Korean Journal of Fetal Medicine
Vol. 4 No. 2 June 2008

Vaginal birth after cesarean - cons -

Jae-Yoon Shim, MD

Department of Obstetrics & Gynecology, Asan Medical Center, University of Ulsan, Seoul, Korea

Overview

- Discuss the risks of VBAC
- Review the change of statistics for C/S and VBAC
- Review the change of guidelines for VBAC
- Discuss the risk assessment tools for successful VBAC
- Discuss the strategies to reduce the overall C/S rate

Risks of VBAC

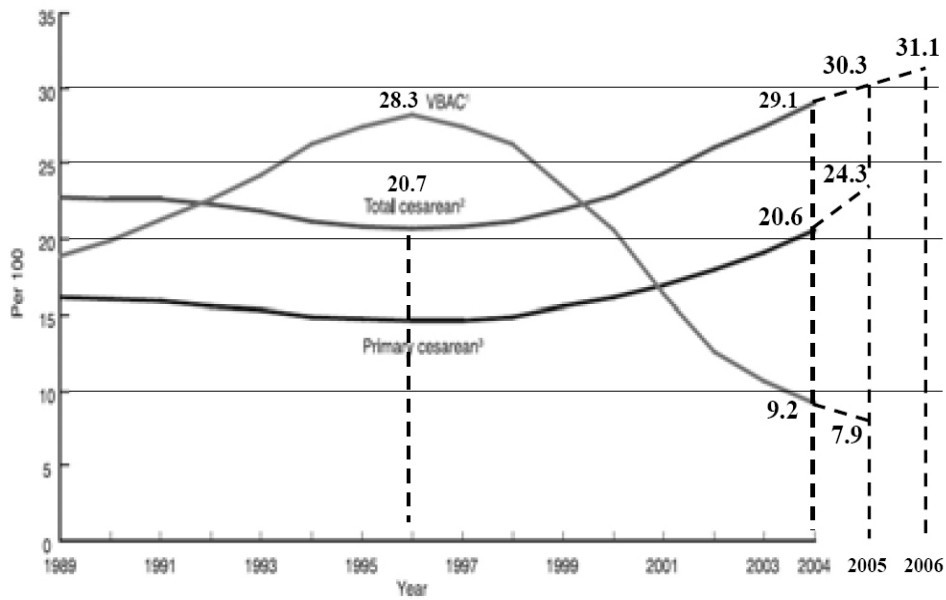
- Rates of uterine rupture 24–52/10,000
  - Does not include induction (77/10,000)
  - May lead to hysterectomy, transfusions, operative injury
- Rates of perinatal death 1.5/10,000
- Severe neonatal neurologic injury
- Maternal death 0.02/1000 TOL

Risk of uterine rupture in VBAC

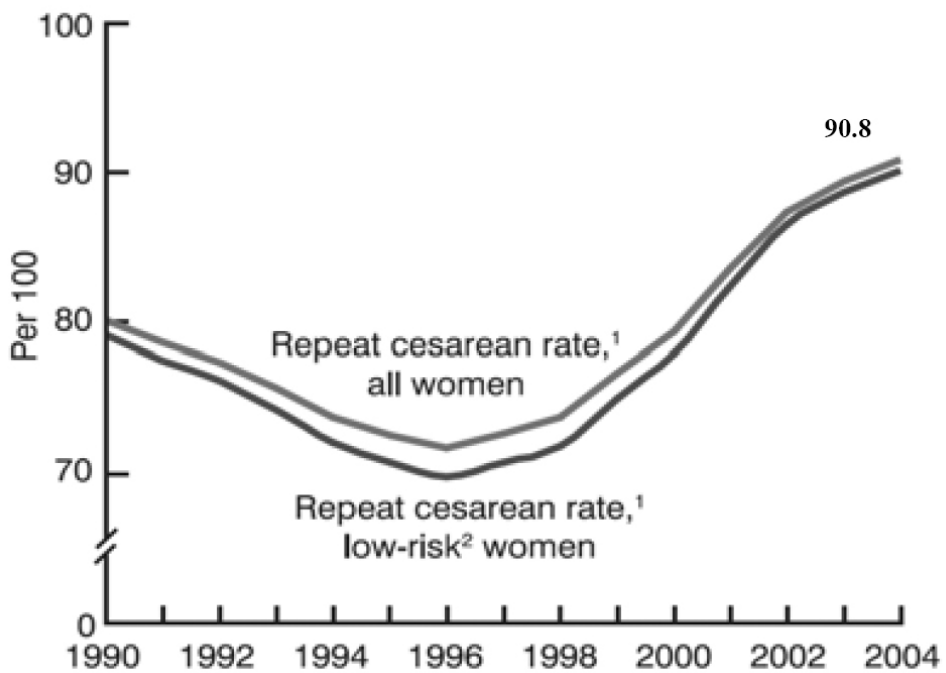
Type	No. of women	Incidence (per 1000)	RR (95% CI)
Repeated C/S	6,980	1.6	1.0
Spontaneous labor	10,789	5.2	3.3 (1.8–6.0)
Induction PGs (–)	1,960	7.7	4.9 (2.4–9.7)
Induction PGs (+)	366	24.5	15.6 (8.1–30.0)

Lydon–Rochelle et al., NEJM 2001; 345:3–8.

VBAC Statistics



National Vital Statistics Reports, Vol. 55, No. 1, 2006
National Vital Statistics Reports, Vol. 56, No. 6, 2007
National Vital Statistics Reports, Vol. 56, No. 7, 2007



National Vital Statistics Reports

- The total C/S rate for 2005 rose to the highest level ever reported in the United States, 30.3 percent.
- This is a 4-percent increase from the 2004 rate (29.1 percent). After declining between 1989 and 1996, the C/S rate has increased by 46 percent from the 1996 low of 20.7 percent.
- Total C/S rates rose as maternal age increased. For example, the 2005 rate for mothers 40-54 years of age (46.2) was over twice as high as that for mothers under age 20 (21.5).
- The average annual increase in the C/S rate at each gestational age category 1997 to 1999 was 1 to 3 percent, compared with an average annual increase of 4 to 6 percent for 2000 to 2005.

- The steep decline in the VBAC rate and the increase in the repeat cesarean rate may be related to
  - Reports of risks associated with VBAC
  - More conservative practice guidelines
  - Legal pressures
  - Debate regarding the harms and benefits of vaginal birth compared with cesarean delivery.

VBAC Guidelines
ACOG Statement (1999)

- Candidates for a trial of labor
  - One or two low transverse C/S
  - Clinically adequate pelvis
  - No other uterine scars or previous rupture
  - Physician readily available throughout labor capable of monitoring labor and performing an emergency C/S
  - Availability of anesthesia and personnel for emergency C/S

ACOG Statement (1999)

- Contraindications for VBAC
  - Prior classical or T-shaped incision or other transfundal uterine surgery
  - Contracted pelvis
  - Medical or obstetric complication that precludes vaginal delivery
  - Inability to perform immediate emergency C/S because of unavailable surgeon, anesthesia, sufficient staff, or facility

ACOG Statement (1999)

- Level A (good & consistent scientific evidence)
  - One previous C/S with a low-transverse incision are candidates for VBAC.
  - Epidural anesthesia may be used for VBAC.
  - A previous uterine incision extending into the fundus is a contraindication for VBAC.
- Level B (limited or inconsistent scientific evidence)
  - Women with two low-transverse C/S and no contraindications who wish to attempt VBAC may be allowed a TOL.
  - Use of oxytocin or prostaglandin gel for VBAC requires close patient monitoring.
  - Women with a inverted T incision that does not extend into the fundus are candidates for VBAC.
- Level C (consensus & expert opinion)
  - VBAC should be attempted in equipped institutions.
  - The ultimate decision should be made by the patient and her physician.

ACOG Statement (2004)

- Candidates for a trial of labor
  - One low-transverse C/S
  - Clinically adequate pelvis
  - No other uterine scars or previous rupture
  - Physician immediately available throughout labor capable of monitoring labor and performing an emergency C/S
  - Availability of anesthesia and personnel for emergency C/S

ACOG Statement (2004)

- Contraindications for VBAC
  - Prior classical or T-shaped incision or extensive transfundal uterine surgery
  - Previous uterine rupture
  - Medical or obstetric complication that precludes vaginal delivery
  - Inability to perform emergency C/S because of unavailable surgeon, anesthesia, sufficient staff, or facility
  - Two prior uterine scars and no vaginal deliveries

ACOG Statement (2004)

- Level A (good & consistent scientific evidence)
  - One previous C/S with a low-transverse incision are candidates for VBAC.
  - Epidural anesthesia may be used for VBAC.
- Level B (limited or inconsistent scientific evidence)
  - Inverted T incision that does not extend into the fundus are candidates for VBAC.
  - PGs in previous C/S should be discouraged.
- Level C (consensus & expert opinion)
  - VBAC should be attempted in equipped institutions.
  - The ultimate decision should be made by the patient and her physician.
  - Contraindicated in women with a classical uterine incision or extensive transfundal uterine surgery.

Before & After
A Change in Guidelines

		1996-1999	2000-2002	p
Attempted VBAC		24.0%	13.5%	< 0.001
Pregnancy	Attempted VBAC	28.1%	18.0%	< 0.001
complication	Repeat C/S	22.8%	12.5%	< 0.001
Neonatal Mortality	Attempted VBAC			
	Repeat C/S			NS
Maternal Mortality	Attempted VBAC	2.0	8.5	NS
	Repeat C/S	8.7	11.9	NS

Zweifler et al., Annals of Family Medicine. 2006

Success Rates

- VBAC success 60-80% (LOE II-2)
- More likely to choose in tertiary hospital
- Spontaneous labor - 80% vaginal delivery
- Oxytocin use - 68% vaginal delivery
- Cervical ripening or induction - 51% vaginal delivery

Positive Factors

- Age 〈40 years
- Prior vaginal delivery (esp VBAC)
- Favorable cervical factors
- Spontaneous labor
- Non-recurrent indication
- More than 6 months since last delivery and this pregnancy

Negative Factors

- Increased number of prior C/S
- EGA 〉40 wks
- Birth weight 〉4000g
- Induction or augmentation of labor
- Uterine closure

Risk Assessment Tools

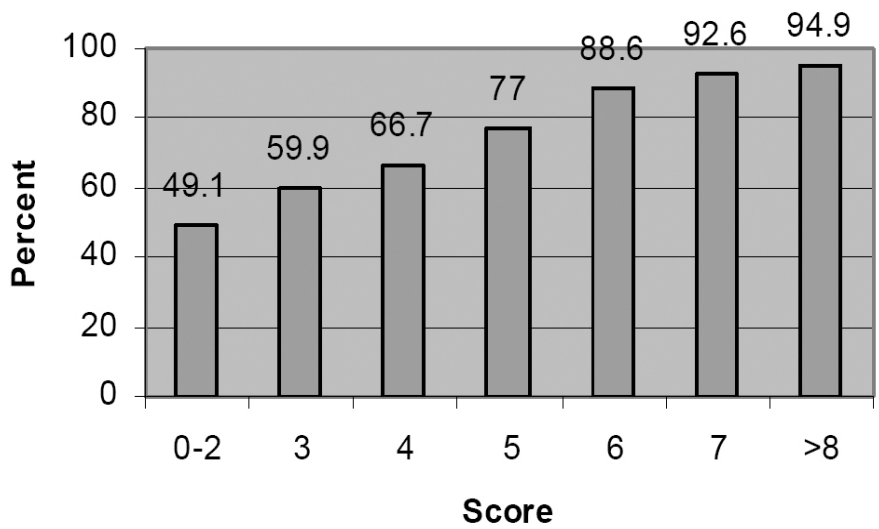
- Predictive tools have fair to good quality evidence
- Imaging modalities ineffective

Scoring system for Successful VBAC

Variable		Score
Age 〈40 years		2
Vaginal birth history	Before & after 1st C/S	4
	After 1st C/S	2
	Before 1st C/S	1
	None	0
Reason other than FTP	1	
Effacement at admission	〉75%	2
	25-75%	1
	〈25%	0
Dilation at admission	≥ 4cm	1

Flamm et al., Obstet Gynecol 1997

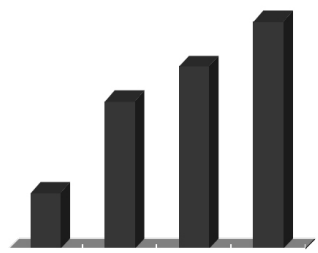
VBAC Success



Flamm et al., Obstet Gynecol 1997

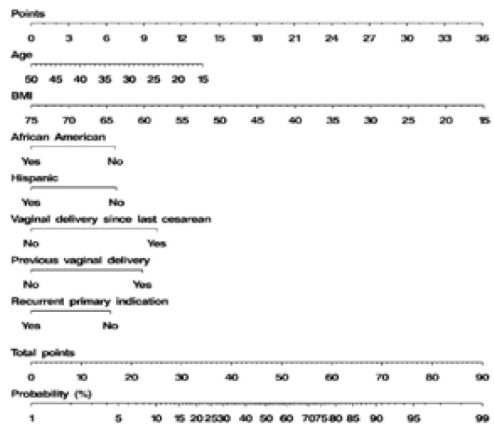
Prenatal scoring tool: VBAC

- Pregnancy Factors
  - C/S Indication
    - Recurrent (0)
    - Non-recurrent (1)
  - Previous macrosomia (0)
  - Anemia (0)



Hashima et al., Am J Obstet Gynecol 2007

Nomogram for prediction of VBAC



Grobman et al., Obstet Gynecol 2007

Table 3. Predicted Rates of Vaginal Birth After Cesarean Delivery for Four Hypothetical Patients

	Cases			
	1	2	3	4
Age (y)	25	25	30	35
Body mass index at first prenatal visit (kg/m^2)	25	35	35	30
Race	African American	Hispanic	White	White
Prior vaginal delivery	Yes	Yes	No	No
Prior vaginal delivery after cesarean	Yes	No	No	No
Recurring indication	No	No	No	Yes
Total points	72	56	52	46
Predicted VBAC success (%)	92.4	70.9	61.9	49.0
95% Confidence interval (%)	91.1–93.6	66.4–74.9	58.9–64.9	46.1–51.9

Strategies to reduce C/S rate

- C/S Indication
  - Repeat LTCS
  - CPD
  - Fetal Distress
  - Breech

- Strategy
  - VBAC
  - Use of labor curves
  - Review boards
  - Careful FHR monitor
  - ECV
  - Vaginal breech del.

Conclusions

- Despite thousands of citations in the literature, there are no randomized trials to prove that maternal and neonatal outcomes are better with VBAC than with repeat C/S.
- Published evidence suggests that the benefits of VBAC outweigh the risks in most women with prior low-transverse C/S.
- Reduce primary C/S !!