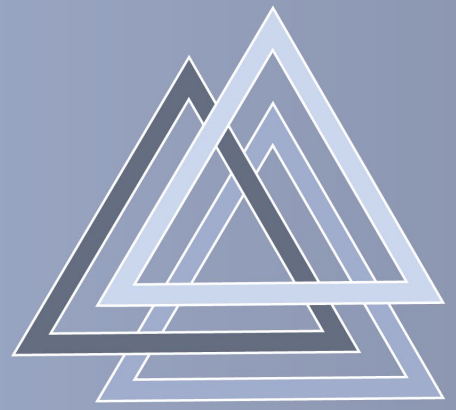


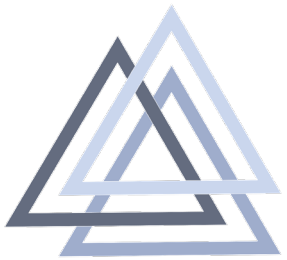
SAAOG

Annual Meeting • 2024

January 20-23 • The Cloister at Sea Island

VBAC According to ACOG …the Code?

Paul Dietz, M.D., FACOG
West Virginia University School of Medicine
Charleston Area Medical Center

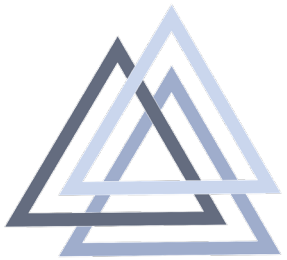


Learning Objective

- Review information and guidelines of ACOG Practice Bulletin #324: Vaginal Birth after Cesarean Section
- Overview of Summary of Recommendations and Conclusions

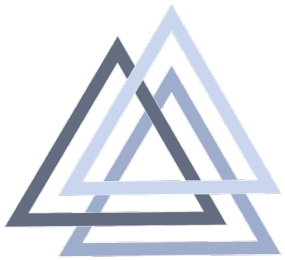
Disclosures

- No disclosures



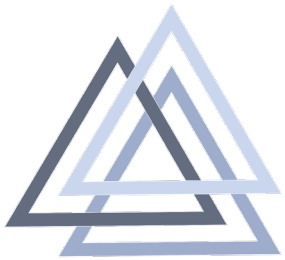
Background

- Between 1970 and 2016, cesarean rate in U.S. rose from 5% to 32%
- Result attributed to several factors:
  - Introduction of EFM
  - Decrease in operative deliveries
  - Decrease in attempted vaginal breech deliveries
  - “Once a cesarean always a cesarean”



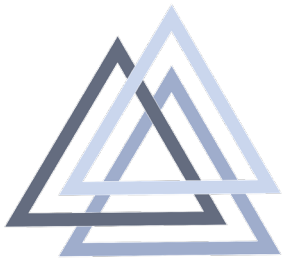
Background

- 1970s saw investigation into paradigm with evidence to suggesting TOLAC as reasonable approach in *select* pregnancies
- Recommendations resulted in increased VBAC rate from 5% in 1985 to 28% in 1996
- Overall cesarean rate decreased from 23% in 1989 to 20% by 1996



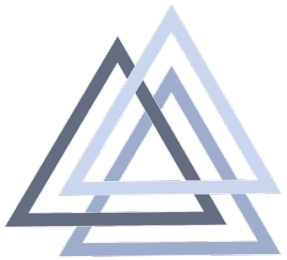
Background

- Increase in TOLAC resulted in concomitant increase in reports of uterine rupture and related complications
- Liability pressures then reversed trend, by 2006, VBAC rate dropped to 8.5% with increase in cesarean delivery rate to 31.1%
- Some hospital stopped offering TOLAC altogether



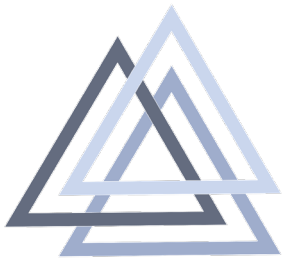
Background

- NIH panel recognized TOLAC as reasonable option in some patients
- Petitioned organizations to facilitate access to TOLAC
- “Concerns over liability have a major impact on the willingness of physicians and healthcare institutions to offer trial of labor”



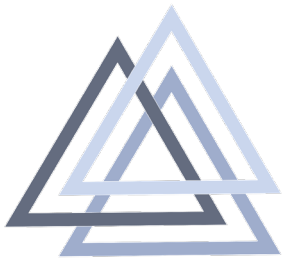
Evaluating the Evidence

- No randomized trials compare maternal or neonatal outcomes between women attempting TOLAC and those undergoing repeat cesarean delivery exist
- Recommendations based on observational studies examining probability of VBAC once TOLAC attempted AND neonatal morbidities associated with TOLAC compared to repeat cesarean delivery



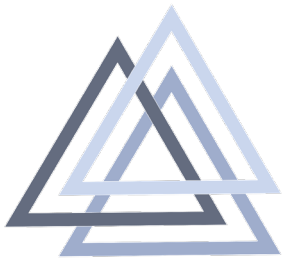
Evaluating the Evidence

- Several potential health advantages for women achieving VBAC:
  - Avoid major abdominal surgery
  - Lower rates of hemorrhage, thromboembolism, and infection
  - Shorter recovery period
  - May decrease risk of maternal consequences related to multiple cesarean deliveries



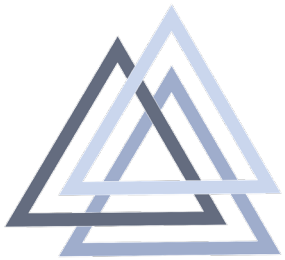
Evaluating the Evidence

- Elective repeat cesarean delivery and TOLAC associated with maternal and neonatal risk:
  - Maternal hemorrhage
  - Infection
  - Operative injury
  - Thromboembolism
  - Hysterectomy
  - Death



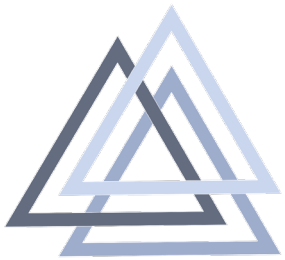
Evaluating the Evidence

- Most maternal morbidity related to TOLAC occurs with failure and repeat cesarean delivery becomes necessary
- VBAC associated with fewer complications than elective repeat cesarean delivery, but failed TOLAC associated with more
- Uterine rupture or dehiscence associated with TOLAC most significant increase in additional likelihood of maternal and neonatal morbidity



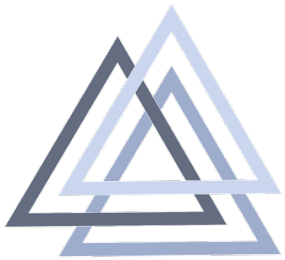
Evaluating the Evidence

- Terms “uterine rupture” and “uterine dehiscence” are not consistently distinguished from each other and often used interchangeably
- Reported incidence of uterine rupture varies from studies grouping true uterine rupture together with asymptomatic scar dehiscence



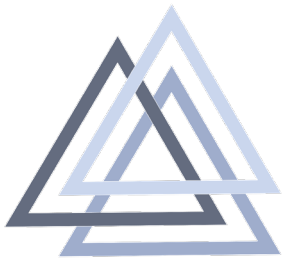
Evaluating the Evidence

- Early case series did not stratify rupture rates by the type of prior cesarean incision
- “Although some may suggest dehiscence is less morbid than rupture, that convention is NOT used in the document, and both terms refer to symptomatic or clinically significant events unless otherwise noted”



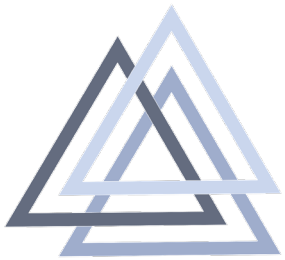
Evaluating the Evidence

- Location of prior uterine incision markedly influences likelihood of uterine rupture
- Prior LTCS uterine incision infers rupture rate during TOLAC of approximately 0.5-0.9%
- Risk higher in those with other types of hysterotomies, with exception of low vertical incision



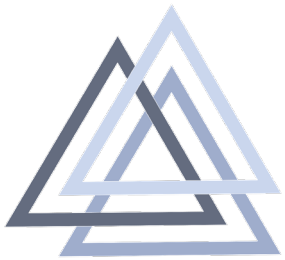
Stratification of Candidates

- TOLAC results in VBAC at rate of 60-80%
- VBAC rate based on demographic and obstetric characteristics
- Evidence labor induction or augmentation less likely to achieve VBAC compared with spontaneous labor without augmentation
- Prior vaginal delivery more likely to achieve VBAC compared to those who have not if attempted TOLAC



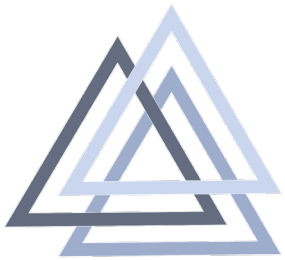
Stratification of Candidates

- Negative factors for successful VBAC:
  - Increasing maternal age
  - High BMI
  - High birth weight
  - Advancement gestational age
  - Short interdelivery interval (<19 months)
  - Preeclampsia



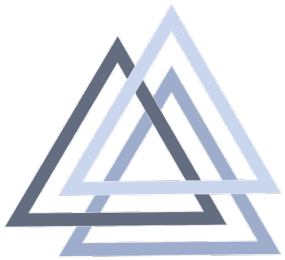
Role of Vaginal Birth Predication Models

- VBAC depends on individual combination of factors
- Attempts to create scoring systems to predict successful TOLAC
- Most have methodologic limitations
- One generated from initial prenatal visit information with one prior LTCS, singleton, and cephalic: maternal age, BMI, race, prior vaginal delivery, history of VBAC, and indication for prior section



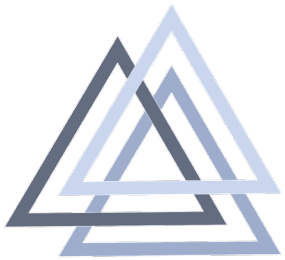
Role of Vaginal Birth Predication Models

- Another model provides probability based on information not available until admission for delivery
- Models may have utility for patient education and counseling for those considering TOLAC at term
- No prediction model for VBAC has been shown to result in improved patient outcomes



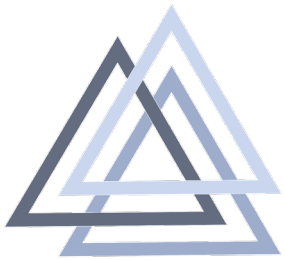
Candidates for TOLAC after Cesarean Section

- Most women with one prior section with low-transverse incision are candidates for and should be counseled and offered TOLAC
- Those ate high risk for uterine rupture (prior classical incision, T-incision, prior uterine rupture or extensive transfundal uterine surgery) are not generally candidates
- Balance risks that are acceptable with patient and provider



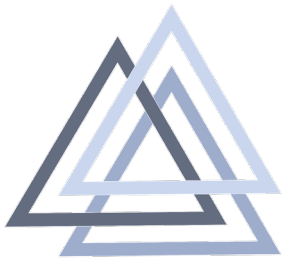
Candidates for TOLAC after Cesarean Section

- Evidence suggests women with at least 60-70% chance of successful VBAC who attempt TOLAC have same or less morbidity than those electing for repeat section
- Those with 60% or less probability of success are more likely to have greater morbidity versus elective repeat section
- Neonatal morbidity higher with failed TOLAC than in VBAC



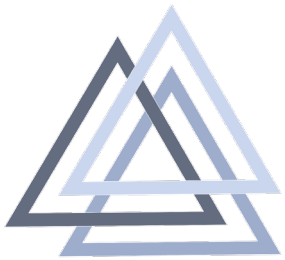
Candidates for TOLAC after Cesarean Section

- Composite neonatal morbidity similar between women attempting TOLAC and those having elective repeat section if the probability of VBAC is greater than 70%
- TOLAC preference-sensitive decision and obtaining patient values and preferences is key in counseling



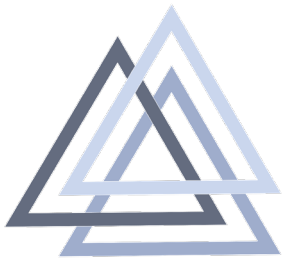
More Than One Previous Cesarean Delivery

- Studies suggest risk between 0.9% and 3.7% of uterine rupture in those undergoing TOLAC with more than one prior section
- One study found no increased risk of uterine rupture (0.9% versus 0.7%) in women with one versus multiple prior sections
- Another noted risk of rupture increases from 0.9% to 1.8% in women with one versus two prior sections



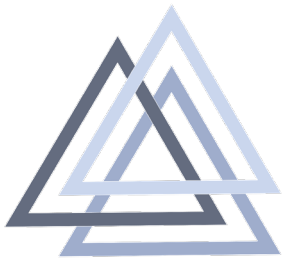
More Than One Previous Cesarean Delivery

- Likelihood of achieving VBAC appears similar for women with one previous section and those with more than one section
- Reasonable to consider women with two prior low-transverse sections to be candidates for TOLAC
- Data regarding risk for women attempting TOLAC with more than two prior sections are limited



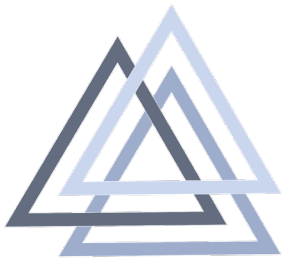
Macrosomia

- Women attempting TOLAC with fetal macrosomia have a lower likelihood of VBAC than those attempting TOLAC with non-macrosomic fetuses
- History of section performed because of dystocia have lower likelihood of VBAC if the current birth weight is greater than that of the index pregnancy with dystocia



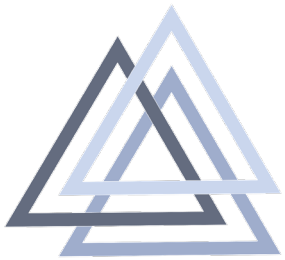
Macrosomia

- Studies examining incidence of uterine rupture during TOLAC with neonatal birth weights greater than 4,000 g have shown mixed results
- Appropriate to consider past birth weights and current estimated fetal weight when making decisions regarding TOLAC
- Suspected macrosomia alone should not preclude offering TOLAC



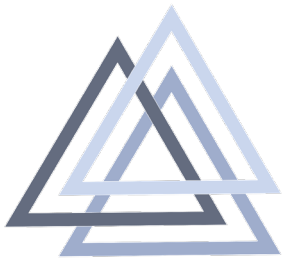
Gestation Beyond 40 Weeks

- Decreased VBAC rates in women who undertake TOLAC beyond 40 weeks of gestation
- Likelihood of success may be lower in more advanced gestations, gestational age greater than 40 weeks alone should not preclude attempted TOLAC



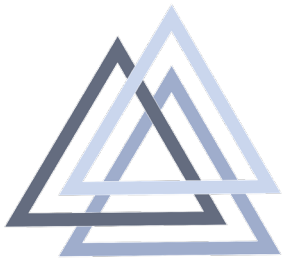
Previous Low-Vertical Incision

- Few studies have evaluated TOLAC in women with prior low-vertical uterine incisions, but those have reported similar rates of successful VBAC compared with those having prior low-transverse uterine incisions
- No consistent evidence of increased risk of rupture or maternal or neonatal morbidity associated with TOLAC in presence of prior low-vertical scar



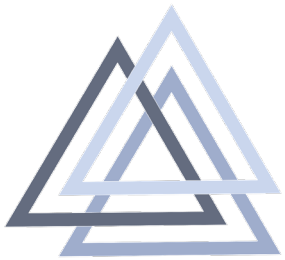
Unknown Type of Prior Uterine Incision

- Question arises in safety of TOLAC in cases of unknown prior uterine incision
- Two case series have found no difference in VBAC success and uterine rupture incidence compared to those of known scar type
- Absence of association may result from fact most section incisions are low transverse



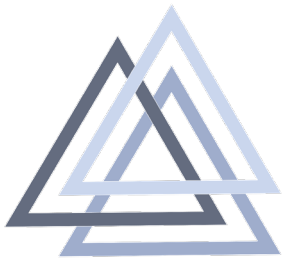
Unknown Type of Prior Uterine Incision

- Prior scar can typically be inferred based on indication for the prior section delivery
- Women with one previous section with an unknown uterine scar type may be candidates for TOLAC, unless high clinical suspicion of a previous classical uterine incision



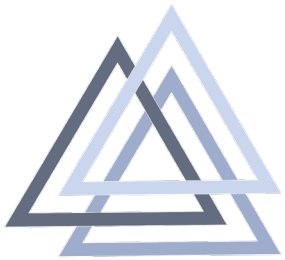
Twin Gestation

- Studies show outcomes of women with twin gestations attempting TOLAC are similar to those of women with singleton gestations who attempt TOLAC
- Women with twin gestations did not incur any greater risk of uterine rupture or maternal or neonatal morbidity than those with a singleton gestation



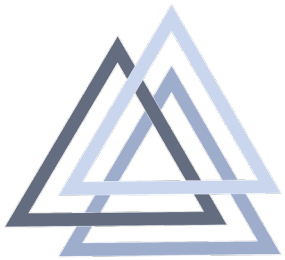
Twin Gestation

- One previous section with a low-transverse incision, who are otherwise appropriate candidates for twin vaginal delivery, are considered candidates for TOLAC



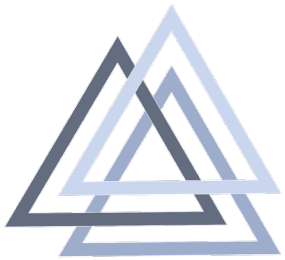
Obesity

- Increasing BMI has been shown to have an inverse association with the likelihood of achieving VBAC
- Nevertheless, BMI alone should not be considered an absolute contraindication to TOLAC because this is a single factor in determining chance of VBAC
- Women with higher BMI also have higher rates of complications with elective repeat sections



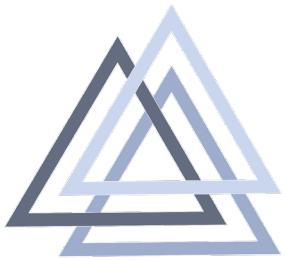
Induction and Augmentation of Labor

- Induction of labor remains an option for women undergoing TOLAC
- Potential increase in rupture associated with any induction and potential for decreased possibility of VBAC should be considered
- Studies have shown increased risk of rupture in setting of induction of labor during TOLAC



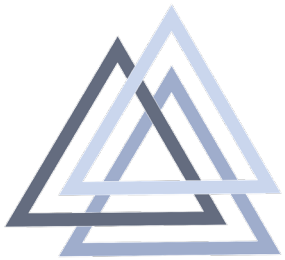
Induction and Augmentation of Labor

- One study found rupture rate of 0.52% for spontaneous labor, 0.77% for induction without prostaglandins, and 2.24% for prostaglandin-induced labor (limited by coding)
- Unable to determine if prostaglandin use itself or the context of its use (unfavorable cervix or need for multiple induction agents) was associated with uterine rupture



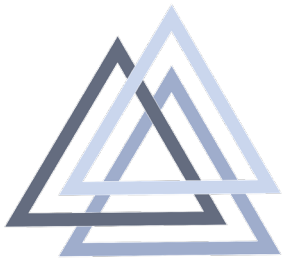
Induction and Augmentation of Labor

- Another study showed that augmentation or induction was associated with an increased risk of rupture when compared to spontaneous labor
- Secondary analysis showed one prior low-transverse showed an increase in rupture only in those undergoing induction who had no prior vaginal delivery



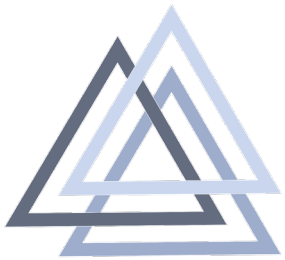
Induction and Augmentation of Labor

- Also showed rupture was no more likely to occur when labor was induced with unfavorable cervix than when induced with a favorable cervix
- A dose-response effect was found between increasing risk of rupture and higher maximum doses of oxytocin, but no threshold was clearly identified nor an upper limit for oxytocin dosage



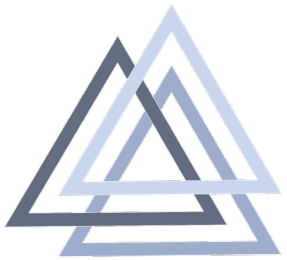
Induction and Augmentation of Labor

- Studies have compared induction in the setting of prior section compared to those undergoing induction with those in spontaneous labor
- Observational study found induction to expectant management in those with prior section that induction was associated with greater relative risk of uterine rupture, whereas another did not



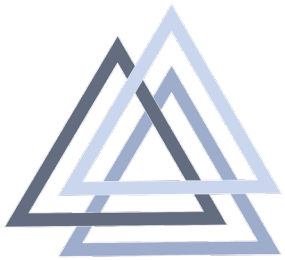
Induction and Augmentation of Labor

- When compared to spontaneous labor, induction is associated with lower likelihood of achieving VBAC
- Some evidence suggests that this is case whether the cervix is favorable or unfavorable
- Observational studies have shown labor induction compared to expectant management is associated with lower odds of section
- VBAC rate also higher in induction compared to expectant



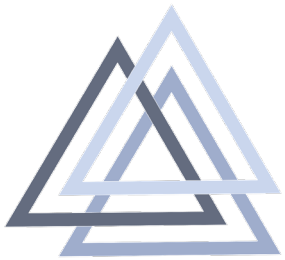
Induction and Augmentation of Labor

- Use of oxytocin for augmentation alone during TOLAC have been examined in many studies with varying results
- Given these results and absolute magnitude of the risk reported in these studies is small, oxytocin augmentation may be used in women attempting TOLAC



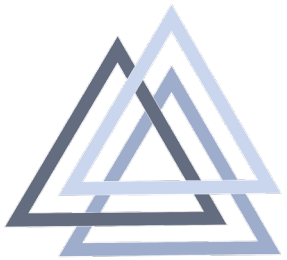
Cervical Ripening

- Studies regarding TOLAC outcomes related to specific ripening agents during induction have generally been small and difficult to use for definitive conclusions
- Given lack of compelling data suggesting an increased risk of uterine rupture with mechanical dilation and transcervical catheters, such interventions may be an option for TOLAC candidates with unfavorable cervix



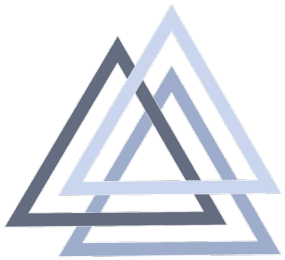
Cervical Ripening

- Studies with prostaglandins as a class on uterine rupture in women with prior section have demonstrated inconsistent results
- Evidence among small studies show that use of misoprostol (prostaglandin E_1) in women with prior section is associated with an increased risk of uterine rupture
- Because data is limited, it is difficult make definitive recommendations on the use of dinoprostone (prostaglandin E_2)



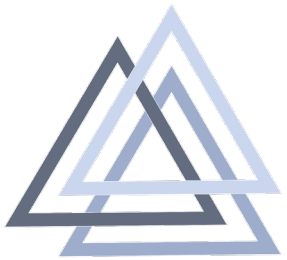
External Cephalic Version

- Data suggest that ECV for breech presentation is not contraindicated in women with a prior low-transverse section who are otherwise candidates for ECV and subsequent TOLAC
- Likelihood of successful ECV has been reported to be similar in women with and without prior section



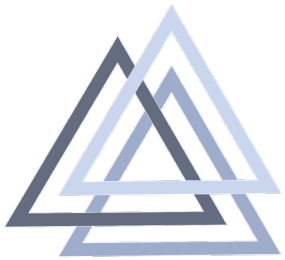
Analgesia

- No evidence suggests epidural anesthesia is causal risk for unsuccessful TOLAC
- Epidural anesthesia for labor may be used as part of TOLAC and make encourage more women to choose TOLAC
- Effective regional anesthesia should not be expected to mask signs or symptoms of rupture, mainly because the most common sign of rupture is fetal heart tracing abnormalities



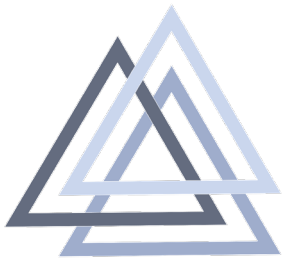
Anticipated Labor Curve

- Studies show women attempting TOLAC have similar labor patterns to those who have not had prior section
- In a 2015 study, women at term in spontaneous labor who had a vaginal delivery with one prior section had a labor curve similar to nulliparous women
- Similar standards should be used to evaluate labor progress of women undergoing TOLAC



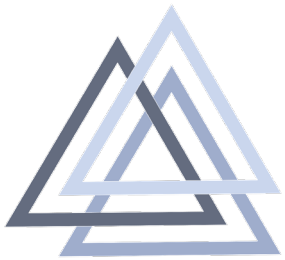
Diagnosis of Uterine Rupture

- Continuous electronic fetal monitoring is recommended during TOLAC
- No data suggest use of IUPC or FSE are superior to external forms of continuous monitoring
- Personnel familiar with potential complications of TOLAC should be present to monitor fetal heart rate patterns



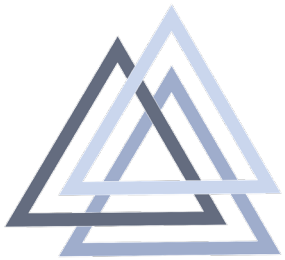
Diagnosis of Uterine Rupture

- Uterine rupture is sudden and may be catastrophic and no antenatal predictors have been identified
- Acute signs and symptoms of uterine rupture are variable and may include:
  - Fetal bradycardia
  - Increased uterine contractions
  - Vaginal bleeding
  - Loss of fetal station
  - New onset of intense uterine pain



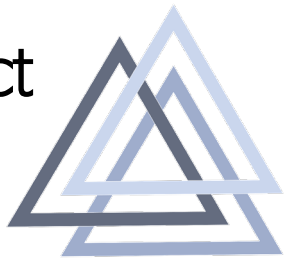
Diagnosis of Uterine Rupture

- Most common sign indicative of uterine rupture is fetal heart rate abnormality
- Associated with up to 70% of cases of uterine rupture
- Given this, continuous fetal heart rate monitoring during TOLAC is recommended



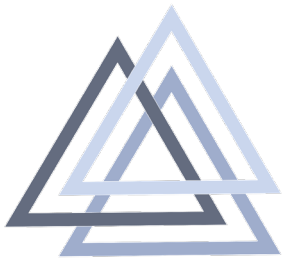
Delivery

- Nothing unique about delivery of the fetus or placenta during VBAC
- Manual exploration after VBAC and subsequent repair of asymptomatic scar dehiscence have not been shown to improve outcomes
- Excessive bleeding or signs of hypovolemia may indicate uterine rupture and should prompt complete evaluation of the genital tract



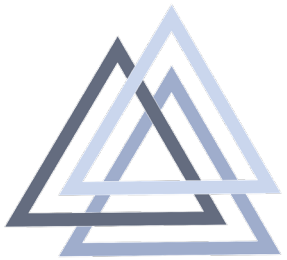
Summary of Recommendations and Conclusion-Level A

- Most women with one previous cesarean delivery with a low-transverse incision are candidates for and should be counseled about and offered TOLAC
- Misoprostol should not be used for cervical ripening or labor induction in patients at term who have had a cesarean delivery or major uterine surgery
- Epidural analgesia for labor may be used as part of TOLAC



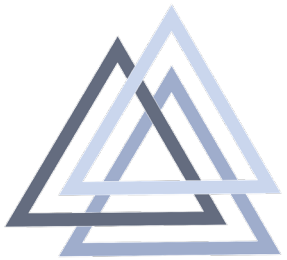
Summary of Recommendations and Conclusion-Level B

- Those at high risk of uterine rupture and those in whom vaginal delivery is otherwise contraindicated are not generally candidates for planned TOLAC
- Given data, it is reasonable to consider women with two prior low-transverse cesarean deliveries to be candidates for TOLAC and to counsel them based on combination of other factors affecting their probability of achieving VBAC



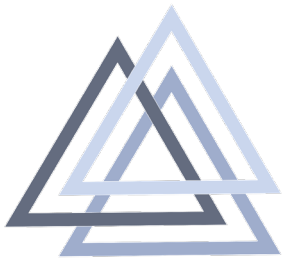
Summary of Recommendations and Conclusion-Level B

- Women with one previous cesarean delivery with an unknown uterine scar type may be candidates for TOLAC, unless these is a high clinical suspicion of a previous classical uterine incision such as cesarean delivery performed at an extremely preterm gestation
- Women with one previous cesarean delivery with a low-transverse incision, who are otherwise appropriate candidates for twin vaginal delivery, are considered candidates for TOLAC



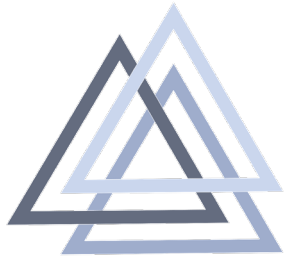
Summary of Recommendations and Conclusion-Level B

- Induction of labor remains an option in women undergoing TOLAC
- ECV for breech presentation is not contraindicated in women with a prior low-transverse uterine incision who are candidates for ECV and TOLAC
- Continuous fetal heart rate monitoring during TOLAC is recommended



Summary of Recommendations and Conclusion-Level C

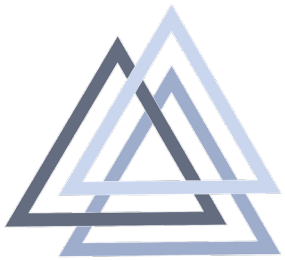
- After counseling, the ultimate decision to undergo TOLAC or a repeat cesarean delivery should be made by the patient in consultation with her provider
- TOLAC should be attempted at facilities capable of performing emergencies deliveries
- Women attempting TOLAC should be cared for in a level I center
- Because of unpredictability of complications, home birth is contraindicated for women undergoing TOLAC



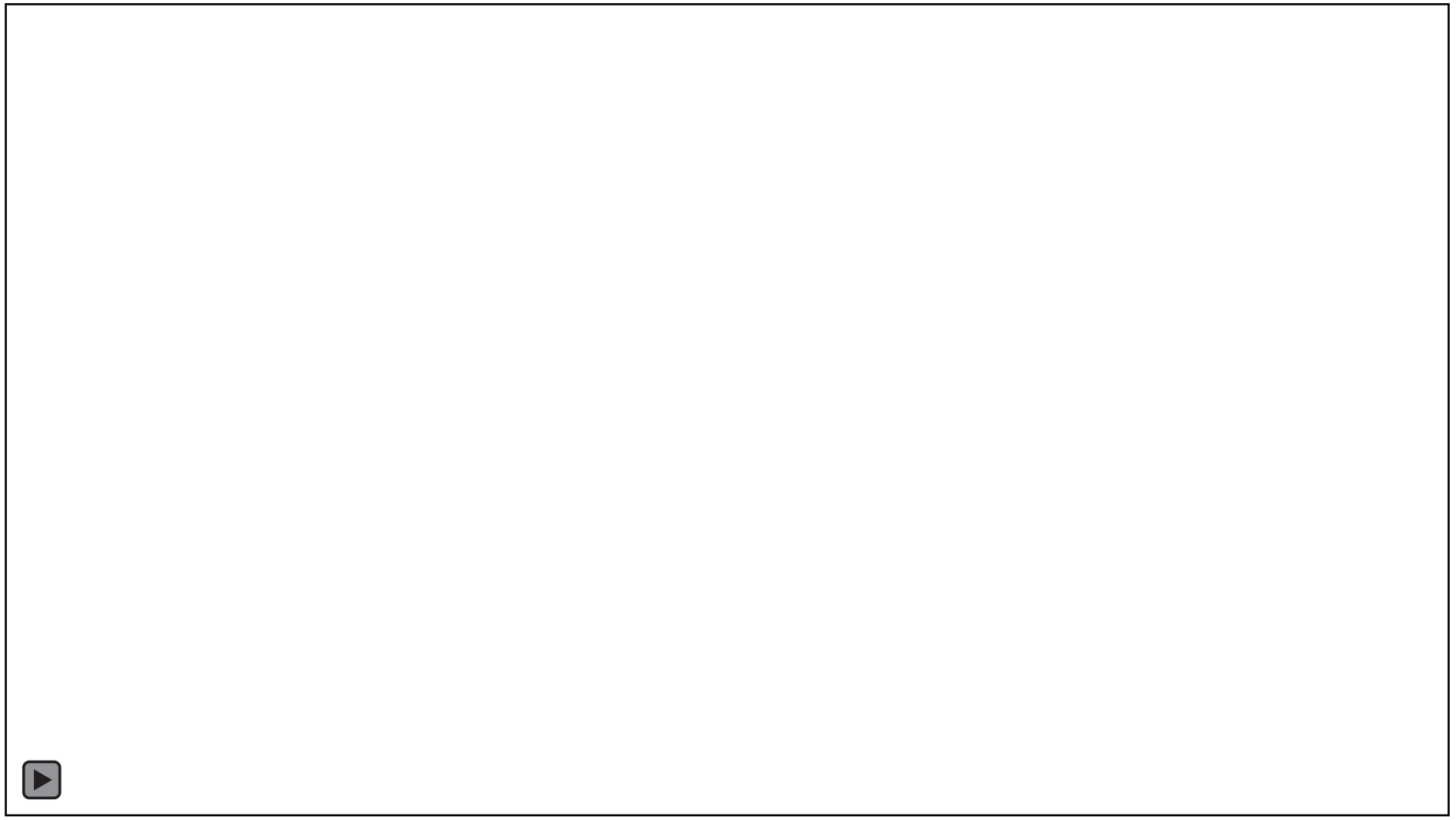
Final Thought…

"Uterine rupture often is sudden and may be catastrophic, and no accurate antenatal predicators of uterine rupture have been identified."

ACOG Practice Bulletin, Number 205, Vaginal Birth After Cesarean Delivery, February 2019



...the Code?



Forceps Assisted Vaginal Birth After Cesarean

VBAC According to ACOG …the Code?

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