rates were similar when compared to those who did not undergo a TOL. Factors in successful vaginal delivery were a previous VBAC, no oxytocin usage and an indication for the previous CS other than CPD. The risk of TOL with a macrosomic infant appears to be no greater than that encountered in a similar gp without uterine scars.
Plauche	Catastrophic uterine rupture	OG	64	792	84	**23 cases of major rupture in which life of mother/fetus endangered.** 61% were from prev. cs scar, 39% were with Pitocin, OB manipulation, labor disorders or external trauma. the most devastating cases were assoc. with grand multip. Fetal mortality was 35%.
Suonio	Intrapartum rupture of uterus Dx by US: a case report	IJGO	22	411	84	Case report of UR Dx by US
Tahilraman	PCS and TOL. Factors related to UD	JRM	29	17 - 21	84	No factor seemed to be an indic. at UR.
ACOG	*Guidelines for Perinatal Care*				83	
Martin	VBAC	AJOG	146	255 - 263	83	
Porreco	TOL in pts. with multiple PCS	JRM	28	770-772	83	Combined study, TOL allowed with >1PCS, 66% del. successful with virtually no morbidity.
Uppington	Epidural anal and PCS	Anes.	38	336	83	
Demianczuk	TOL after PCS: prognostic indicators of outcome	AJOG	142	640	82	92 TOL in PCS, 54% success, 3 cases of UD, no cases of mat or fetal mort. 27% success if cx. 3 cm dil at presentation, 69% success if cx. > 3 cm.
Lavin	Vaginal del. in pts. with a PCS	OG	59	135-148	82	
Meier	TOL following CS: a 2 year experience	AJOG	144	671	82	Started in 1980, 207 pts. attempted VBAC, 84.5% successful, there were no deaths and mat/fet morbidity was negligible. This vol program resulted in 27% decrease in CS rate.
Petitti	In hosp mat. mortality in the US: time trends and rel to del.	OG	59	6	82	For all del., mortality declined from 25.7 to 14.3/100K from 1970-78. Vag. del. decrease 20.4-9.8, for CS from 113.8 to 40.9/100,000. Conc Mortality for CS del. is not less than 2 nor more than 4 times that of vag. del.
Shy	Evaluation of ERCS as a standard of care: an application of decision analysis	AJOG	139	123	81	Statistical evaluation of a hypothetical population comparing TOL and ERCS. Conclusion: contemporary practice mortality rates are essentially equal for both delivery practices. However, substantial cost savings are available with TOL.
Spaulding	Current concepts of management of rupture of the gravid uterus.	OG	54	437	79	**15 cases of UR, 47% had previous CS, 13% had received Pitocin before rupture. Perinatal mortality was 13%, no mat deaths. 60% had hyst**.
Semchyshyn	Infant survival following UR and complete abruptio	OG	50	74s	77	Case report of spon UR through prev. CS scar resulting in complete abruptio, extrusion of fetus in membranes and placenta into the peritoneal cavity. infant survived.
Skelly	Rupture of the uterus: the preventable factors	Safr Med J	50	505	76	50 cases of UR
Ritchie	Pregnancy after rupture of the pregnant uterus: a report of 36 preg. and a study of cases reported since 1932	BJOG	78	642	71	
Reyes-Ceja	Pregnancy following previous UR. Study of 19 patients	OG	34	387	69	Rate of repeat UR is 32% if the scar includes the upper segment of the uterus.

O'Driscoll	Rupture of the uterus	Proceed RSM	59	65	66	
Dewhurst	The ruptured CS scar	BJOG	74	113	57	
Cragin	Conservatism in obstetrics	N Y Med J	civ	1	16	"Once a Cesarean Section, always a Cesarean Section" (written when classical incision was standard)

ERCS=Elective repeat Cesarean Section **PCS**=Prior Cesarean Section, **TOL**= Trial of Labor, **UR**=Uterine Rupture, **UD**=Uterine Dehiscence, conc.=conclusion, **LTCS**=Low Transverse Cesarean Section, **LVCS**=Low Vertical Cesarean Section.

I have honestly attempted to record everything accurately, however, please refer to original article for any major decisions pertaining to patient care.

This database is maintained on the Web by myself and Ken Turkowski at: http://www.worldserver.com/turk/birthing/rrvbac.html

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