
بسم الله الرحمن الرحیم

Vaginal Birth after Caesarean (*VBAC*)

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Between 1970-1988 the Cesarean delivery rate in the United States increased dramatically from 5% to 25%.

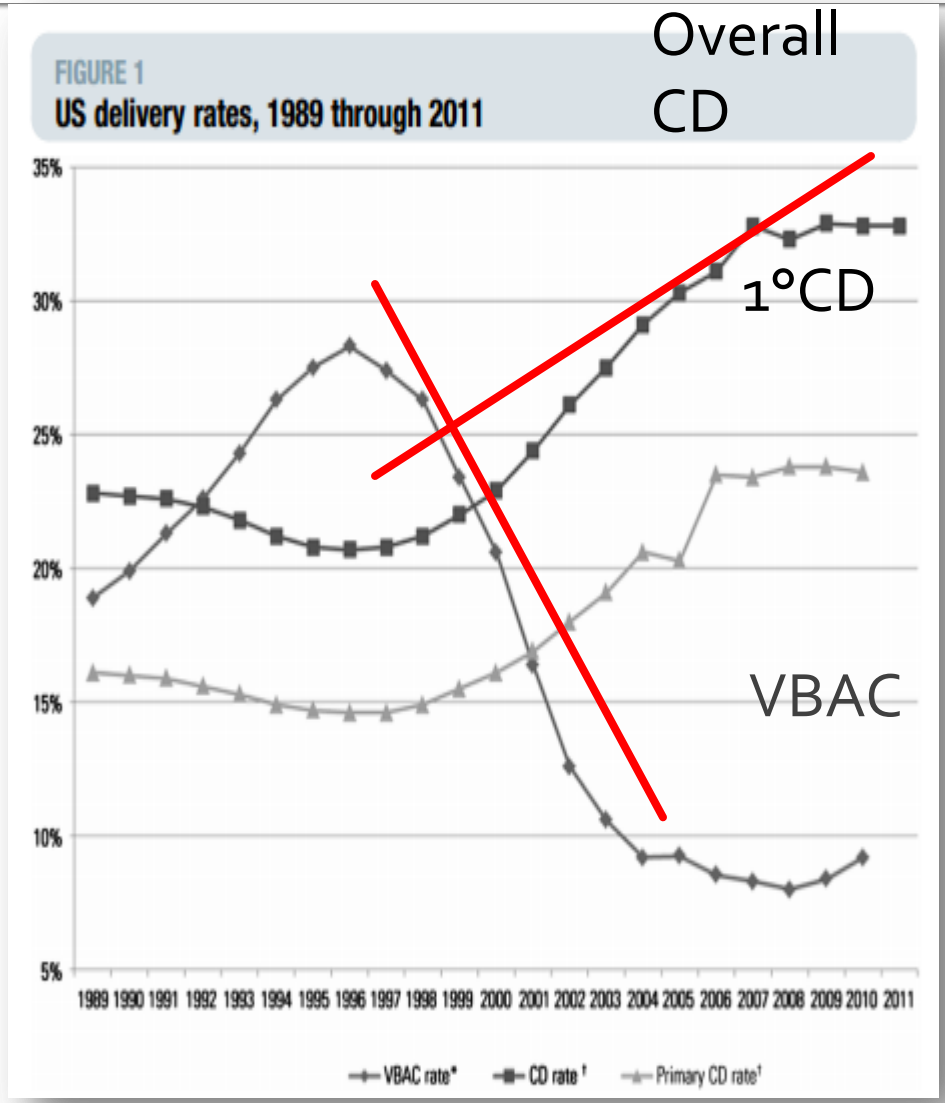
From 1989-1996 the Cesarean section rate decreased to 20.7% while the VBAC rate increased from 18.9% to 28.3%.

Year	C- Section Rate	VBAC Rate
2002	26.1%	12.6%
2003	27.5%	10.6%
2004	29.1%	9.2%
2005	30.2%	

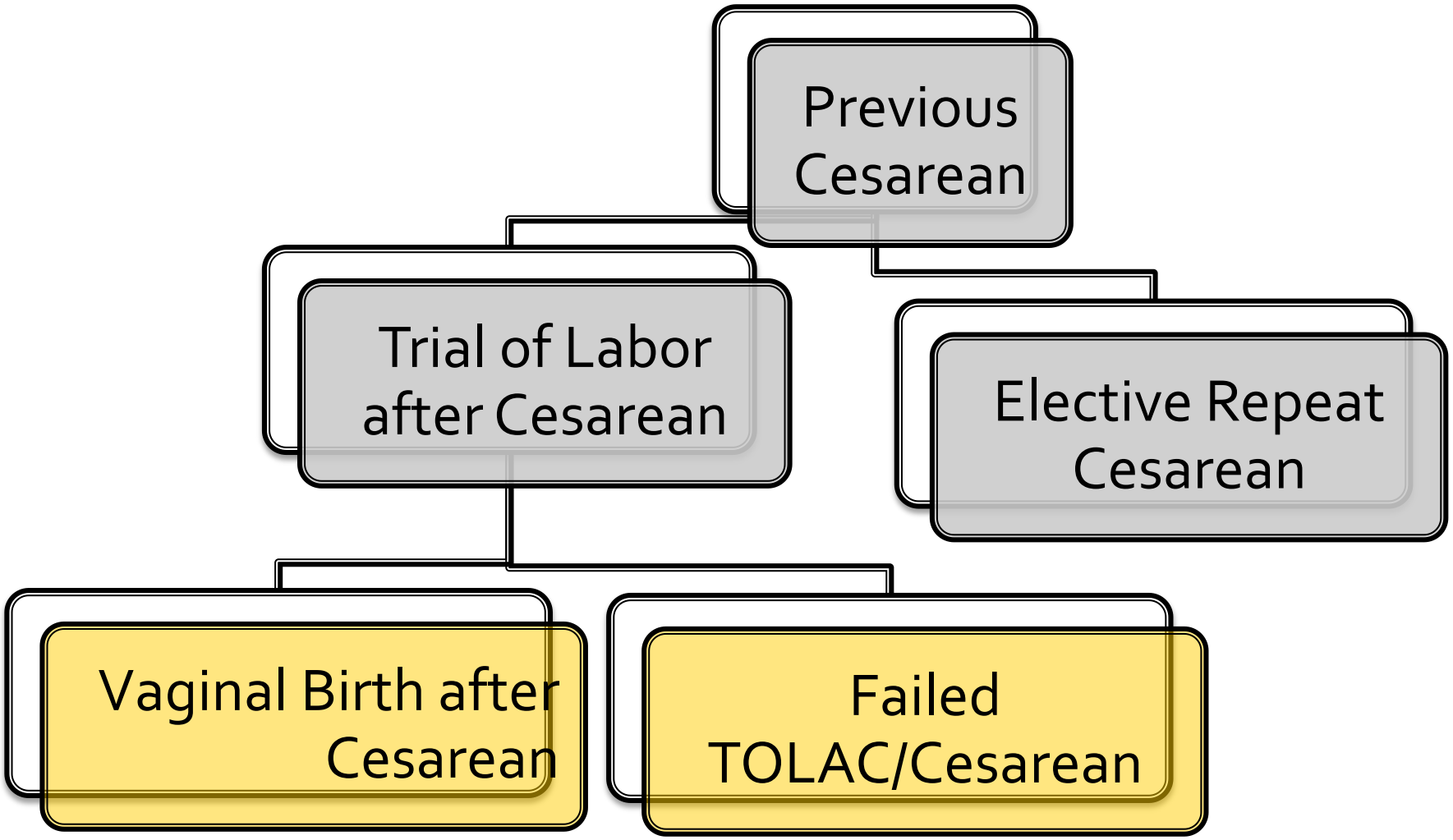
Curtin SC. Rates of Cesarean Birth and Vaginal Birth After Previous Cesarean, 1991-95. Monthly Vital Statistics Report. Vol 45, No. 11, Suppl 3. Hyattsville (MD): National Center for Health Statistics; 1997. (Level II-3)
Martin JA et al. Births: Final Data for 2002. Natl Vital StatRep 2003; 52 (10): 1-113. (Level II-3)
Martin JA et al. Preliminary Births for 2004: Infant and Maternal Health. Natl Vital Stat Rep 2004.

ACOG.SMFM Obstetric Care Consensus
Am J Obstet Gynecol 2014;123:963-711

Cesarean Delivery and VBAC Rates



Trial of Labor after Cesarean (TOLAC)


Previous Cesarean
Trial of Labor after Cesarean
Elective Repeat Cesarean
Vaginal Birth after Cesarean
Failed TOLAC/Cesarean

- VBAC Success Rate
  66% to 85%

  Minimal Neonatal or Maternal Morbidity

VBAC

- the patient's personal preferences & future pregnancy plans
- obstetric history & probability of VBAC
- scientific data on risks and benefits of TOLAC versus PRCD
- availability of TOLAC in the selected birth setting

VBAC

- The benefits of successful VBAC :

avoidance of the potential **adverse outcomes associated with cesarean** delivery, especially **multiple cesarean** deliveries.

- The benefits of PRCD :

avoidance of the potential adverse outcomes associated with TOLAC, primarily uterine **rupture** and morbidity associated with **intrapartum cesarean** delivery.

Can we predict successful TOLAC?

The maternal morbidity of TOLAC appears to be **higher** than that for PRCD **when** the **predicted chance** of vaginal delivery is **<60 to 70 percent.**

Indication for Previous CS

50-75% of patients can VBAC after previous CS for CPD!

Can we predict successful TOLAC?

- **only one previous cesarean** (VBAC 60- 80 % uterine rupture 0.4- 0.7 %)
- Increasing risk with increasing number of previous CS

Can we predict successful TOLAC?

- contraindications to labor or vaginal birth (eg, placenta previa).
- prior transfundal uterine incision or prior uterine rupture. "10% " risk of rupture from classical and T incisions for Myomectomy and Hysterotomy
- Women with vertical incision with the lower uterine segment that does not extend into the fundus are candidates for VBAC.

Can we predict successful TOLAC?

- **A history of vaginal birth** (either prior vaginal delivery or VBAC) :

83 % for women with a previous NVD.
94 % for women with a previous VBAC.

Dilatation at the time of previous CS
Gestation at previous CS – was there a lower segment? Prior emergency CD

Calculator:TOLAC for use at entry to prenatal care

Input:		
Maternal age		
Height		
Pre-pregnancy weight		
Obstetric history	No previous vaginal deliveries (0)	
	Previous vaginal delivery before prior cesarean (0.868)	
	Previous VBAC (1.869)	
Arrest disorder at previous cesarean	No (0)	
	Yes (0.597)	
On antihypertensive drug therapy	No (0)	
	Yes (0.966)	Results:
Probability of successful vaginal delivery	%	

- The **ultimate decision** made by the patient.
- **Documentation of counseling** and the management plan should be included in the medical record.
- ACOG recommends that TOLAC be attempted in **facilities** that can provide cesarean delivery for situations that are immediate threats to the life of the woman or fetus.

- Misoprostol (ripening or induction)
- **Epidural analgesia** okay but think about scar rupture if there is escalation of pain

- **Induction** (remains an option)

Increases the risk of rupture 2-3fold especially if prostaglandins are used Reduces the chance of VBAC 1.5-fold

- **External cephalic version** for breech presentation is not contraindicated.

- Continuous **FHR monitoring** is recommended.

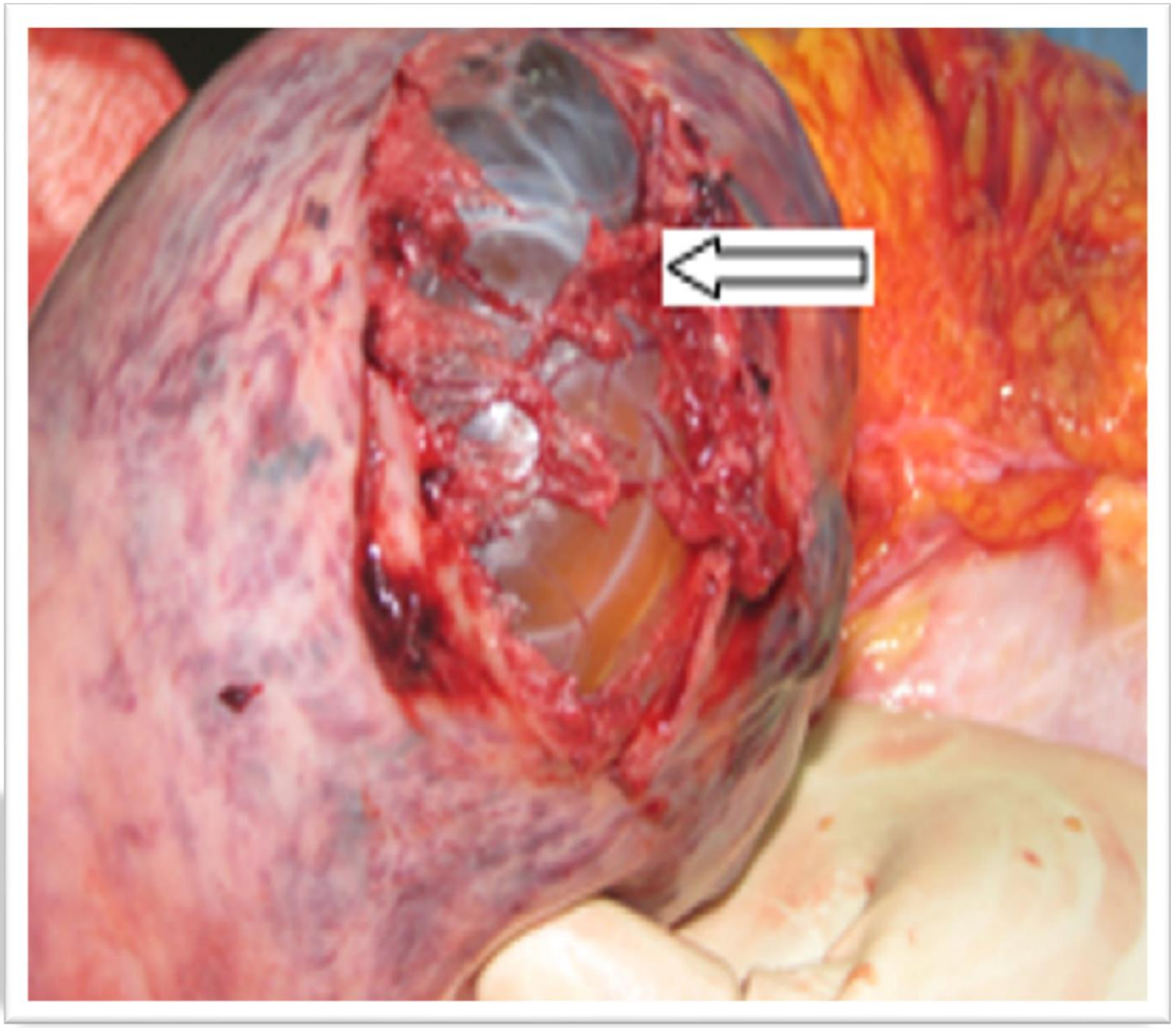
Maternal Outcomes

Short-term

- Death
- Uterine rupture(0.3% to 1.5%)
- Hysterectomy
- Transfusion/hemorrhage
- Infection
- Surgical injury

Long-term:

- multiple cesarean deliveries



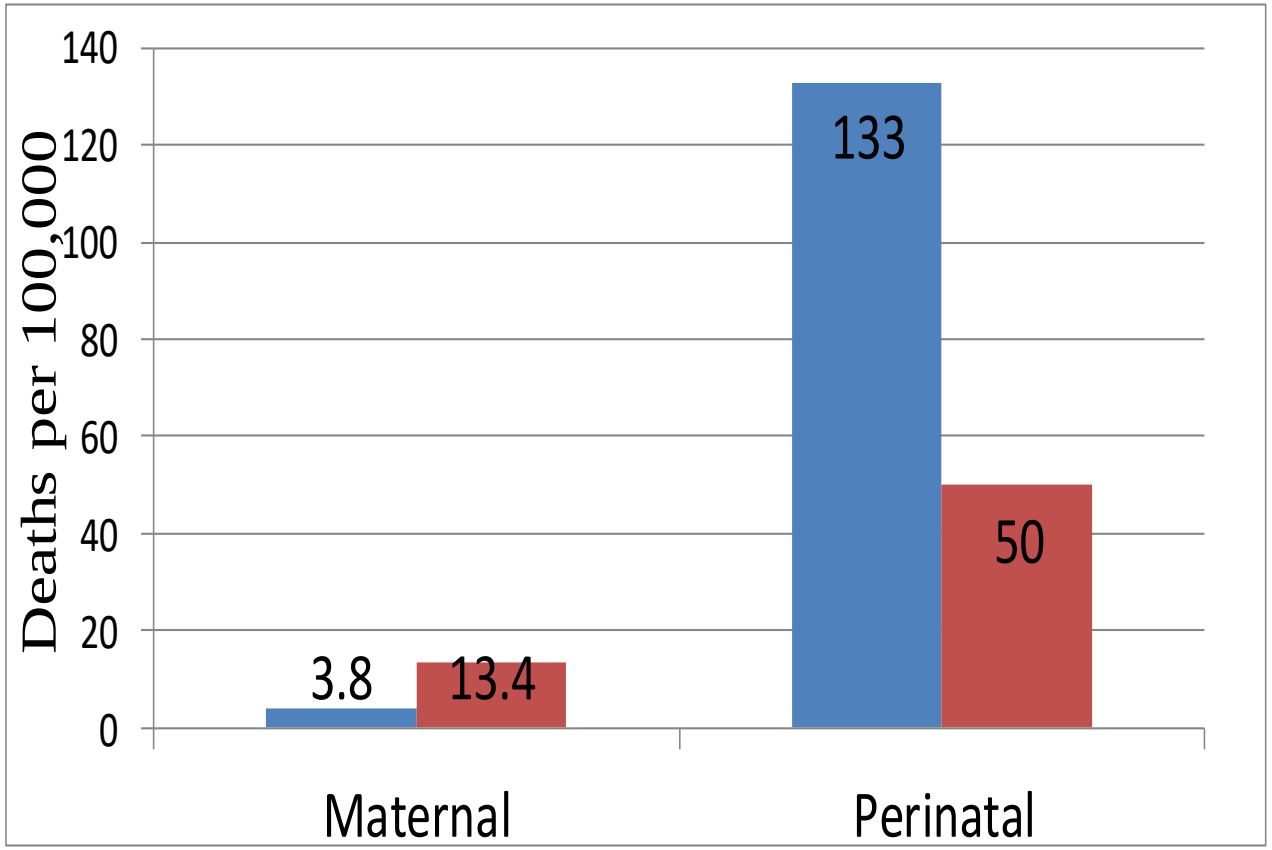
Signs and Symptoms of Uterine Rupture

- Fetal bradycardia (70%)
- Increase/change uterine contractions
- Loss of fetal station/change in abdomen
- Vaginal bleeding
- Hypotension
- New onset pain/pain between contractions
  - Referred shoulder pain

Neonatal Outcomes

- Short-term
  - Perinatal death
  - Sepsis
  - Apgar scores
  - NICU admission
  - Breastfeeding
- Long-term
  - Neurologic development
  - Future pregnancies

Maternal and Perinatal Death



- VBAC in **second trimester**:
  PGs (misoprostol)

- IUFD in third trimester:
  PRCD/TOLAC??

Vaginal breech delivery

- Cesarean delivery /vaginal breech delivery.
- In properly selected cases, it is associated with a low risk of complications.

- Criteria for selecting women at lower risk of morbidity from vaginal breech birth include

•No contraindication to vaginal birth.

•No prior cesarean deliveries (relative contraindication).

•No fetal anomaly that may cause dystocia.

•Estimated fetal weight within an appropriate range. The optimum range is unclear. The author uses ≥2000 and ≤4000 g, but ≥2500 and ≤3500 g or ≥1500 and ≤3800 g are examples of other reasonable approaches.

•Gestational age ≥36 weeks.

•No hyperextension of the fetal neck/head (ie, an extension angle of greater than 90 degrees).

•Frank or complete breech presentation (incomplete breech presentation is a contraindication).

•Spontaneous labor.

•Staff skilled in breech delivery and immediate availability of facilities for safe emergency cesarean delivery (eg, anesthesia, obstetric, and pediatric personnel; surgical facilities and personnel).

- We prefer use of neuraxial rather than parenteral analgesia for management of labor pain.
- We avoid oxytocin augmentation in the active phase of labor.

- We leave membranes intact.

A vaginal examination should be performed immediately upon rupture of membranes to exclude cord prolapse.

- Descent is adequate if the breech reaches the level of the *ischial spines* when the cervix is **6 cm dilated** and reaches the *pelvic floor* at **full dilation**. If the fetus fails to deliver within **6o minutes** of maternal pushing, we perform a cesarean delivery.

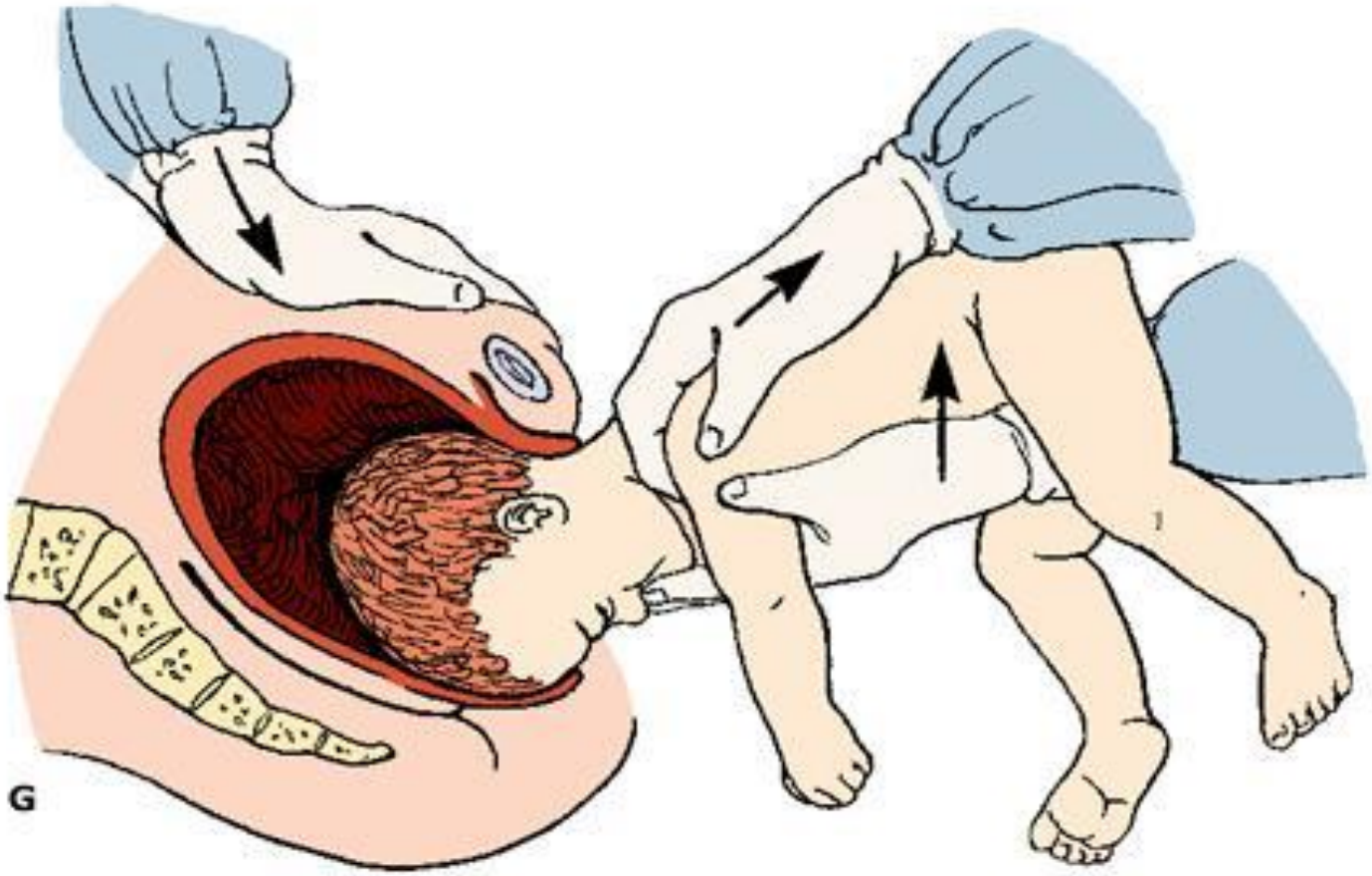
- We do not assist the delivery until maternal efforts have resulted in expulsion of the fetus at least to the scapulae.

- Arm dystocia can usually be resolved by **rotation of the trunk** or by sliding an index finger along the scapula, over the shoulder, and into the antecubital fossa. The elbow and forearm are then swept in front of the face and downward to the chest, at which point the arm can be delivered

- It is essential that the **trunk not be raised** more than 45 degrees above the horizontal plane of the birth canal; this avoids traction on the cervical spine, which can lead to death or severe disability.

- Suprapubic pressure helps the neck/head to flex and descend. The head can deliver spontaneously or with use of the Mauriceau-Smellie-Veit maneuver or with use of Piper forceps. No method has been proven to be superior to the others.

Mauriceau-Smellie-Veit maneuver



- If the head is entrapped, we administer a uterine relaxant. Options include a beta adrenergic agonist (eg, terbutaline 0.25 mg subcutaneously or 2.5 to 10 mcg/minute intravenously) or nitroglycerin (50 mcg once, may repeat at one minute intervals as needed to sufficiently relax the uterus, maximum total dose 250 mcg; an initial bolus of 100 to 200 mcg may also be used but increases the risk of hypotension). General anesthesia is another option but may take too long to administer. The mother should also push effectively.

Cesarean breech delivery

- we suggest either scheduling planned cesarean delivery between 39 and 41 weeks of or an unscheduled cesarean in early labor
- For preterm delivery (for **medical or obstetric reasons**) the cesarean delivery is scheduled or in **spontaneous preterm labor**, performed when delivery appears to be inevitable.

- The **technique** of fetal extraction through the hysterotomy incision is similar to that for vaginal breech delivery.

- The preterm lower uterine segment may be narrow, making delivery through a transverse lower uterine incision difficult. A vertical incision is made in the lower uterine segment and extended into the upper uterine segment if required.

My guidelines for VBAC - 1

- Patients are counselled that VBAC is <u>not</u> usually recommended if:
  - There is a classical, T-shaped or unknown uterine incision
  - More than one CS has been performed
  - The previous CS was performed for failure to progress in the active phase of labour i.e. >4 cm dilated
  - Their BMI is >35
- *Patients accepted outside of these guidelines on a case- by-case basis.*

My guidelines for VBAC - 2

- Patients who are suitable for a trial of scar should be told by their primary carer that elective CS and VBAC have risks and benefits.
- They should:
  - Read on the subject – RCOG 2008
  - Discuss it with an obstetrician
  - Their decision will be respected
- Patients planning VBAC require one to one preparation

My guidelines for VBAC - 3

- Any available record about the previous CS is scrutinized
- The patient is provided with individualised chance of success with VBAC & maternal and fetal risks
- Delivery in a place capable of emergency laparotomy is recommended
- Any limitation in the patient's chosen place of birth is discussed
- The discussion is documented

My guidelines for VBAC - 4

- Offer IOL by sweep membranes, ARM and oxytocin in safe working hours at 39 – 41w
- Cervical ripening with Foley but not PGs
- If admitted in spontaneous labour then review by obstetrician within 2 hrs is desirable
- IV line,blood group and reserve
- epidural if required.
- Monitor by continuous CTG if oxytocin or epidural is in use

My guidelines for VBAC - 5

- CS is recommended if there is failure to progress i.e.
  - <1 cm per hour dilatation over >4 hrs and >3 cm and good uterine activity
  - No head descent with >60 minutes active pushing in the 2nd stage
  - Assisted delivery may be attempted according to usual obstetric dictates
- OR "Fetal Distress" i.e.
  - Scalp lactate >4.8 or CTG so abnormal as to warrant scalp sampling by ACOG guidelines

Patient selection for VBAC

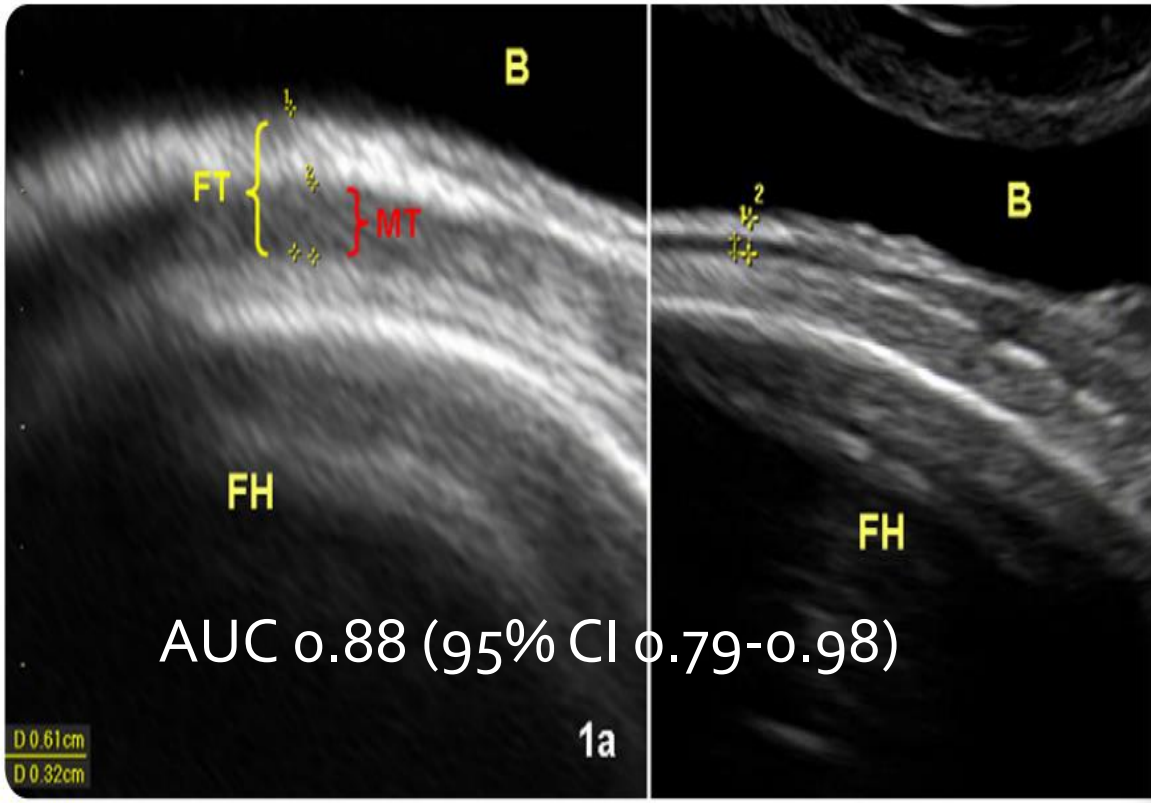
- Time since previous CS
  - Risk of scar rupture is 2 – 3x greater if <18m (> 3 y too)
- Maternal weight
  - Miserable rates of VBAC for women >135 Kg
- Lower uterine segment thickness
  - No uterine ruptures if >4.5 mm
- Maternal Age
  - Clear evidence for declining uterine performance with age at first labour
- Family history of labour performance
  - A field ripe for study

Patient selection for VBAC

- Size of the mother and baby
  - But we are very bad at estimating this
- Other pregnancy problems
  - Should be assessed according to obstetric principles
- Engagement and cervical ripening
  - Best assessed at the onset of labour
- Labour performance
  - That's why it's called trial of scar
  - Dilatation and descent
  - Progress rather than arbitrary time limits
- Psychological Factors
  - The patient's willingness and drive
  - The support provided

Prediction of complete uterine rupture by sonographic evaluation of the lower uterine segment

Emmanuel Bujold, MD, MSc, FRCSC; Nicole Jastrow, MD; Jessica Simoneau, RT; Suzanne Brunet, RT; Robert J. Gauthier, MD, FRCSC



AUC 0.88 (95% CI 0.79-0.98)