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우리나라에서 VBAC은 안전한 방법인가?

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Changing concepts about VBAC

In the 1912	"once a cesarean, always a cesarean"
↓	
In the 1980s	• Improvement of C/S method and obstetric care • NIH (1981) and WHO (1985) VBAC was an acceptable option for the reduction of cesarean section rates
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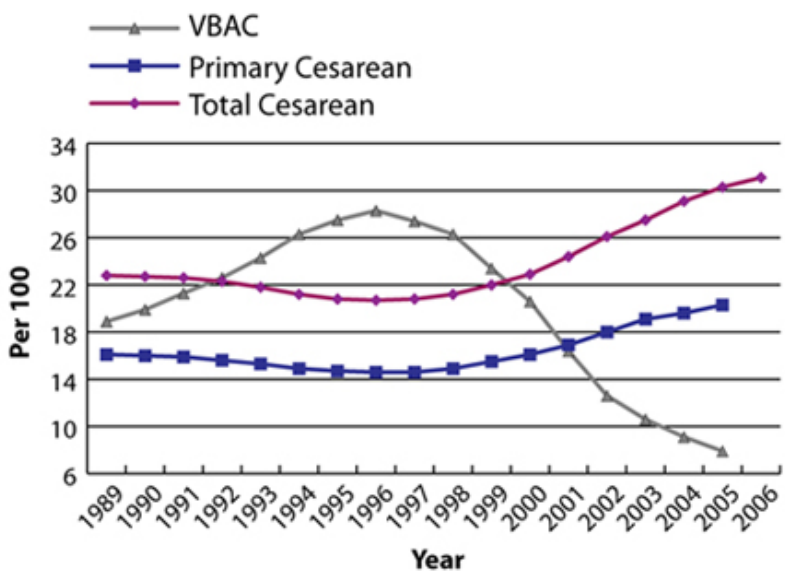
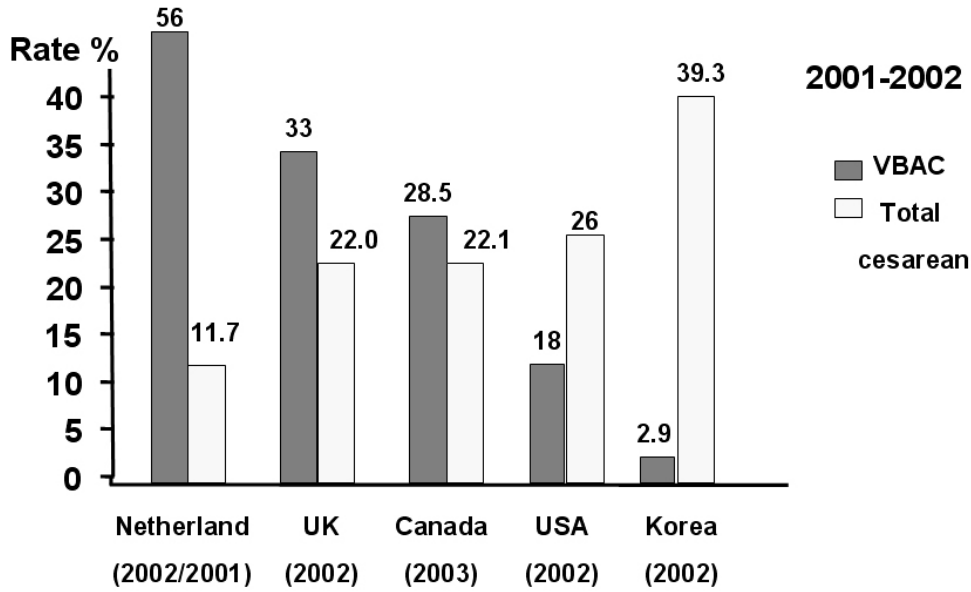
In the late 1990s	• Increasing reports of morbidity and mortality associated with VBAC • VBAC Attempt : in indicated women after enough counseling.

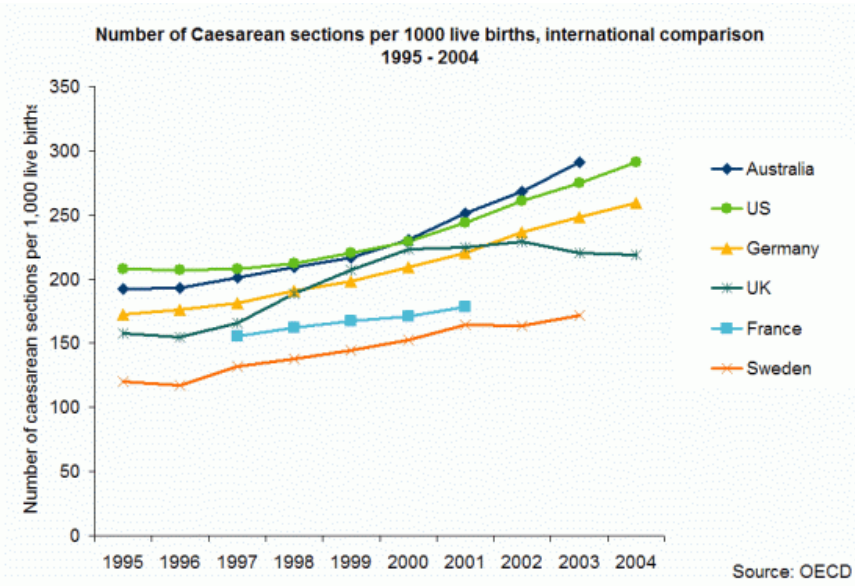
Total cesarean, primary cesarean, and VBAC rate, USA



Total cesarean, primary cesarean and vaginal birth after cesarean rates, United States, 1983-2006

VBAC rate & Cesarean rate





Risk of Trial of labor after cesarean

Maternal complication of TOL after cesarean.

NEJM (2004) Prospective observational study(1999–2002)

Table 2. Maternal Complications.*

Complication	Trial of Labor (N=17,898)	Elective Repeated Cesarean Delivery (N=15,801)	Odds Ratio (95% CI)	P Value
	no. (%)			
Uterine rupture	124 (0.7)	0	—	<0.001
Uterine dehiscence†	119 (0.7)	76 (0.5)	1.38 (1.04–1.85)	0.03
Hysterectomy	41 (0.2)	47 (0.3)	0.77 (0.51–1.17)	0.22
Thromboembolic disease‡	7 (0.04)	10 (0.1)	0.62 (0.24–1.62)	0.32
Transfusion	304 (1.7)	158 (1.0)	1.71 (1.41–2.08)	<0.001
Endometritis	517 (2.9)	285 (1.8)	1.62 (1.40–1.87)	<0.001
Maternal death	3 (0.02)	7 (0.04)	0.38 (0.10–1.46)	0.21
Other maternal adverse events§	64 (0.4)	52 (0.3)	1.09 (0.75–1.57)	0.66
One or more of the above	978 (5.5)	563 (3.6)	1.56 (1.41–1.74)	<0.001

* CI denotes confidence interval, and a dash not applicable.
† Not all women underwent examination of their scars after vaginal delivery.
‡ Thromboembolic disease includes deep venous thrombosis or pulmonary embolism.
§ Other adverse events include broad-ligament hematoma, cystotomy, bowel injury, and ureteral injury.

Perinatal Outcome for term infant

NEJM (2004) Prospective observational study (1999–2002)

Table 5. Perinatal Outcomes for Term Infants.*

Outcome	Trial of Labor (N=15,338)	Elective Repeated Cesarean Delivery (N=15,014)	Odds Ratio (95% CI)	P Value
	no. (%)			
Antepartum stillbirth†‡				
37–38 wk	18 (0.40)	8 (0.10)	2.93 (1.27–6.75)	0.008
≥39 wk	16 (0.20)	5 (0.10)	2.70 (0.99–7.38)	0.07
Intrapartum stillbirth‡				
37–38 wk	1 (0.02)	0	—	0.43
≥39 wk	1 (0.01)	0	—	1.00
Hypoxic–ischemic encephalopathy	12 (0.08)	0	—	<0.001
Neonatal death	13 (0.08)	7 (0.05)	1.82 (0.73–4.57)	0.19
One or more of the above	59 (0.38)	20 (0.13)	2.90 (1.74–4.81)	<0.001

* CI denotes confidence interval, and a dash not applicable.
† Antepartum stillbirths include a total of five malformations: four in the trial-of-labor group (one at 37 to 38 weeks and three at 39 weeks or more) and one in the elective-repeated-cesarean-delivery group at 37 to 38 weeks.
‡ The percentages are based on the number of stillbirths during the gestational period.

Outcome of uterine rupture

NEJM (2004) Prospective observational study (1999–2002)

	Uterine rupture (N=114)
Intrapartum stillbirth	0
Hypoxic–ischemic encephalopathy	7 (6.2%)
Neonatal death	2 (1.8%)
Admission to NICU	46 (40.4%)
5–min Apgar score<5	16 (14.0%)
Umbilical–artery blood pH<7	23 (33.3%)

Trial of labor (N=15,338)
Uterinel rupture 0.7%

Smith GC et al. JAMA (2002)

Population based, retrospective cohort study of data from the linked Scottish Morbidity Record and stillbirth and neonatal death enquiry encompassing births in Scotland (1992–1997)

		TOL after C/S	Elective C/S	Nulliparous labor	Multiparous labor
Perinatal death	No./births	20/15,515	1/9,014	135/1,371,690	90/151,549
	Rate/10,000	12.9	1.1	9.8	5.9
	P value		0.03	0.79	0.07
	Adjusted OR (95%CI)		11.7(1.4–101.6)	0.9 (0.5–1.7)	1.7 (1.0–3.2)

Practical guidelines: ACOG (July 2004)

The following recommendations are bases on good and consistent scientific evidence (Level A):

Most women with one previous cesarean delivery with a low–transverse incision are candidates for VBAC and should be counseled about VBAC and offered a trial of Labor

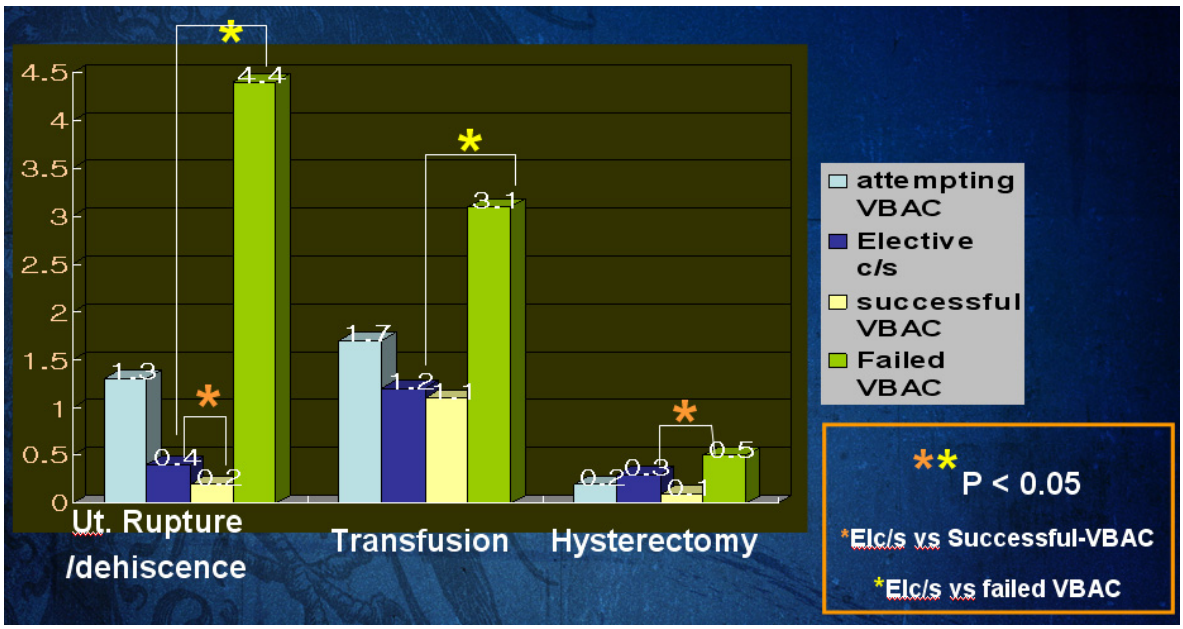
The following recommendations are bases primarily on consensus and expert opinion (Level C):

Because uterine rupture may be catastrophic, VBAC should be attempted in institutions equipped to respond to emergencies with physicians immediately available to provide emergency care.

Practical guidelines: SOGC (Feb. 2005)

" provided there are no contraindications, a woman with 1 previous transverse low-segment caerean section should be offered a trial of labor(TOL) with appropriate discussion of maternal and perinatal risks and benefits. The process of informed consent with appropriate documentation should be an important part of the birth plan in a woman with a previous cesarean section."
SOGC (society of obstetricians and gynecologists of canada)

Successful VBAC, Failed VBAC and elective Cesarean

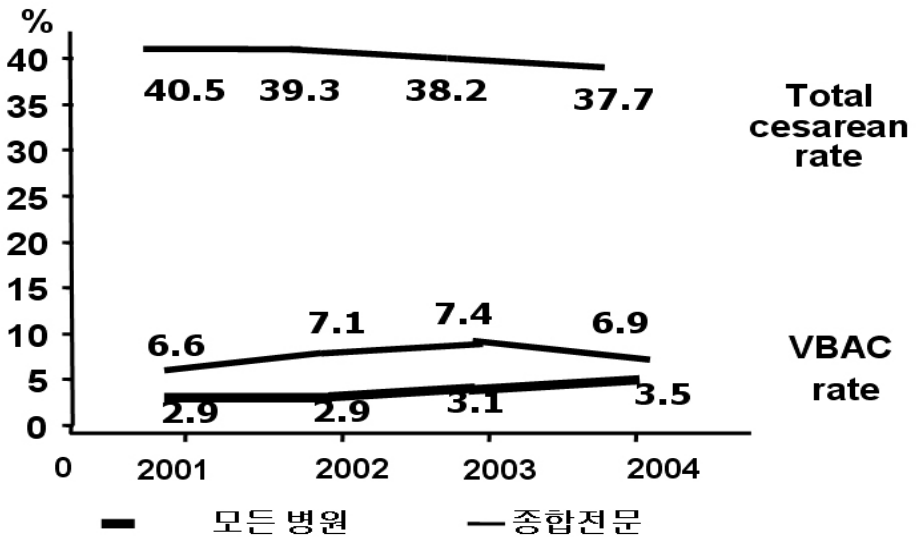


Rossi AC et al., AJOG 2008 May 27 (Epub. ahead of print)

Recent trends of VBAC research

- Increased risk of uterine disruption may result from attempting VBAC with respect to elective repeat cesarean delivery
- However, this increase may be counterbalanced by reduction of materanal morbidity, uterine lesions, and hysterectomy when a trial of labor is successful (Rossi AC et al., AJOG 2008 (Epub.)
- Many recent studies have concentrated on identification of predicting factors for success of VBAC to minimize the incidence of maternal complication.

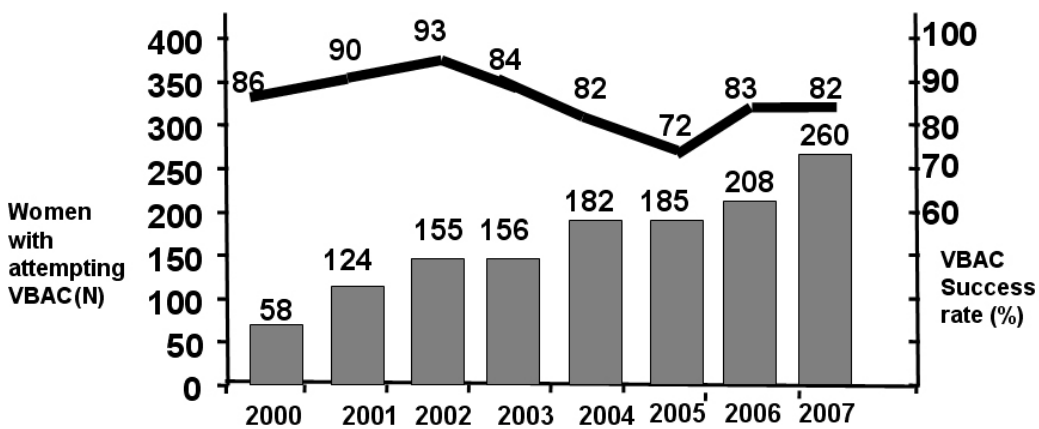
VBAC rate in Korea



참고, 국민 건강보험 공단

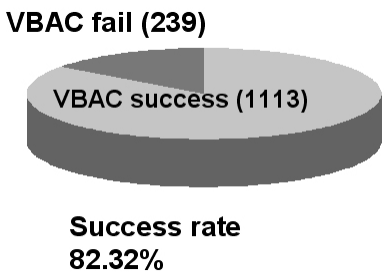
VBAC success rate :

St. Mary's Hospital, CUMC



Predicting factor of VBAC success: St. Mary's Hospital, CUMC

- Between January 2000 and February 2008
- Women attempting VBAC with a singleton gestation of at least 37 weeks' gestation
- Total 1352 women were included.



Predicting factor of VBAC success

Factors	VBAC	Univariate success rate (%)	P A. P value	Multivariate A. OR (95%CI)
Maternal age		NS		
≤35 / 〉35	82.3 / 86.1			
BMI at delivery		0.002	NS	
≤ 29 / 〉29	84.8 / 84.7			
Birth Weight		〈0.001	〈0.001	2.74 (1.12-6.70)
≤ 4,000 g / 〉4,000g	84.0 / 60.6			
Prev. c/s indication		0.021	0.001	1.30 (1.11-1.53)
Non rec.- / recurrent	83.4 / 76.8			
Prev. vaginal delivery		0.001	0.028	3.05 (1071-5.40)
No / one more	81.7 / 92.4			
Induction (yes/No)	85.1 / 56.0	〈 0.001	〈 0.001	4.57 (3.06-6.81)
Augmentation (Yes/ No)	82.2/85.7	NS	NS	

Decision of trial of labor after cesarean

- Basic indication of VBAC
  previous one low transverse cesarean delivery
- Selection to increase the chance for VBAC success
  - Previous vaginal delivery of VBAC
  - Previous non-dystocia cesarean indication
  - Estimated fetal weight less than 4,000g
  - Spontaneous labor (no induction, no augmentation)
  - Interdelivery interval of more than 18-24 months

- Woman's views about the experience of vaginal birth and fear of anticipated surgery in next pregnancy should be also considered.

Conclusion

- Although the relative risk for neonatal morbidity may be increased, the attributable risk remains small.
- And not a few patients believe that an attempt at a vaginal delivery, particulary if the chances of a vaginal delivery are substantial, is a worthwhile endeavor (Grinstead J et al. 2004, Obstet Gynecol)
- Decision of delivery mode after previous cesarean cannot be made uniformly. Through consideration about VBAC risk and the chance of VBAC success is important.