

# 제왕절개수술 후 질식분만(VBAC)은 과연 안전한가?

Is VBAC(Vaginal Birth After Cesarean) Really Safe?

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VBAC (2, 3), VBAC

(classical uterine incision)

Cragin(1916) 1993 Los Angeles County - University of Southern California Medical Center ACOG

“once a cesarean, always a cesarean”

20 (1), VBAC

가 VBAC \$2,300

1980 23% 가 1997 Los Angeles County VBAC 49

1970 \$24million

VBAC (4).

, 1981 National Institutes of Health(NIH) VBAC 가

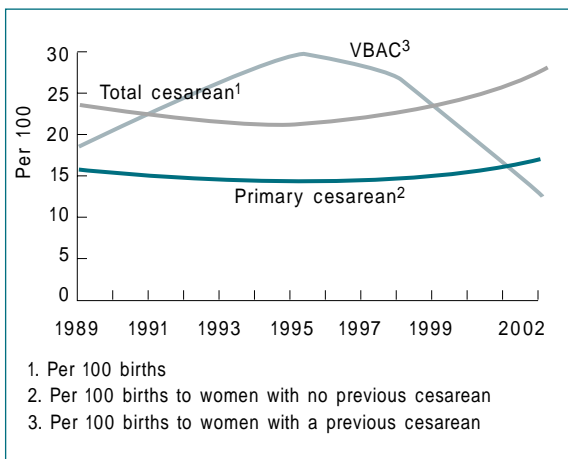
VBAC 1981 3% 1996 VBAC

28.3% 가 , VBAC “informed patient choice”

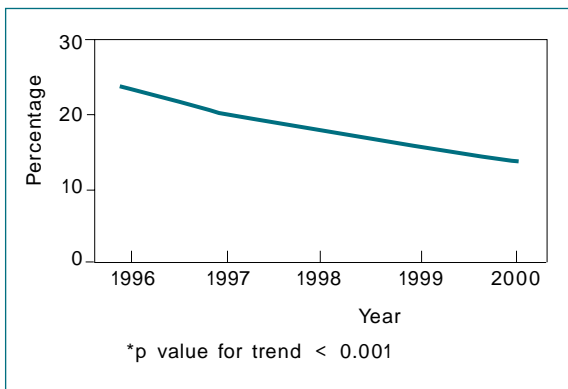
(American College of Obstetricians and Gynecologists, ACOG) 1984 1995 VBAC

(vertex presentation) 가 가 가

1999 ACOG



1. (Total) (primary)  
 VBAC ( , 1989 ~ 2002)



2. California VBAC (1996 ~ 2000)

1 ~ 2 VBAC

(5). 1 2000 ACOG

Task Force on Evaluation of Cesarean Delivery

1 VBAC

(6).

VBAC

National health objective 2010

VBAC VBAC 1989  
 19% 1996 28% ,  
 1999 23% ,  
 2001 16.5%, 2002 12.6%  
 ( 1)(7~9).  
 , 2003 Deutchman  
 VBAC 가  
 (10).

2002 Centers for Disease Control and Preven-  
 tion(CDC) 1990 VBAC  
 California VBAC  
 (11). 1996 2000  
 VBAC 23% 15% 1/3 (  
 2), , , ,  
 1996 19 가  
 VBAC , 2000 20 ~ 29  
 VBAC 가 , 40  
 가 VBAC .

Health Maintenance Organization  
 (HMO) 가 VBAC , Medi-  
 Cal/Medicaid 가 VBAC  
 , HMO가 MediCal/Medicaid VBAC  
 ( 1). VBAC

(changed standard of  
 obstetric practice), ,  
 (provider preference), ,

1999 ACOG VBAC

1. California  
VBAC (1996 ~ 2000)

Characteristic	1996	2000	% change*	(95% CI)†
<b>Race/Ethnicity</b>				
White, non - Hispanic	24.7	15.3	- 38	( - 36~ - 41%)
Black, non - Hispanic	20.0	14.7	- 27	( - 20~ - 33%)
American Indian/ Alaska Native	16.8	9.8	- 42	( - 9~ - 52%)
Asian/Pacific Islander	24.9	17.6	- 29	( - 24~ - 35%)
Hispanic	21.5	13.9	- 35	( - 33~ - 38%)
<b>Age group(yrs)</b>				
<19	25.4	12.9	- 49	( - 39~ - 57%)
20~29	24.1	15.9	- 34	( - 32~ - 36%)
30~39	21.9	14.2	- 35	( - 33~ - 38%)
>40	18.0	11.9	- 34	( - 25~ - 42%)
<b>Insurance status</b>				
MediCal/Medicaid	19.8	11.9	- 40	( - 37~ - 42%)
Fee - for - service	20.3	12.2	- 40	( - 36~ - 43%)
HMO/Prepaid	28.5	19.7	- 31	( - 29~ - 34%)
Other‡	24.0	17.1	- 29	( - 18~ - 39%)
<b>Education</b>				
<High school	21.6	13.6	- 37	( - 34~ - 40%)
High school	21.9	14.3	- 35	( - 32~ - 38%)
1~4 years of college	22.7	15.3	- 33	( - 29~ - 36%)
>4 years of college	26.6	16.4	- 38	( - 35~ - 41%)

\* Relative percentage change when comparing 1996 with 2000

† Confidence interval

‡ Payment source is state/local government program, Title V funds, or military

가 ,  
(cesarean delivery resource)

“ immediately available ”

VBAC

가

( : 가

가

(cesarean resource)

).

VBAC

가

(10).

(meta - analysis)

(trial of labor, TOL)가

가 (12).

가

VBAC

가

,

(immediately available)

가 .

30

(5). ACOG

“ Cesarean delivery

resources need to be available during VBAC trial of

(population - based retrospective

Labor ”

“ immediately available ”

cohort study)

JAMA

(13).

37

43

,

, “ immediately available ”

가

TOL

(perinatal death

VBAC

rate)

10,000

12.9

(20/15,515)

,

VBAC

,

. ACOG

가 11

가

(odds

ratio, 11.6; 95% confidence interval, 1.6 - 86.7).

TOL

1,000 5.2 가

3.3 가

(OR, 3.3; 95% CI, 1.8 - 6.0). VBAC

, TOL

10,000

(induction)

4.5

8 가

1,000 7.7

TOL

4.9 가 (OR, 4.9; 95% CI, 2.4 - 9.7),

775 1

(prostaglandin)

2,200 1

1,000 24.5

VBAC

15.6 가

(OR, 15.6; 95% CI, 8.1 - 30.0).

VBAC

91

5

5%

가 VBAC

10 가

Massachusetts General Hospital(MGH)

Greene

‘ VBAC

Mozurkewich 39,000

11

가 3 가 ,

VBAC

10 가

VBAC

,

가

2.1 가 ,

가

1.7 가 , 5 가 가 7

2.2 가 (12).

, (15).

2001 Lydon - Rochelle

VBAC

1987 1996 VBAC 20,095

VBAC

가

(16),

(uterine dehiscence)

가

(population - based, retrospective cohort study)

(17).

New England Journal of Medicine

(14).

(Cost Effectiveness)

가 1,000 1.6

National health objective 2010

가(charge)가

가

가(charge)

(cost) , VBAC

, , TOL

가

(morbidity) , ,

VBAC

가

Clark VBAC

(18).

가

1

0.65%, 3

2.14% , 5% pH 7.0

(seizure) (multior-

gan damage) , 42% pH 7.0

가

가

(lifetime medical cost) \$503,000

(long - term morbidity)

3가 가 ( 2) 가

( 3).

24 가

가

13±6 3

, TOL 70%가 VBAC

2.	(long - term morbidity)	가
Assumption set	Morbidity assumptions	
A	Among infants with pH<7.00, seizures, and multiorgan failure, cerebral palsy will develop in 75%.	
	Among infants with pH <7.00, no multiorgan failure, and no seizures, cerebral palsy will develop in 0%.	
B	Among infants with pH<7.00, seizures, and multiorgan failure, cerebral palsy will develop in 90%.	
	Among infants with pH<7.00, no multiorgan failure, and no seizures, cerebral palsy will develop in 20%.	
C	Among infants with pH<7.00, seizures, and multiorgan failure, cerebral palsy will develop in 95%.	
	Among infants with pH<7.00, no multiorgan failure, and no seizures, cerebral palsy will develop in 30%.	

3.				
Assumption set	Maternal cost	Long - term neonatal cost	Short - term neonatal cost	Net savings
A	\$ 431	-\$ 264	-\$ 18	+\$ 149
B	\$ 431	-\$ 419	-\$ 18	-\$ 6
C	\$ 431	-\$ 630	-\$ 18	-\$ 217

\* VBAC 70% 가

가

(long - term morbidity assumption) \$149

\$217

VBAC 70%

가

가

VBAC

VBAC	(Guideline)	TOL	
- 1999	2004	-	1999
	1996		, 가
VBAC			(postterm pregnan-
(ACOG)	1999	VBAC	cy), 가
2004 7		(5, 9).	VBAC (as“ appropriate ”)
5			2004
			가 VBAC
1. TOL(Trial of labor)			60 ~ 90%
1999	TOL	5가	VBAC
		2. VBAC	
- One or two prior low - transverse cesarean deliveries		1999	2004 60 ~ 80%
- Clinically adequate pelvis			. 2004
- No other uterine scars or previous rupture			(dystocia)
- Physician immediately available throughout active labor capable of monitoring labor and performing an emergency cesarean delivery			, 가 5 ~ 9cm
- Availability of anesthesia and personnel for emergency cesarean delivery		67 ~ 73%	, VBAC 가
			VBAC 13%
			. VBAC
2004			(labor induction)
	가	(augmentation),	, 4,000gm
		, 40	, 19
	가 5 가	가	
Caughey	(19),		
	(spontaneous)	3. VBAC	가?
		VBAC	

, , TOL VBAC  
 , , (cost - effectiveness)  
 가 . TOL  
 pH가 7.0 , 5 가 7 , 가  
 가 . ,  
 가 가 . TOL  
 2004 5 VBAC 70%  
 (cost saving) (18, 22, 23).  
 . 2004 VBAC  
 Mozurkewich 5. VBAC (Induction)  
 27,000 TOL 3 (Augmentation) 가?  
 , 1% 1999 2004  
 . 1999  
 (12). VBAC  
 Gregory (20), 10 (popula- (close monitoring)  
 tion based study) Kieser (21), , 2004 'discourage'  
 Mozurkewich (12)  
 1% , 가 5 가 ,  
 가 1,000  
 , (24 ) 24.5 15 가  
 (14).  
 4. 6. VBAC ?  
 VBAC - (Cost - 1999 47가  
 Effectiveness)  
 가?  
 1999 2004  
 . VBAC 가  
 - Prior classical or T - shaped incision or other  
 transfundal uterine surgery  
 - Contracted pelvis  
 - Medical or obstetrical complication that pre-

#### 4. ACOG VBAC

1999	2004
The following recommendations are based 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.	
Epidural anesthesia may be used for VBAC.	
A previous uterine incision extending into the fundus is a contraindication for VBAC.	Level C
The following recommendations are based on limited or inconsistent scientific evidence (Level B)	
Women with two previous low - transverse cesarean deliveries and no contraindications who wish to attempt VBAC may be allowed a trial of labor. They should be advised that the risk of uterine rupture increases as the number of cesarean deliveries increases.	
Use of oxytocin or prostaglandin gel for VBAC requires close patient monitoring.	The use of prostaglandins for cervical ripening or induction of labor in most women with a previous cesarean delivery should be discouraged.
Women with a vertical incision within the lower uterine segment that does not extend into the fundus are candidates for VBAC.	
The following recommendations are based 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.	
After thorough counseling that weighs the individual benefits and risks of VBAC, the ultimate decision to attempt this procedure or undergo a repeat cesarean delivery should be made by the patient and her physician.	“ This discussion should be documented in the medical record” 가 .
	Vaginal birth after a previous cesarean delivery is contraindicated in women with a previous classical uterine incision or extensive transfundal uterine surgery.

cludes vaginal delivery

- Inability to perform emergency cesarean delivery because of unavailable surgeon, anesthesia, sufficient staff, or facility

2 contracted pelvis

- Previous uterine rupture

- Two prior uterine scars and no vaginal deliveries

가 가 가 .

7. (Counseling) 가 ?

VBAC



(informed consent process and the plan of management)		VBAC		(oxytocin augmentation)	
1999	2004	0.4%	1.0%	가	
		(25).			
8. VBAC (Labor Management)		9.			
1)		1999	2004	VBAC (4).	가
VBAC		1999	(Level A, B, C)	VBAC	
2)	(Intrapartum Management)				
(continuous electronic monitoring)		New England Journal of Medicine		VBAC	
1999	2004			(26).	
2004		19	33,699	가	4
(intrauterine pressure monitoring)가		(external monitoring)가		(large multicenter)	
		prospective cohort study)		VBAC	
		population based study)		(retrospective)	
		institution study)		(single)	
3)	(Augmentation)	가		VBAC	
1999	1991	Rosen			
	(24)	(oxytocin)			
가	가	가			
가	가				
(gel)				, VBAC	
	(appears to be safe)				
	2004	가		VBAC	
(induction)	(augmentation)				
tation)	1999	Zelop		(hypoxic ischemic encephalopa-	

thy) , 15,338 TOL VBAC  
 12 (0.08%) , VBAC 가  
 (N = 15,014) (return to a  
 policy) (27). VBAC  
 VBAC (counseling) VBAC 가 ,  
 가 ACOG , 가  
 가 .  
 VBAC 1980 VBAC (28).  
 1990 가 1996  
 . 가  
 VBAC . , VBAC  
 가 ,  
 , VBAC  
 가 가 VBAC  
 .  
 1999 , ,  
 2004 ACOG , ,  
 VBAC VBAC 가  
 가 .  
 VBAC ACOG 가 .  
 “immediately available” “ 가  
 가? ”  
 , 가  
 가 VBAC  
 .  
 1980 1990 VBAC  
 VBAC , 1990

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(
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- |    |     |
|----|-----|
| 1. | 6.  |
| 2. | 7.  |
| 3. | 8.  |
| 4. | 9.  |
| 5. | 10. |