Vaginal Breech Delivery

OB/GYN Grand Rounds
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Objectives

- Review maneuvers of a vaginal breech delivery
- Review the evidence on vaginal breech deliveries including Term Breech Trial (2000)
- Discuss ACOG committee opinion on vaginal breech delivery
Overview

- 4% of term infants are breech
- Frank breech (extended) (most common 65%)
- Complete breech (flexed) (5%-10%)
- Incomplete/Footling breech (10%-40%)

<table>
<thead>
<tr>
<th>Presentation</th>
<th>Risk of Cord Prolapse</th>
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<tbody>
<tr>
<td>Cephalic</td>
<td>0.4%</td>
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<tr>
<td>Frank Breech</td>
<td>0.5%</td>
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<tr>
<td>Complete Breech</td>
<td>5%</td>
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<tr>
<td>Incomplete/Footling Breech</td>
<td>15%</td>
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Risk factors for breech presentation

- **Maternal factors**
  - Uterine anomalies
  - Space Occupying lesions
  - Placental abnormalities
  - Lax abdominal walls (Grand Multip)
  - Amniotic fluid abnormality
  - Contracted pelvis
  - Previous breech delivery

- **Fetal factors**
  - Fetal anomaly (anencephaly, hydrocephaly)
  - Multifetal gestation
  - Fetal neurologic condition (impaired fetal mobility)
  - Short umbilical cord
  - Fetal attitude (extended legs—spontaneous version less likely)
Complications of breech delivery

- **Maternal**
  - Birth canal trauma

- **Fetal**
  - Head entrapment
  - Fetal neurologic condition (torticollis, palsy, paralysis)
  - Fetal joint dislocation (Neck, shoulder, knee, etc)
  - Cord prolapse
Risks with VBD

- Higher than cephalic for congenital abnormalities, birth asphyxia, birth injury
  (Albrechtsen, 1998: Pritchard and MacDonald 1980; Cheng and Hannah 1993)
- Largest part of the fetus delivers last
- Increased r/o cord prolapsed in non-frank breech presentations.
- In general, breech presentation, irrespective of mode of delivery is associated with increased r/o subsequent infant physical or mental disability
  (Daniellian et al, 1996)
Methods of Vaginal Delivery

Spontaneous breech delivery
Partial breech extraction
Total breech extraction
Spontaneous breech delivery

- No traction or manipulation of the newborn
- Only support the infant as it delivers

- Engagement and descent: bitrochanteric diameter oblique to the pelvic diameter → AP
- Anterior hip typically descends more rapidly, posterior hip delivers first
- Legs and feet follow → back anterior, shoulders oblique to pelvis → biacromial diameter AP
- The head is sharply flexed and enters pelvis obliquely → turns to bring posterior neck under symphysis pubis
Partial breech extraction

- **Spontaneous delivery up to the level of the umbilicus**
- Can by with/without maternal expulsive forces
- Delivery easier and M&M likely lower with spontaneous delivery to umbilicus
- Rotation and maneuvers decrease persistent nuchal arms
- Cord compresses after delivery of the breech → prompt delivery of the rest of the infant
- Unless perineum very relaxed, episiotomy is recommended
The fetus emerges spontaneously (A), while uterine contractions maintain cephalic flexion

Premature aggressive traction (B) encourages deflexion of the fetal vertex and increases the risk of head entrapment or nuchal arm entrapment.
Splint the medial aspect of each femur and sweep laterally (away from midline). Keep finger parallel to femur.
Fingers on ASIS and thumbs on sacrum

Gentle downward traction

Turn 180° and repeat for posterior arm

Delivery of anterior arm

Chapter 24. Breech Presentation and Delivery
Williams Obstetrics, 23e, 2010
If trunk rotation is unsuccessful...
Delivery of fetal head

Total breech extraction

- The entire body of the fetus is extracted by the obstetrician.
- Usually reserved for delivery of the second twin.
- Frank breech can sometimes be delivered with a finger in each groin.
- If delivery not affected by moderate traction, then deliver by breech decomposition—convert frank breech into footling breech (Pinard maneuver).
- Complete and incomplete breech extraction is done by grasping both feet of the fetus. (If both feet cannot be grasped, deliver the first foot up to, but not past the level of the introitus.)
- Gentle downward traction is employed and the legs are serially grasped higher and higher as they deliver.
- Unless perineum is very relaxed, episiotomy is recommended.
Mauriceau maneuver

Maxilla, not mandible!
Modified Prague maneuver
Forceps
Head entrapment

Dührssen incisions at 10 o’clock and 2 o’clock. Additional incision at 6 o’clock rarely needed

Other options include IV nitroglycerin or GETA

Last resort: Zavanelli and C/S

Developing countries: symphysiotomy

Chapter 24. Breech Presentation and Delivery
Williams Obstetrics, 23e, 2010
Things to remember:

• Always employ steady, gentle, downward rotational traction until lower half of scapulas are delivered
• Do not attempt delivery of the shoulders and arms until one axilla is visible
• Attempts to free the arms immediately after the costal margins emerge should be avoided
• Continuous epidural is the ideal anesthetic (although has longer 2\textsuperscript{nd} stage)
• Perform vaginal exam immediately after ROM (cord prolapse)
Still controversial but...

- Most obstetrician do not recommend augmentation or induction of term breech
- Many think that should avoid AROM, especially early in labor due to higher r/o cord prolapse
EBM: How do fetal risks of VBD compare with maternal risks of C/S?
Y2K: A paradigm shift
Term Breech Trial

- 121 center, 26 countries
- Required a sample size of 2800 women with singleton fetus in a frank or complete breech presentation. Randomly assigned to planned caesarean section or planned vaginal birth with primary outcomes of perinatal mortality, neonatal mortality, or serious neonatal morbidity and maternal mortality or serious maternal morbidity.
- Following an interim analysis when 1,600 women recruited, independent data monitoring committee recommended recruitment be stopped early owing to a significantly higher event rate than expected.
Term Breech Trial: Results

Serious Neonatal Morbidity (<28 days of age)

- Subdural hemorrhage
- Intracranial hemorrhage
- Spinal cord injury
- Basal skull fracture
- Peripheral nerve injury at hospital discharge
- Seizures <24 hours of age
- 5 minute APGAR <4
- Cord gas base excess >15
- Intubation >24 hours
- Tube feeding >4 days
- NICU stay >4 days
Term Breech Trial: Conclusion

• “Planned caesarean section is better than planned vaginal birth for the term fetus in the breech presentation; serious maternal complications are similar between the groups.”
• After the TBT, ACOG released a Committee Opinion stating that planned VBD may no longer be appropriate, and if pursued, it should be done with great caution
• C/S for term breech in the US changed from 12% in 1970 to 87% in 2001
• Secondary analysis of neonatal M&M
  ▫ After excluding cases of IOL/augmentation if epidural was not used, there was prolonged labor, footling breech, or no experience physician present r/o VBD still 3.3% but 1.3% with elective c/s (RR 0.49, CI 0.26-0.91)
Critiques of the TBT

- Lack of adherence to inclusion criteria
- Hyperextension of fetal neck not routinely excluded
- Interinstitutional variation of standard of care
- Inadequate ante and intrapartum fetal assessment
- Many women recruited in labor
- No attendance of a clinician with adequate experience
- Did not appreciate the complex nature of vaginal breech delivery
- Fetuses with a birth weight exceeding 4000 g were overrepresented in the VBD group (5.8 % vs 3.1% for VBD and C/S, respectively; P = .002)
Critiques of the TBT

- 2 cases of stillbirth before enrollment included in results
- 1 case of anencephalus
- 2 sets of twins included
- 2 deaths not related to delivery (1 SIDS and 1 diarrhea)
- EFW not routinely done—7 of 16 deaths were in newborns <2550 gm
- Imaging pelvimetry in 9.8% of cases—6 of 16 deaths had “difficult deliveries”
- Continuous EFM not routinely done—3 of 16 deaths with sudden loss of FHTs and no ability to perform emergency C/S
- 1 of the 3 deaths in the C/S group had abnormal FHTs and a ruptured myelomeningocele at time of delivery
- Excluding deaths not related to mode of delivery and using ITT and 2-tailed Fisher exact test: 5/1038 VBD and 2/1038 C/S infant mortality not significantly different (P=0.45)
- Of the 69 neonatal M&M, only 16 could potentially be due to mode of delivery. 11/1039 VBD and 5/1039 C/S (P=0.2)
Critiques of the TBT

- Conclusions that are based on various categories of neonatal morbidity
- Problems associated with labor, not mode of delivery (Glezerman, 2006; Turner, 2006)
- Statistical power required high vaginal delivery rate so researchers encouraged practitioners to go beyond their comfort level (pivotal in safety of a complex procedure)
- Practitioners were protected from medical liability=significant bias.
- Protocol allowed for 0.5 cm/hr dilation and 3.5 hrs for second stage.
Publications since the TBT

- Reitberg et al (2005) reports a policy of routine planned c/s has been followed by improved neonatal outcomes (perinatal mortality 0.35% → 0.18%)
- The Dutch Maternal Mortality Committee registered and evaluated four maternal deaths following planned c/s for breech presentation (2 from PE, 2 from sepsis) from 2000-2002, 7% of the total direct maternal mortality in that period (Schutte et al 2007)
- Schutte et al (2007) asserts that planned c/s for breech presentation (increased from 57% to 81%) does not guarantee the improved outcome of the child and may increase risks to the mother
Metaanalysis (2003)

- TBT, Gimovsky, and Collea
- After exclusion of deaths from congenital malformation the risk of perinatal death or serious morbidity is reduced by elective c/s (RR 0.29, CI 0.10-0.86)
- “Individual women should be informed of the risks of vaginal breech delivery, the present and future risks of caesarean section, and our lack of accurate knowledge in the latter field, so that as informed a choice as possible can be made in each case”
f/u after the TBT (2004)

• A second study published as a f/u to TBT
• At 2 years of age, no significant difference in the combined risk of death/neurodevelopmental delay between the two groups. (3.1% C/S and 2.8% VBD)
• Neurodevelopmental delay dx in 12 of C/S and 7 of VBD. Study not powered enough to determine if there was any significance.
• Maternal morbidity at 2 years was similar in both groups
• Prelabor C/S had lower risk than C/S performed during labor (esp if labor complicated—pitocin augmentation, pushing >60 minutes)
PREsention et MODe d’Accouchement (PREMODA) study criteria for planned vaginal breech birth (2006)

- Normal pelvimetry by x-ray or computed tomography
- No hyperextension of the fetal head on ultrasound examination
- Estimated fetal weight 2500 to 3800 grams
- Frank breech presentation
- Continuous use of electronic fetal heart rate monitoring during labor
- Patient's written informed consent for vaginal breech birth

PREsentation et MODE d’Accouchement (PREMODA) study (2006)

- Prospective observational multicenter study
- 8105 singleton breech fetuses at term in 174 centers in France and Belgium
- Composite outcome of fetal/neonatal mortality or serious neonatal morbidity not different for the 2 groups VBD 1.60%, C/S 1.45% (OR 1.10, 95% CI 0.75-1.61)
- ~70% of planned VBD delivered vaginally, 6.6% had an adverse perinatal outcome
- 82% had x-ray or MRI pelvimetry
What about preterm infants?

- C/S preferred as head entrapment more likely
- 2014 systematic review (7 non-randomized studies)
  - Weighted r/o neonatal mortality significantly lower for C/S (3.8% vs 11.5%; pooled risk ratio 0.63, 95% CI 0.48-0.81)
  - One study showed a 2-fold increased r/o head entrapment for EGA 26-29 wks in VBD over C/S
What about 2\textsuperscript{nd} twins?

- Optimal delivery of noncephalic 2\textsuperscript{nd} twin is controversial
- VBD not recommended if growth is discordant and the 2\textsuperscript{nd} twin is the larger twin
- Most studies show vaginal delivery is safe if EFW >1500 g
- Some studies even show improved outcomes with vaginal deliveries
- Internal podalic version and breech extraction was considered to be superior to ECV in one study—less fetal distress (Chauhan 1995)
Committee Opinion
After TBT, Committee Opinion recommended that planned vaginal delivery of a singleton term breech may no longer be appropriate.
ECV should be offered to pts with breech presentation at term.
Persistent breech presentations at term should undergo a planned C/S.
This is not applicable to pts with advanced labor and likely to have an imminent delivery or to pts with a nonvertex second twin.
2006

• “The decision regarding the mode of delivery should depend on the experience of the health care provider. Cesarean delivery will be the preferred mode of delivery for most physicians because of the diminishing expertise in vaginal breech delivery.”
• ECV should be offered and performed whenever possible
• Planned VBD may be reasonable under hospital-specific protocol for eligibility and labor management
• Use great caution with VBD and obtain detailed informed consent including informing the pt that r/o perinatal/neonatal mortality or short term serious neonatal morbidity may be higher than if a cesarean delivery is planned
Who can be offered a VBD?

- Criteria required to attempted VBD
  - No contraindications to attempted vaginal birth
  - Facilities for emergency C/S
  - Absence of fetal anomaly (hydrocephalus, neck mass, etc)
  - EFW 2000-4000 grams (3800 g in some studies)
  - Frank breech or complete breech
  - EGA 36 weeks or more
  - Continuous EFM
  - Normal progress of labor
  - Adequate pelvis
  - Flexed head
  - Experienced physician
  - Informed consent
Contraindications for VBD

- Maternal or fetal contraindications to attempted vaginal birth
- EGA <36
- Abnormal progress of labor
- Absence of informed consent
References


• ACOG Committee Opinion #340. Mode of Term Singleton Breech Delivery

• ACOG Committee Opinion #265. Mode of Term Singleton Breech Delivery


• UpToDate Overview of breech presentation

• UpToDate Delivery of the fetus in breech presentation

• ACOG Simulation Consortium-Breech Delivery Learning Objectives

• Five years to the term breech trial: The rise and fall of a randomized controlled trial American Journal of Obstetrics and Gynecology, Volume 194, Issue 1, January 2006, Pages 20–25 Marek Glezerman

