



VAGINAL BIRTH AFTER CESAREAN DELIVERY THOUGHTS FOR 2011

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Objectives

- Describe rates and patterns of utilization of trial of labor after cesarean (TOLAC) and repeat cesarean delivery (R CD)
- Understand long and short term benefits and harms to mothers and babies
- Describe factors that influence trial of labor and repeat cesarean delivery



**DR. BURGIS HAS DISCLOSED THAT SHE
HAS NO RELEVANT FINANCIAL
RELATIONSHIPS.**

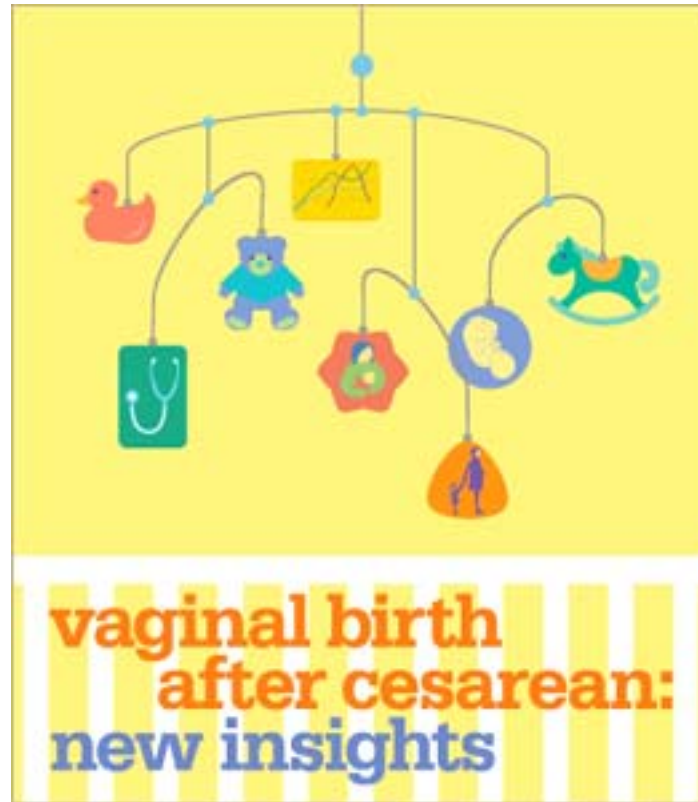


Evidence

- Medical literature review *January 1980 through January 2011*
- Over 3000 Citations
- No randomized trials comparing outcomes for mothers and babies for trial of labor(TOLAC) vs planned cesarean delivery (R CD)



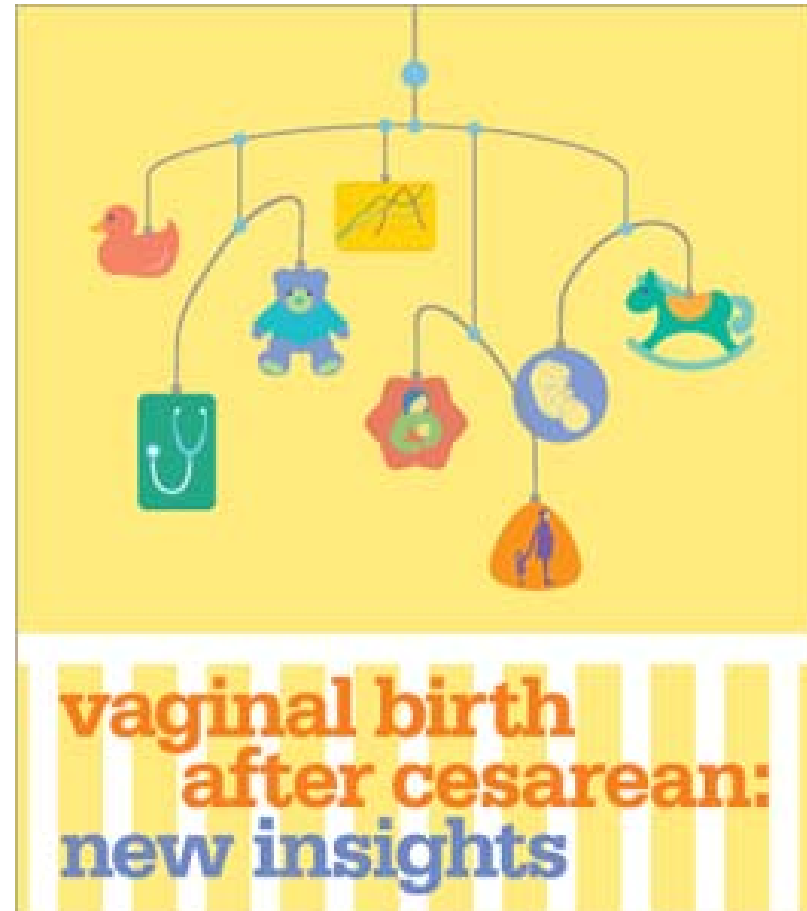
NIH Consensus Development Conference Statement on



NIH Consensus Development Conference Statement

• **March 2010**

- 15 member panel
- 20 experts from related fields presented evidence
- Systematic review of evidence
 - <http://consensus.nih.gov>



NIH Consensus Development Conference Statement

- ***6 Key Questions***
- What are the rates and patterns of utilization of TOLAC, VBAC, and R CD in the US?
- Among women who attempt a TOLAC, what is the vaginal delivery rate and the factors that influence it?
- What are short- and long-term benefits and harms to the mother attempting TOLAC vs R CD?

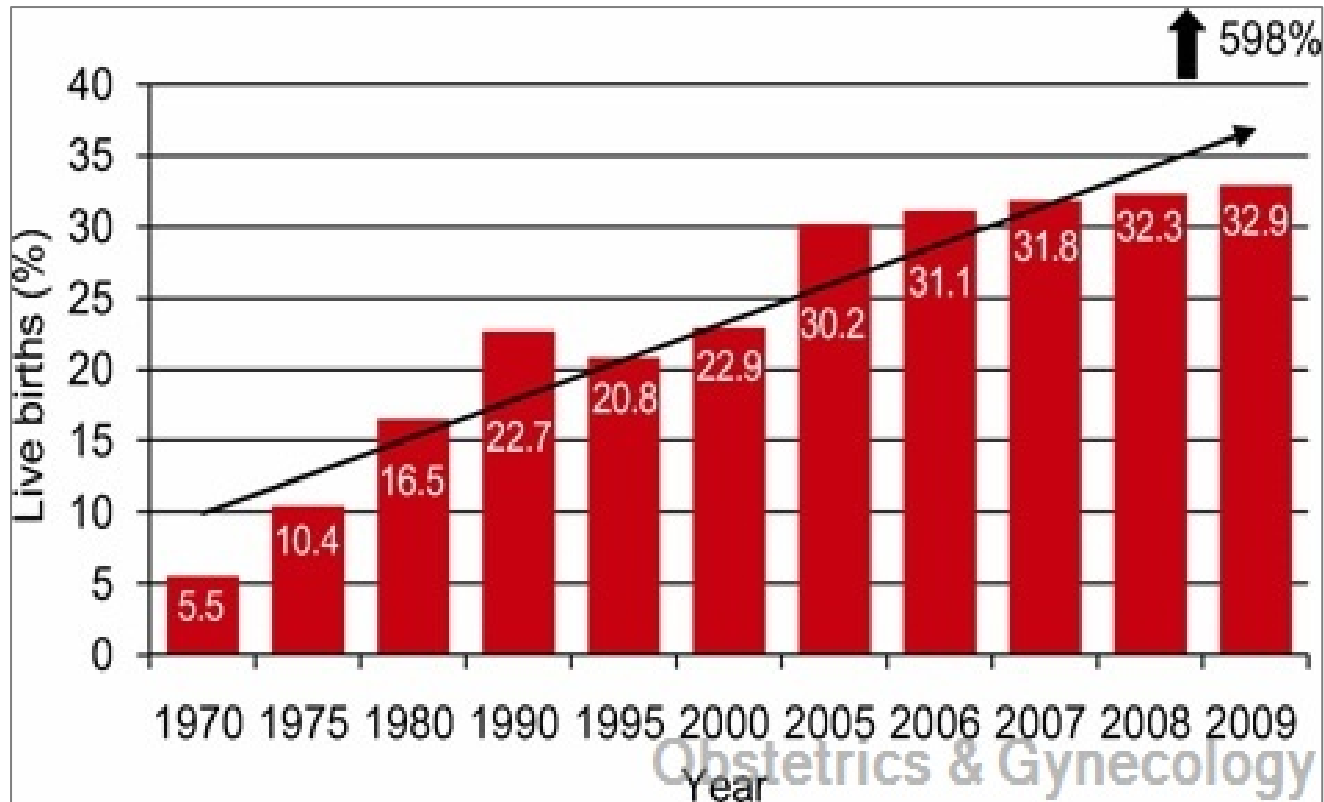


NIH Consensus Development Conference Statement

- What are the short-and long term benefits and harms to the baby of maternal attempt at TOLAC vs R CD?
- What are the nonmedical factors that influence the patterns and utilization of TOLAC?
- What are the critical gaps in the evidence for decision making, and what are the priority investigations needed to address the gaps?



Cesarean Deliveries are Rising!



Cesarean delivery rates from 1970 to 2009. (Data from <http://www.cdc.gov/nchs/nvss.htm>, courtesy of Caroline Signore, MD, MPH.) Scott. VBAC: A Common-Sense Approach. Obstet Gynecol 2011.



Scott, James R.
Obstetrics & Gynecology. 118(2, Part 1):342-350, August 2011.
doi: 10.1097/AOG.0b013e3182245b39



Cesarean Deliveries are Rising!

- Suspected Fetal Compromise
- Arrest of labor
- Fetal malpresentation
- Continuous electronic FHR monitor
 - Has not improved perinatal outcomes
 - Has not lowered the cerebral palsy rates

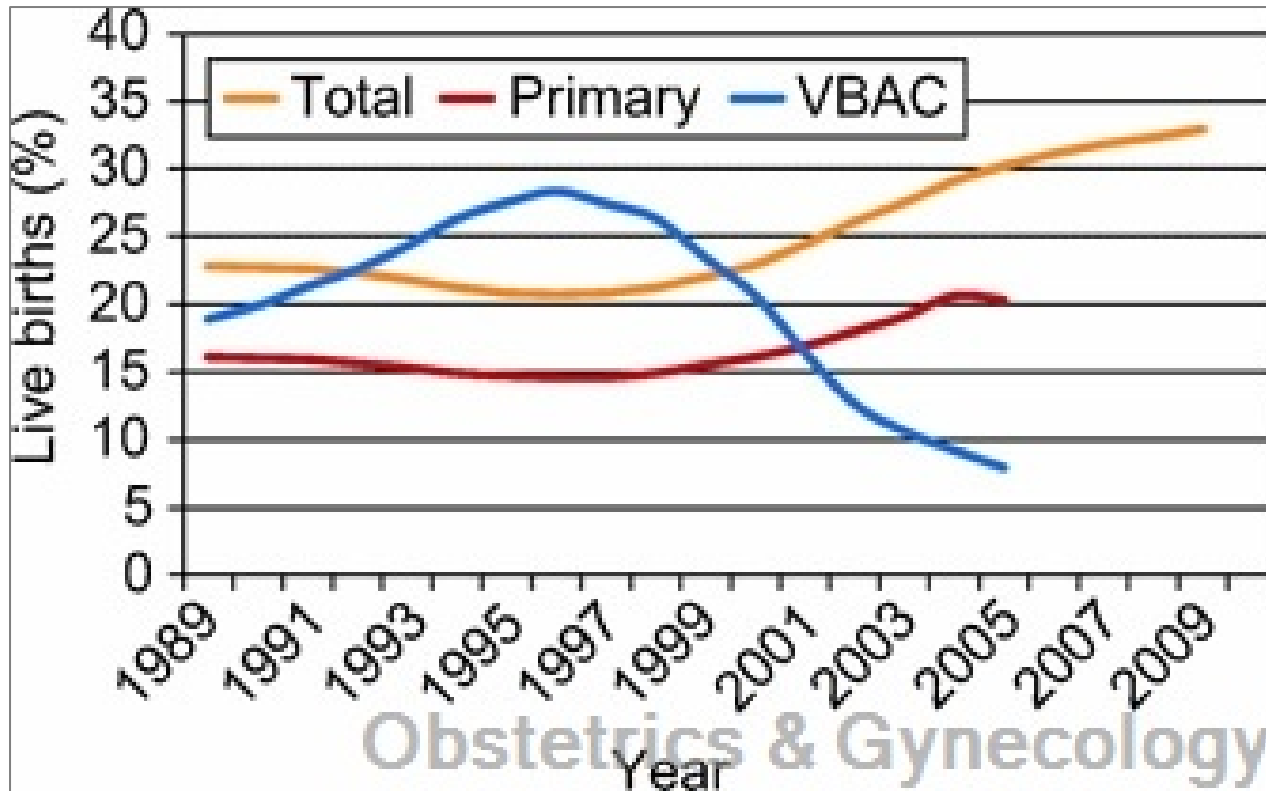


Cesarean Deliveries are Rising!

- Non obstetric indications
- Some women perceive CD as better
 - Easier
 - More convenient
 - Cesarean delivery on maternal request (CDMR)



VBAC has Declined!



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Rates of total cesarean deliveries (1998–2009), primary cesarean deliveries (1998–2007), and vaginal births after cesarean (VBAC) (1998 to 2007). (Data from <http://www.cdc.gov/nchs/nvss.htm>, courtesy of Caroline Signore, MD, MPH.) Scott. VBAC: A Common-Sense Approach. Obstet Gynecol 2011.



VBAC has declined

- 28% in 1996
- <10% in 2006
- One third of hospitals and one half of MDs cannot comply with “immediate availability”
- Between 2003 and 2006, 26% ACOG fellows stopped offering TOLAC



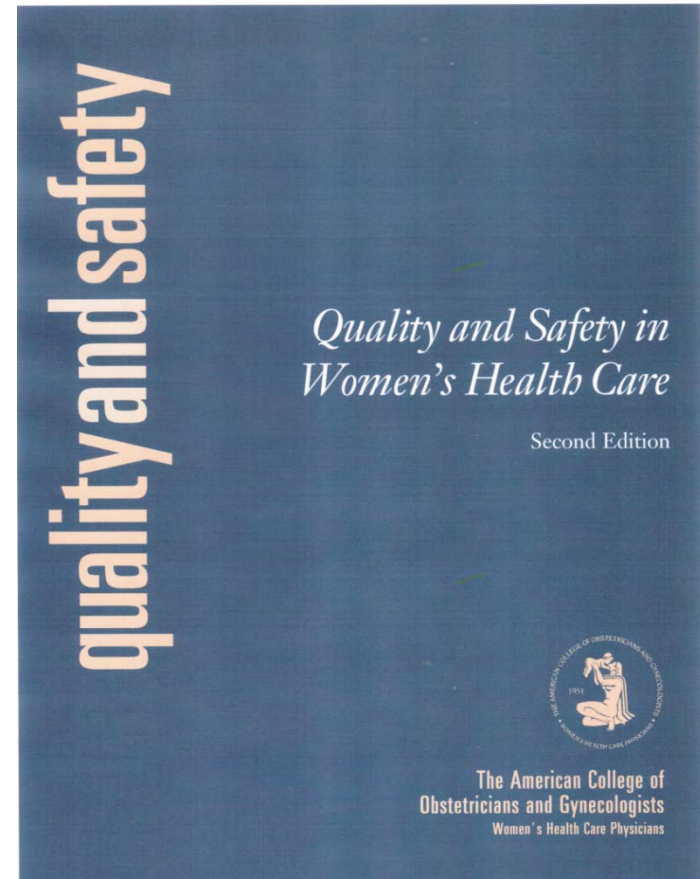
When compared to Vaginal Delivery, Cesarean Delivery

- More Blood loss
- Longer Recovery
- More neonatal respiratory distress
- More maternal bladder and ureteral injuries
- More postpartum infections
- More Thromboembolism
- More rehospitalization



ACOG Voluntary Review

- Review service
- vrqc@acog.org
- If unable to offer TOLAC, referral is appropriate



TOLAC vs RCD

- Information from PRAMS data
- New Jersey data
- VBAC dropped dramatically
- R CD has increased across all racial/ethnic groups
- R CD increasing even in low risk women



TOLAC

- Success remains high for low risk women
- 60-80% VBAC
- Most data from large centers
- Many demographic factors associated with likelihood of VBAC



What factors influence VBAC?

- **RCD after failed TOLAC**
- Increased risk for infection
- Increased risk for maternal operative complications
- Increased risk for neonatal infection



What factors influence VBAC?

Lower Rates

- African-American, Hispanic
- increasing maternal age
- single marital status
- less than 12 years education
- rural delivery setting
- maternal disease complicating pregnancy



What factors influence VBAC?

Higher Rates

- Greater maternal height
- BMI <30 kg/m²
- Prior history of vaginal delivery
- Non recurring indication for CD
- Prior delivery fetal weight <4000 grams



What factors influence VBAC?

Current pregnancy factors that *favor* VBAC

- Fetal weight <4000 g
- Lower gestational age at delivery
- Greater dilation at admission

Current pregnancy factors that *decrease* VBAC

- Gestational age >40 weeks
- Labor augmentation
- Labor induction



What factors influence VBAC?

- *Do antepartum or intrapartum strategies influence the rate?*
- Large tertiary centers
- Several scoring systems predict VBAC
- Studies proving validity have not been done
- <http://www.bsc.gwu.edu/mfmv/vagbirth.htm>
!



What are the short and long term benefits and harms for the mother?

- Cesarean delivery on Maternal Request
- Benefits are directly related to successful VBAC
- Harms are mostly related to unsuccessful TOL



Short Term Benefits for TOL

- **Decreased risk of maternal mortality compared with RCD**
 - At term, 1.9/100,000 for VBAC compared to 9.6/100,000 for RCD
 - Lower mortality implied with higher volume centers
- **Shorter hospital stay with VBAC**
- **Lower risk of DVT (1 study)**



No Difference or Insufficient Evidence

- Overall risk of hysterectomy
- Risk of blood transfusion
- Women's perceptions of birth experience
- Initial parent – infant interactions
- Breastfeeding initiation



What are the short term harms?

- **Uterine rupture**
- 0.5% to 1% with one prior CD
- Reason it occurs is unclear

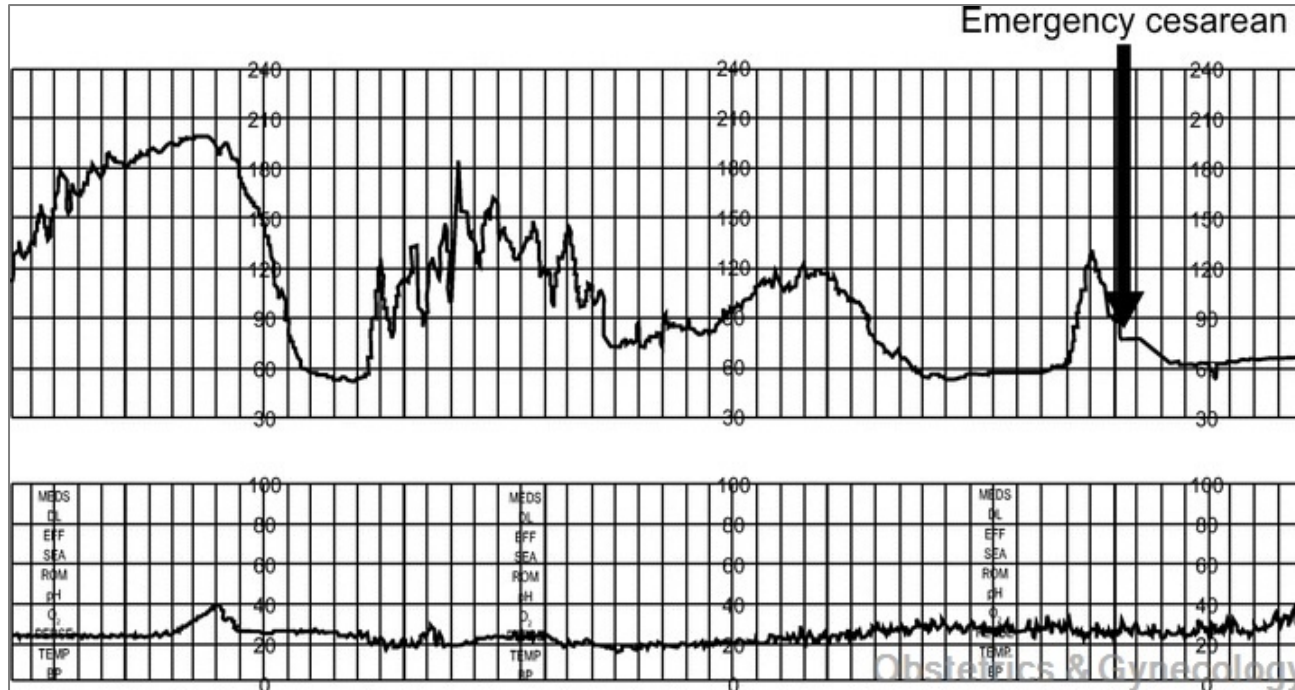


What are the short term harms?

- Most common presenting symptom?



Fetal Heart Rate Abnormalities



This patient with uterine rupture delivered a healthy neonate by cesarean (arrow) 14 minutes after the onset of fetal heart rate (FHR) decelerations and bradycardia. Scott. VBAC: A Common-Sense Approach. Obstet Gynecol 2011.

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Fetal Heart Rate Abnormalities

- Variable to late FHR decelerations
- Abdominal pain described as “tearing”



Uterine Rupture

- Increased vaginal bleeding
- Loss of the presenting part
- Increased uterine contractions



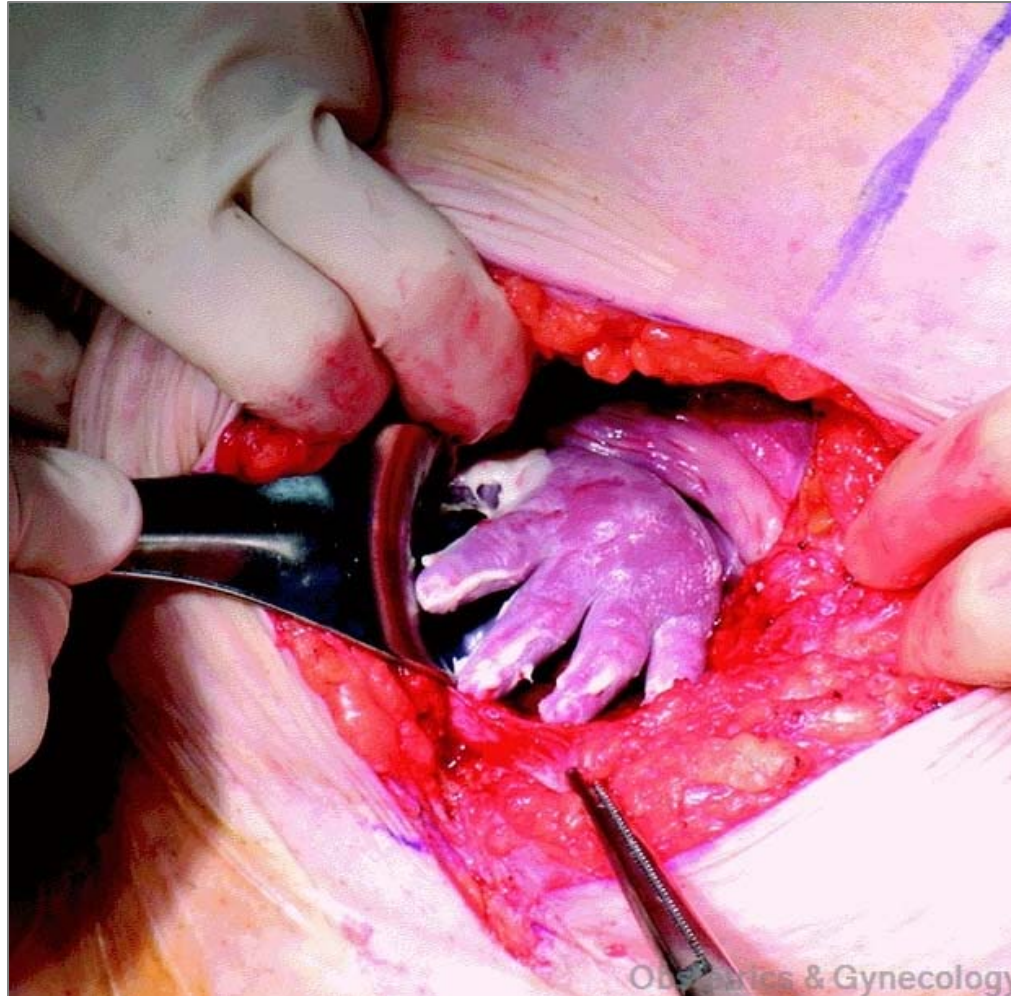
Short Term Harms for TOL

Uterine Rupture

- Incidence approximately 325/100,000 women undergoing TOL at all gestational ages
- Incidence is 778/100,000 at term
- Incidence is 26/100,000 for R CD all gestational ages
- Incidence is 22/100,000 for R CD at term



Short Term Harms for TOL



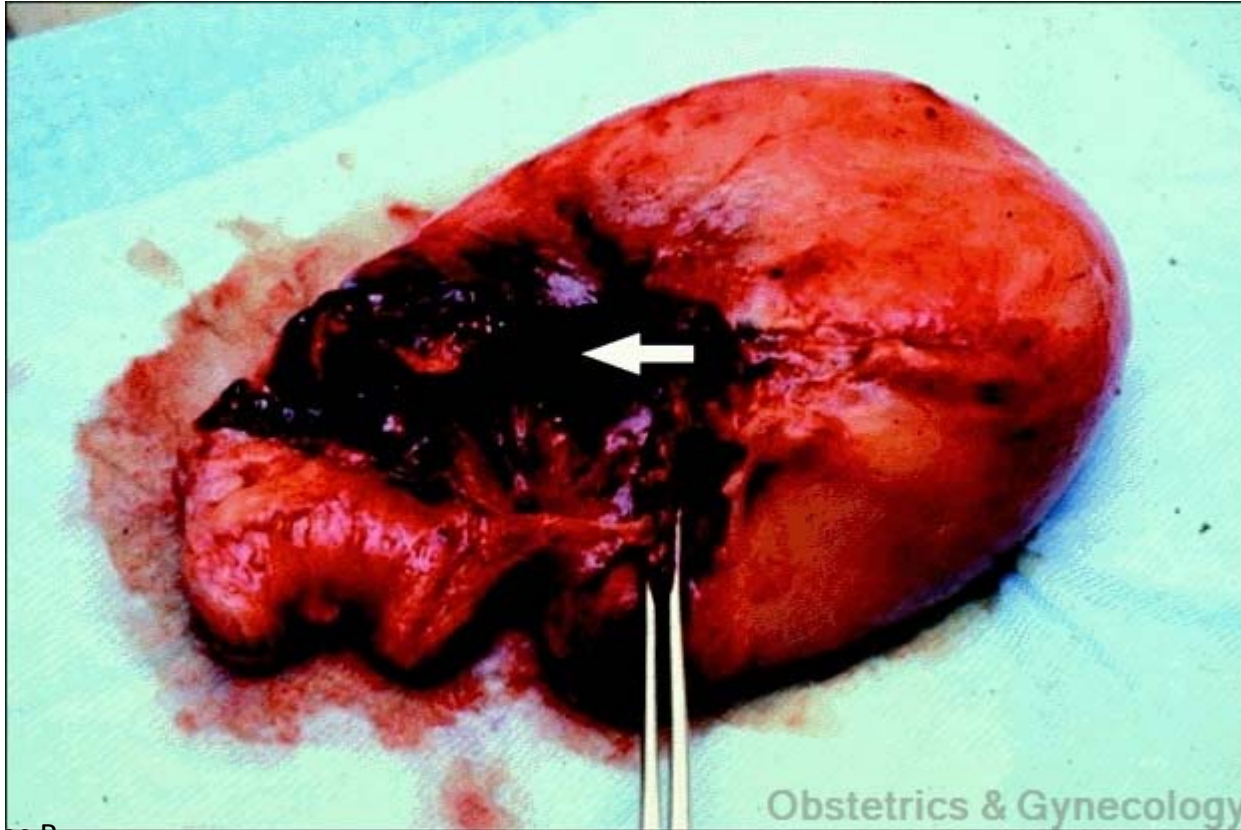
Complete disruption of hysterotomy scar with fetal hand through uterine defect. (Reprinted from Eller AG, Fisher B. Images in clinical medicine: diagnosis of uterine rupture on CT. N Engl J Med 2009;360:170. Copyright ©2009 Massachusetts Medical Society.). Scott. VBAC: A Common-Sense Approach. Obstet Gynecol 2011.




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Short Term Harms for TOL



- Stellate rupture of the previous low transverse cesarean scar which extended into the broad ligament (arrow) and required hysterectomy.Scott. VBAC: A Common-Sense Approach. Obstet Gynecol 2011.

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What influences rupture?

- ↑ Classical and low vertical scars
- ↑ Induction of labor
- No increase with oxytocin augmentation of spontaneous labor
- ↑s with the # of prior CD
- May ↑ with unfavorable cervix, obesity, interpregnancy interval <18 mos., single layer uterine closure, infant > 4000 g



What influences rupture?

- ↓s with prior vaginal birth



Consequences of Rupture

- No reported maternal deaths
- 14 to 33% need hysterectomy
- 6% result in perinatal death
- At term, fetal death with rupture <3%
- Unable to quantify neonatal morbidity



Long Term Benefits TOL

- No high grade evidence
- Moderate grade – ↓ abnormal placentation in subsequent pregnancies
- 28% of women have > 2 pregnancies
- Reproductive life plan



Long Term Benefits TOL

Placenta Previa increases with each CD

900/100,000 one CD

1700/100,000 with 2 CDs

3000/100,000 with 3 CDs

Placenta accreta, increta, and percreta ↑



Long Term Benefit for TOL

- No studies on issues such as chronic pain, ectopic pregnancy, stillbirth, infertility
- No studies on complications related to other surgery



Long Term Harms of TOL

- No high, moderate, or low grade evidence
- Insufficient evidence
- Pelvic floor function
- R CD should not be considered protective of pelvic floor function



What are short and long term benefits and harms for the baby?

- There is little evidence on neonatal outcomes in women for TOL vs R CD
- There is extensive data documenting differences in neonatal outcome following vaginal delivery compared to CD



What are short term outcomes for the baby?

No high grade evidence

Moderate grade

↑ perinatal mortality for TOL vs R CD

Low Grade

-fetal mortality ↑ for TOL vs R CD

-Hypoxic ischemic encephalopathy

One study showed ↑ for TOL



Short Term outcomes for Baby

Insufficient Evidence

- Respiratory sequelae
- Sepsis
- Birth Trauma
- Breast feeding
- Mother infant bonding



Non medical factors that influence utilization of TOL?

- Professional practice guidelines
- Professional liability concerns
- Nature of informed decision making
- Provider and birth-setting issues
- Health insurance status and insurance reimbursement
- Patient and provider preference



Professional Association Practice Guidelines

Table 1. Comparison of Clinical Practice Guidelines for Vaginal Birth After Cesarean Delivery From Professional Societies and the Agency for Healthcare Research and Quality

Society	VBAC Counseling	Facilities and Personnel	Other Recommendations
The College ⁴	VBAC should be offered to most women with one previous cesarean delivery with low transverse incision; consider those with two previous low transverse cesarean deliveries.	Safest where staff can provide immediate emergency cesarean delivery, but patients should be allowed to accept increased risk when such resources are not available.	Twins, macrosomia, postdatism, low vertical incision, and unknown type of uterine incision should not preclude.
RCOG ⁵	Women with one prior low segment cesarean delivery should be able to discuss option of VBAC; final decision between woman and her obstetrician.	Should be conducted in suitably staffed and equipped delivery suite with continuous intrapartum care and monitoring and available resources for immediate cesarean delivery and advanced neonatal resuscitation.	Caution with twins and macrosomia (uncertainty due to underpowered studies).
SOGC ⁶	VBAC should be offered to women with one previous cesarean delivery with low transverse incision.	In hospital where a timely cesarean is available; an approximate timeframe of 30 min should be considered adequate for urgent laparotomy.	Twins, macrosomia, and postdatism are not contraindications.
AAFP ⁷	VBAC should be offered to women with one previous cesarean delivery with low transverse incision.	Should not be restricted only to those facilities with available surgical teams present throughout labor because there is no evidence that these additional resources result in improved outcome.	Not addressed.
AHRQ ²	VBAC is a reasonable choice for the majority of women with prior cesarean delivery.	Not addressed.	Not addressed.

VBAC, Vaginal Birth After Cesarean Delivery; The College, American College of Obstetricians and Gynecologists; RCOG, Royal College of Obstetricians and Gynaecologists; SOGC, Society of Obstetricians and Gynaecologists of Canada; AAFP, American Academy of Family Physicians; AHRQ, Agency for Healthcare Research and Quality.

Professional liability concerns among MDs and hospitals

- Concerns have had a major impact
- ACOGs “immediate availability”
- 30% ACOG fellows stopped offering TOLAC
- Tort reform may help



Nature of Informed Decision Making

- Patient physician relationship is key
- Spectrum of risks and benefits must be understood
- Decision aids may be used
- Careful patient selection
- Positive attitude, flexibility
- Close vigilance throughout labor



Provider and Birth Setting

- No comparative data on types of maternity care providers
- Some evidence younger providers are less willing
- Most data from tertiary care centers
- High volume – better outcomes



Health Insurance and Reimbursement

- No data to allow conclusions
- Not clear whether overall reimbursement levels for VBAC compared with R CD have an influence on practice patterns



Patient Provider Preferences

- *Women report they are influenced by provider preference*

Factors for TOLAC

Empowered by labor and vaginal delivery

Ease of breastfeeding

Partners' involvement

Expectation of an easier recovery



Patient Provider Preferences

Factors favoring R CD

- Desire for sterilization
- Scheduling convenience
- Preference of R CD over emergent CD or operative vaginal delivery
- Avoids labor pain
- Fear of unsuccessful TOL



What are the Critical Gaps??

- Lack of standard terminology
- Persistent racial, ethnic, and socioeconomic differences
- Factors that affect the course of labor and its clinical management are incompletely understood
- Comparative long term outcomes are not known

What are the Critical Gaps??

- Comparative effect of breastfeeding between the groups
- Non medical factors affecting availability have not been studied
- Clinical and policy relevant studies to address medical-legal barriers
- Informed consent
- National and state surveillance

Conclusions

- TOL is reasonable for many low risk women with one prior CD



Cases

- 39 year old G2P1001 presents for prenatal care
- First pregnancy complicated by abruptio placenta and urgent 1°LTC/S
- Operative note available
- BMI 22
- Patient interested in TOLAC



Cases

- At 15 weeks patient develops acute appendicitis
- Emergent laparotomy for ruptured appendix
- Prolonged hospitalization
- Still a candidate?



Cases

- At 39³ weeks, cervix 3/75/0
- What's next?
- What is the best advice?
- At 40² weeks, cervix is unchanged
- Fetal growth is good
- What would you advise?



Cases

- Spontaneous labor 2 days later
- Successful VBAC
- Liveborn male, APGARS 9,9; weight 7lbs 12 ozs
- Mom and baby discharged home PPD #2



Cases

- 29 year old G4P3003 presents at 13 weeks for prenatal care
- First pregnancy 1°LTCD for failed induction birth weight 9 lbs 3 ozs
- Second pregnancy VBAC, uncomplicated
- Third pregnancy R CD, birth weight 10 lbs 2 OZS



Cases

- What advice for this patient?
- Reproductive life plan
- What are the risks?
- What are the benefits?



Cases

- **ACOG Practice Bulletin - 2010**
- Risk of rupture with greater than 1 LTCD
 - 0.9% to 3.7%

2 Large Studies

one showed no increased risk

one showed increased risk of 0.9% to 1.8%



Cases

- Uncomplicated pregnancy
- Cervix 1/thick / -3 at 39 weeks
- Estimated fetal weight 7 pounds 6 oz.
- Spontaneous labor at 39 weeks 5 days
- Successful VBAC
- Fetal weight 7 pounds 8 oz.
- Uncomplicated post natal course



Cases

- 30 year old G2 P1011 at 38 weeks 2 days
- Good dating
- 1° LTCD in 2003, stat after attempted ECV
- Uncomplicated pregnancy
- Comes in with SRROM
- What do you advise?



Cases

- Clear fluid
- Cervix 2/thick/high cephalic presentation
- What's the advise ?
- What are the risks?
- Patient desires TOL
- Is this OK?



Cases

- Pitocin started
- Received epidural
- Is epidural safe?
- Progressed to complete and pushing in 13 hours
- Successful VBAC
- Liveborn female, APGARS 9,10
- Uncomplicated postnatal course



Cases

- 31 year old G3P2002 at 38 weeks 3 days
- Good dating
- Presents to L&D with regular uterine contractions
- Pregnancy history, 1°LTCD for arrest, RLTCDD at term
- Requested TOLAC at every prenatal visit



Cases

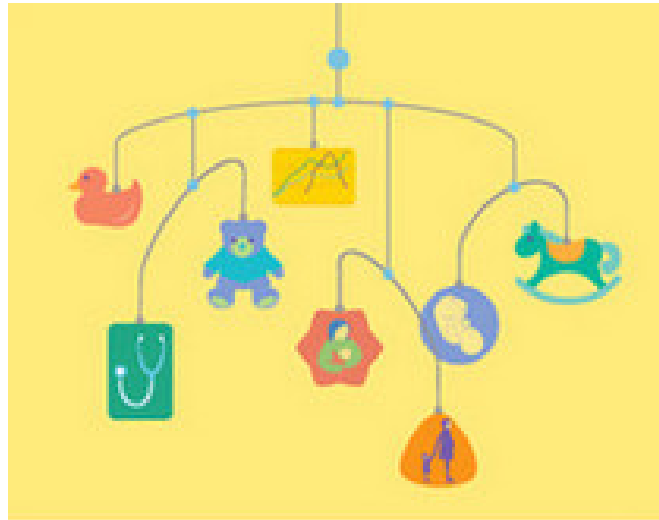
- Would she be a candidate?
- What are the risks?
- On admission cervix 2/80/-1 cephalic
- Five hours later 5/90/-1
- Seven hours later 6/90/-1
- Pitocin started
- Eleven hours later 7/90/0



Cases

- Twelve hours later FHR deceleration to the 90's
- Cervix unchanged.
- What is the plan?
- Repeat LTCD
- Female infant APGARS 8,9
- Intact lower uterine segment





**vaginal birth
after cesarean:
new insights**

