Ultrasound Evaluation Of the Cervix

Mani Montazemi, RDMS
Director of Ultrasound Education & Quality Assurance
Baylor College of Medicine
Division of Maternal-Fetal Medicine
Texas Children’s Hospital Pavilion for Women
Houston Texas

Clinical Instructor
Thomas Jefferson University Hospital
Radiology Department
Philadelphia, Pennsylvania

Don’t…
• Measure cervical length before 16 weeks, too much variation to be useful

Why Measure?
• Preterm birth (PTB)
• Defined as delivery < 37 weeks
• 1 in 8 births in the U.S. are preterm
• Accounts for 15 – 20% of neonatal deaths
• 75% of non-anomaly deaths
• Treatment $26 billion / yr USA
• Preterm infants are at risk for respiratory distress, necrotizing enterocolitis, and cerebral palsy
• Adverse effects persist into childhood and beyond

Evaluation of the Cervix
Predicting Preterm Delivery
• Digital
• Fetal Fibronectin
• Ultrasound

Least accurate method to measure cervical length & to identify a cervical funnel

**Filling of the Bladder For Pelvic Sonograms**

Beryl R. Benacerraf, MD

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**Lower Uterine Segment**

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**Transabdominal Examination**

**Pitfalls**

- Presenting fetal part
**Transabdominal Examination**

**Pitfalls**
- Presenting fetal part
- Bladder distension
- Symphysis pubis cartilage
- External os not visible
- Critical angle artifact
- Large maternal body habitus
- Lower uterine contraction
• The placenta’s relationship to the IO should be assessed in every scan. Failure to see the inferior edge of the placenta should lead to TV scanning to R/O previa if not previously done in the 2nd trimester.
• A previa can be missed near term if the fetal head is low in the pelvis.
**Transabdominal Examination**

**Pitfalls**
- Presenting fetal part
- Bladder distension
- Symphysis pubis cartilage
- External os not visible
- Critical angle artifact

**Lower Uterine Segment Contraction**

*Post Void*
- Are common!
- These contractions are very slow & long

**Placenta Previa: False Positives**

**“Contractions”**

Round myometrium

**“Contractions”**

Thick & asymmetric LUS
“Contractions” Thick & asymmetric LUS Myometrial Thickness ≤ 1.5 cm
Cervical length > 5 – 5.5cm
“S” shaped cervical canal
Internal os cephalad to bladder reflection

If indicated, the cervical length should **ALWAYS** be measured with transvaginal approach
Common Indications for TV Evaluation of Cervix

- Evaluating patients with vaginal bleeding to look for placenta previa
- Fetal parts
- Diagnosing cervical incompetence
- Assessing cervical effacement and dilation in patients with preterm labor
- Multiple Gestations
- Post cerclage placement
- History of preterm labor
- Succenturiate lobed placentas
- Velamentous cord insertion

Transvaginal Approach
Anatomic Landmarks for Vaginal Sonography

- The endocervical folds or plica palmatae (likened to a palm leaf) are occasionally seen on TVUS. This should not be confused with pathology.
- More often, the endocervical canal is seen as a simple “white line” in the center of the cervix.
**Cervical Length**

- Upper limit of normal: 5.0 cm
- Average: 4.0 cm
- Lower limit of normal: 3.0 cm
- Pathologically decreased: 2.0 cm

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**Straight Cervix**

**Curved Cervix**
"One step" vs. "Two step" Technique

Curved Cervix

If height ≥ 5 mm → "two step" technique

Excessive Probe Pressure

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**Cervical Length**

- A short cervix is a consistent and reliable risk factor for PTB
- Cervical length <10th % for gestational age is considered “short”
- At 18 to 24 weeks (a short cervix is < 25mm)
- The rate of CL change is an important predictor of PTB
  - For each additional 1mm of CL change between 24 and 28 weeks gestation the risk of PTB increases 3%
- The cervix undergoes physiologic shortening at 28 to 30 weeks
  - At 32 weeks the 50th % is 25mm
  - Therefore there is limited clinical utility in cervical measurement beyond 28 weeks

**Cervical Changes**

- Essentially the same in
  - Term labor
  - Preterm labor
  - Cervical incompetence

**Cervical Changes**

- Trust
- Your
- Vaginal
- Ultrasound
Cervical Changes

- Dilation
- Effacement
- Funneling or Beaking
- Posterior – caudal
- Bulging membranes

Cervical Changes

- Dilation
  - Widening of the endocervical canal from side to side

Cervical Changes

- Effacement
  - Shortening of the cervix
  - Reduction of the cervical length from internal end to external end

Cervical Changes

- Funneling or Beaking
  - Extension of amniotic fluid for some variable distance (≥ 5mm) into the endocervical canal from internal os toward external os
  - ‘V’ shape
    - More common, triangular “notch” at the internal os
  - ‘U’ shape
    - Uncommon, typically larger than V-shaped variety
    - Usually deeper than it is broad and may be dynamic
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**Cervical Beaking – V Shape**

**Cervical Funneling – U Shape**

**Cervical Funneling**

- **Funnel Length** > 1.6 cm
- **Cervical Length** < 2.0 cm
- **Funnel Width** > 1.4 cm

**Diagnostic Challenge**
Cervical Changes

- Posterior to Caudal
  - In the early to mid pregnancy the cervix points posteriorly toward the sacrum
  - As the woman progresses towards labor the cervix starts to rotate to line up with vagina
Cervical Changes

- Bulging of membranes
  - Fluid extends all the way to the external os
  - If into vagina, delivery likely unstoppable

Preterm Labor

“to evaluate for cervical dilation”

Diagnostic Challenge

Cervical Change is Dynamic!
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Cervix – Dynamic Changes

Cervix – Dynamic Changes

Cervix – Dynamic Changes

Cervical Stress Test with Gentle Pressure

Cervical Stress Test with Gentle Pressure
Cervical Stress Test with Gentle Pressure

Introduction to Ultrasound Evaluation of the Cervix

Thank You