TRIAL OF LABOR AFTER C-SECTION (TOLAC)

FLAME LECTURE: 115

BURNS 1.1.18

LEARNING OBJECTIVES

- List risks and benefits of trial of labor after cesarean delivery
- Describe a TOLAC and VBAC
- List the indications and possible complications for a TOLAC
- Prerequisites:
  - None
- See also – for closely related topics
  - None

DEFINITION

- TOLAC: Trial of labor after C-section
  - Woman with previous c-section attempts a vaginal delivery a subsequent pregnancy
- VBAC: Vaginal birth after C-section
  - Successful TOLAC that results in vaginal delivery

HISTORY

"Once a cesarean, always a cesarean" – Cragin, 1916

- A century ago, this quote encompassed the belief that once a woman has a C-section, all subsequent deliveries must be C-sections as well
  - Initially, this was the safest management because C-sections were previously performed using vertical incisions that were prone to rupture if vaginal delivery was attempted
- Since then, there has been an ever-evolving attempt towards reducing repeat C-sections and giving women the opportunity to safely attempt a vaginal delivery (TOLAC)
  - However, with more TOLACs came more uterine ruptures, so in late 1990's ACOG put out stipulations on which patients were candidates for TOLAC
  - Patient interest in TOLAC has fluctuated
    - In late 1990's 50% of women chose trial of labor, but currently about 20-25% elect for TOLAC

INFLUENCING FACTORS

- When a woman presents for prenatal care with a history of c-section delivery, she may be offered:
  1. TOLAC
  2. ERCS (Elective repeat cesarean section)
- Patients should be counseled that while these options are elective, circumstances during pregnancy course and at time of delivery may require a repeat C-section for safety
- Successful VBACs have overall lower morbidity than ERCS due to potential complications of surgery
  - However a failed TOLAC (aka transition to c/s) has higher morbidity than ERCS

POTENTIAL COMPLICATIONS	
Endometritis	Higher in TOLAC Group
Uterine Rupture (0.7-1.8%)	Higher in TOLAC Group
Fetal Hypoxia	Higher in TOLAC Group
Future morbidity during repeat c/s	Higher in ERCD group
Future risk of placenta previa & accreta	Higher in ERCD group
Maternal Death (0.02-0.04%)	Higher in ERCD group

INFLUENCING FACTORS

Favorable / Low-risk
Transverse Incision (1-2 priors)
Prior VD (Including prior VBAC)
Appropriate counseling
Appropriate personnel / equipment 24-hour OB and anesthesia physicians in house
Caucasian
Spontaneous labor
Previous C-section for non-recurrent indication (ex. Fetal malpresentation)
Current preterm pregnancy

- Women who are low-risk in favorable settings can have up to 75% success rate
- The indication for their prior C-section can impact success
  - Negative impact: arrest of dilation, or arrest of descent
  - More favorable: mal-presentation, non-reassuring fetal heart rate tracing

Chart adapted from Williams' Obstetrics & Gynecology: Prior Cesarean Delivery

INFLUENCING FACTORS

Increased Failure Rate
Single mother
Increased maternal age
Macrosomic fetus
Obesity
Multifetal pregnancy
Preeclampsia
EGA > 40 weeks
Low vertical incision / Unknown incision
Labor induction
Medical comorbidity
>1 prior cesarean
Short inter-pregnancy interval

Chart adapted from Williams' Obstetrics & Gynecology: Prior Cesarean Delivery

- Factors listed here may make TOLAC success less likely but aren't absolute contraindications to TOLAC from being attempted if so desired
- Pts with an unknown uterine incision type (and no previous preterm C/S) are unlikely to have a vertical incision and thus may be offered TOLAC
- Women desiring TOLAC may be offered induction of labor
  - But should **NOT** be given misoprostol for induction due to increased risk of uterine rupture (increases risk of rupture up to 2.24%)

INFLUENCING FACTORS

High-Risk (aka contraindicated)
Prior Classical/Vertical incision
>2 prior cesarean sections
Prior uterine rupture
Prior transfundal surgery
Inadequate facilities
Breech presentation w/ failed ECV
Contraindications to vaginal delivery

Chart adapted from Williams' Obstetrics & Gynecology: Prior Cesarean Delivery

- Women who are considered high-risk should NOT attempt TOLAC due to high risk of uterine rupture
- Women in low-risk categories who attempt TOLAC should be managed in facilities capable of performing immediate emergent C-section if necessary

COUNSELING RE: TOLAC

- Risks and benefits should be outlined as early as possible, and updated as a woman's pregnancy course (and even labor course) progresses
- For low-risk women, a shared-decision making approach is appropriate as there is no "right vs. wrong" answer
- For women with two prior C-sections, do not assume that they are disinterested in TOLAC
  - Many women may not have been offered TOLAC in the past depending on where they delivered (provider comfort, facility equipment, etc)

COUNSELING RE: TOLAC

- VBAC Calculators may assist in counseling for patients
  - NICHD MFM VBAC calculator: https://mfmunetwork.bsc.gwu.edu/PublicBSC/MFMU/VGBirthCalc/vagbirth.html
  - Example:
    - 33 yo Hispanic G3P2002 at term with a BMI of 29 and a NSVD for her 1st preg followed by a C/S for her 2nd preg for breech presentation who desires TOLAC

VAGINAL BIRTH AFTER CESAREAN

Height & weight optional; enter them to automatically calculate BMI

Maternal age	33 years
Height (range 54-80 in.)	62 in
Weight (range 80-310 lb.)	160 lb
Body mass index (BMI, range 15-75)	29 kg/m^2
African-American?	no
Hispanic?	yes
Any previous vaginal delivery?	yes
Any vaginal delivery since last cesarean?	no
Indication for prior cesarean of arrest of dilation or descent?	no

Calculate

VAGINAL BIRTH AFTER CESAREAN

Predicted chance of vaginal birth after cesarean: **71.9%**

95% confidence interval: [**67.7%**, **75.6%**]

OTHER CONSIDERATIONS

IUFD OR 2ND TRIMESTER DELIVERY

- For women who desire an induction termination or vaginal delivery of a demised fetus
  - < 28 weeks: cervical ripening with misoprostol is **safe**
  - > 28 weeks: cervical preparation with foley balloon is recommended to avoid risk of uterine rupture
  - TOLAC may be appropriate for all cases, including prior vertical C-section incision

OTHER CONSIDERATIONS

DIAGNOSING UTERINE RUPTURE

- Uterine rupture is the most significant contributor to maternal and neonatal morbidity in failed TOLAC (7/1000 cases)
  - Classical and T-shaped incisions have 2-9% rupture rate vs. <1% for single low transverse scar
- Uterine rupture can lead to terminal bradycardia of the fetus and death
  - Requires emergent delivery via laparotomy

Signs & Symptoms of Uterine Rupture
Recurrent variable decelerations and/or terminal fetal bradycardia **This is often the first and most consistent sign of rupture (respectively), thus patients undergoing TOLAC should always receive continuous fetal monitoring**
New onset intense uterine pain Actually not a common finding (contractions continue, often have analgesics already)
Vaginal bleeding
Loss of fetal station Fetus progressing downward then suddenly regresses in fetal station
Maternal hypovolemia/hypotension Bleeding may be internal and not always visible

REFERENCES

ACOG Practice Bulletin 184: *Vaginal Birth After Cesarean Delivery* . November 2017

UpToDate *Choosing the route of delivery after cesarean birth*. Updated Nov. 2017

Prior Cesarean Delivery. In: Cunningham F, Leveno KJ, Bloom SL, Spong CY, Dashe JS, Hoffman BL, Casey BM, Sheffield JS. eds. Williams Obstetrics, Twenty-Fourth Edition New York, NY: McGraw-Hill; 2013.

RESOURCES:

NICHD MFM VBAC calculator: https://mfmunetwork.bsc.gwu.edu/PublicBSC/MFMU/VGBirthCalc/vagbirth.html