Cervical Length Assessment

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- Prelabor preterm cervical shortening, particularly before 24 weeks of gestation, is associated with an increased risk for spontaneous preterm birth, which is a major cause of infant morbidity and mortality.
- Progesterone supplementation or cerclage may prolong pregnancy in these women.

DIAGNOSIS OF SHORT CERVIX

- Before 24 weeks,(14-24ws)

- when transvaginal ultrasound cervical length is ≤25 mm (2 to 3 centile)

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- regardless of the population being evaluated (prior preterm birth, no prior preterm birth, twin pregnancy)

The American College of Obstetricians and Gynecologists uses ≤20 mm in women with no prior spontaneous birth and < 25 mm in women with prior spontaneous preterm birth at<34 weeks of gestation

- There is no threshold value below which the patient always delivers remote from term.
- In one study of women with no measurable cervical length at 14 to 28 weeks, 25 percent delivered ≥32 weeks .
- In another study of women with cervical length ≤25 mm at 24 weeks, 82 percent delivered at ≥35 weeks; of those with cervical length ≤13 mm at 24 weeks, 50 percent delivered at ≥35 weeks

CANDIDATES FOR SCREENING

- universal cervical length screening before 24 weeks of gestation
- Universal screening – 913 (95% CI 591-1494)
- One risk factor for preterm birth – 474 (95% CI 291-892)
- Two risk factors for preterm birth – 125

Recommendations from selected national and international organizations

- In the United States:
- **Society for Maternal-Fetal Medicine (SMFM)**
- routine (TVUS) 16 and 24 weeks of gestation for women with a singleton pregnancy **and history** of prior spontaneous preterm birth
- **ACOG**: neither mandated universal routine cervical length screening in women without a prior spontaneous preterm birth nor recommended against such screening .
- However, has recommended examining the cervix when technically feasible

Recommendations from selected national and international organizations

- International:
- International Federation of Gynecology and Obstetrics (FIGO) :recommends
- sonographic cervical length screening in **all** women 19+0 to 23+6 weeks of gestation using TVUS

CLINICAL APPROACH IN WOMEN WITH SINGLETON PREGNANCIES

- Nulliparous women and parous women with no prior spontaneous preterm singleton birth

Nulliparous women and parous women with no prior spontaneous preterm singleton birth

- Screening protocol: single TVUS examination at approximately 20 weeks (18 to 24 weeks)
- Management : vaginal progesterone

Other possible interventions:

- Cerclage ,Pessary ,Bed rest

Women with risk factors for but no prior spontaneous preterm birth

- Screening protocol: single TVUS examination at approximately 20 weeks (18 to 24 weeks)
- Management : vaginal progesterone

Parous women with a prior spontaneous preterm singleton birth

- Screening protocol: begin TVUS cervical length screening at 14 to 16 weeks of gestation. Serial screening was more effective
- Hydroxyprogesterone caproate 250 mg IM/W beginning between 16-20 Ws
- Management :cerclage in addition to progesterone.

Parous women with a prior spontaneous preterm singleton birth

14 to27 ws

- TUV at 14ws
- ≥30mm
- TUV/2W →24WS

28 to36ws

- TUV at 16 ws
- ≥30mm
- TUV/2W →24WS

Parous women with a prior spontaneous preterm singleton birth

- Cervical length 26-29 mm
  - TUV/W →24WS
  - progestrone
- Cervical length ≤25mm
  - cerclage
  - And progestrone

Parous women with a prior spontaneous twin birth

- Screening protocol
- Prior twin spontaneous preterm birth ≥34 weeks:
- single TVUS examination at approximately 20 weeks (18 to 24 weeks)

- Prior twin spontaneous preterm birth <34
- weeks begin TVUS cervical length screening at 14 to 16 weeks of gestation. Serial screening was more effective

Parous women with a prior spontaneous twin birth

- Management protocol
- Prior twin spontaneous preterm birth ≥34 weeks:
- vaginal progesterone
- Prior twin spontaneous preterm birth <34
- cerclage in addition to progesterone.

PROCEDURE FOR SONOGRAPHIC MEASUREMENT OF CERVICAL LENGTH

Cervical Length Assessment

- Although the cervix maybe imaged trans abdominally, this is often limited by technical factors that include maternal habitus, cervical position, or shadowing by the fetal presenting part.
- In addition, the maternal bladder or pressure from the transducer may artificially elongate the appearance of the cervix.
- As a result, values from trans abdominal or trans vaginal measurement of the cervix can differ significantly.

Cervical Length Assessment

- If the cervix appears shortened or if it cannot be adequately visualized during transabdominal evaluation, transvaginal assessment is considered (American Institute ofUltrasound in Medicine, 20 1 3b) .
- Only cervical length measurements obtained transvaginally at or beyond 1 6 weeks 'gestation are considered sufficiently accurate for clinical decision-making.
- A foreshortened cervix is associated with an elevated risk for preterm birth, particularly in the setting of prior preterm birth, and the degree of risk rises proportionally with the degree of cervical shortening .

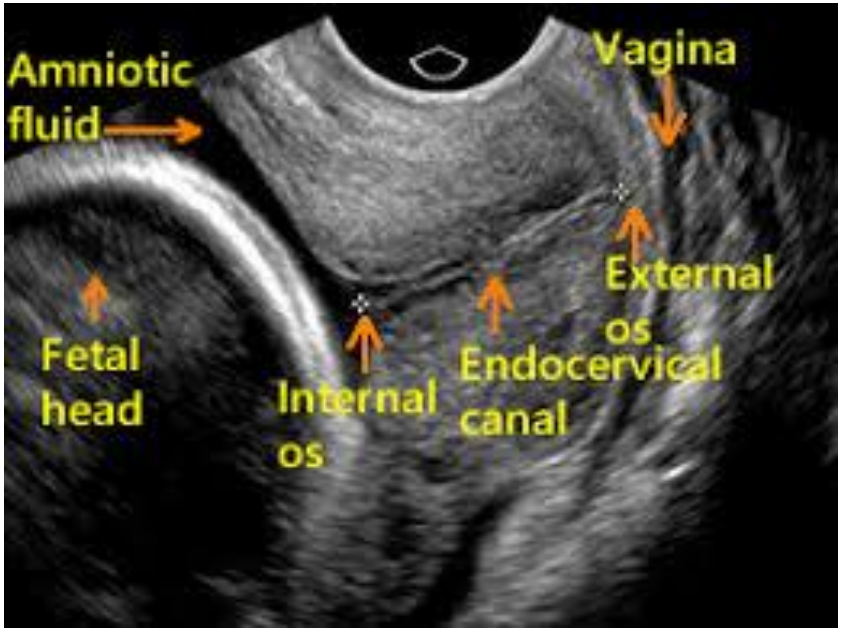
Cervical Length Assessment

- The cervix should be measured along its longitudinal axis.
- The cervix should occupy approximately 50–75% of the image.
- Excessive pressure on the cervix by the probe should be avoided, as the cervix artificially appears to be longer and the presence of a funnel will be obscured.
- The examination should last for 3–5min. Several (at least three) measurements should be obtained during the course of the examination and the shortest measurement should be used for counseling.

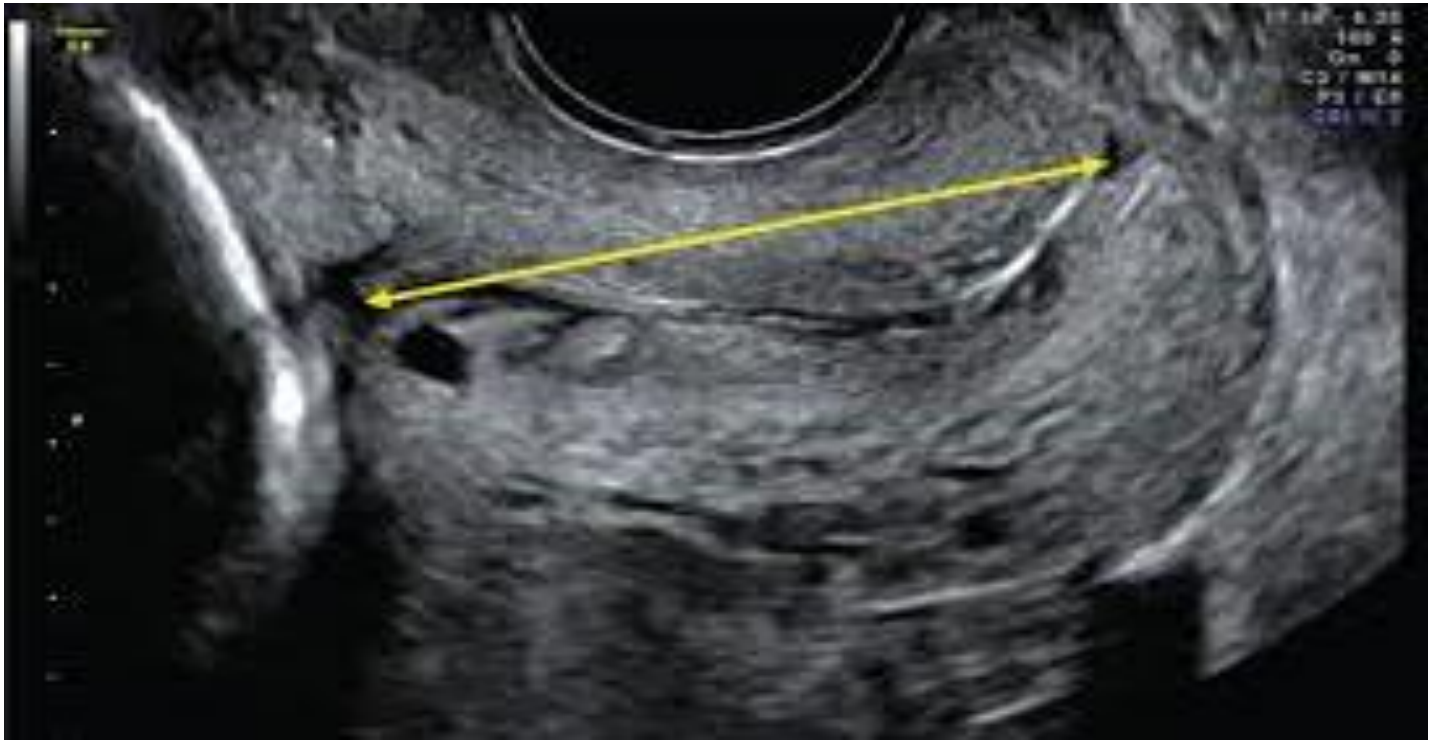
Criteria for Transvaginal Evaluation of the Cervix

- Maternal bladder should be empty.
- Transducer is inserted under real-time observation, identifying mid sagittal plane, intenal os, and then extenal os, while keeping the internal os in view.
- Internal os, external os, and entire endocervical canal should be visible. The internal os may appear as a small triangular in dentation at the junction of the amnionic cavity and endocervical canal.
- Image is enlarged so that the cervix fills approximately 75% of the screen.
- Anterior and posterior width of the cervix should be approximately equal.
- Transducer is pulled back slightly until the image begins to blur, ensuring that pressure is not placed on the cervix, then inserted only enough to restore a clear image.
- Images should be obtained with and without fundal or suprapubic pressure, to assess for dynamic change-or shortening on real-time imaging.

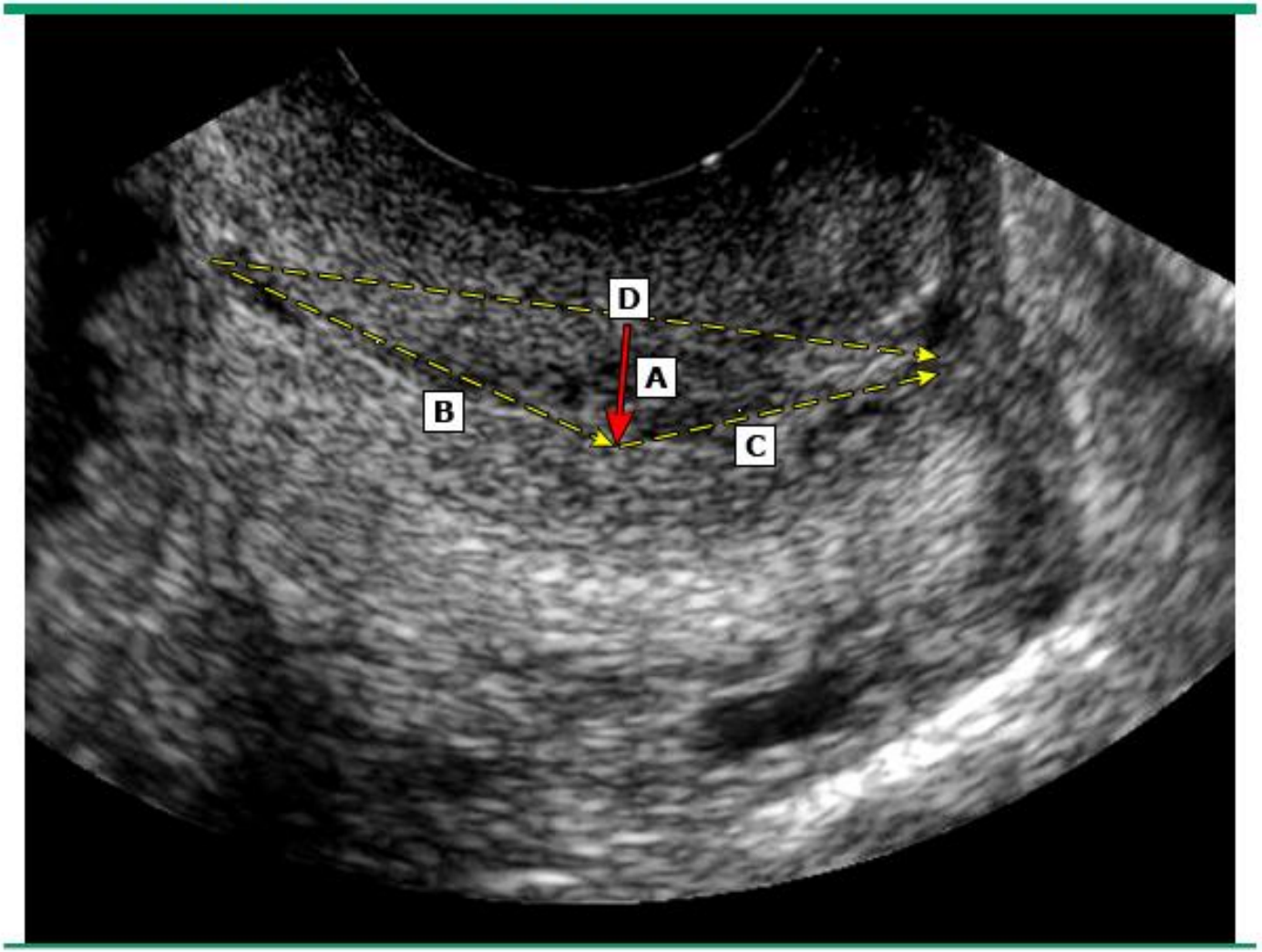
Cervical Length Assessment



Cervical Length Assessment



Cervical length in a curved cervix



Evaluation of cervical length in a patient with a curved cervix. If the widest distance (A, red arrow) between the dashed yellow lines is greater than 5 mm, use the sum of B and C as the best measurement of cervical length. If less than or equal to 5 mm, use D as the best measurement of cervical length.

Cervical Length Assessment

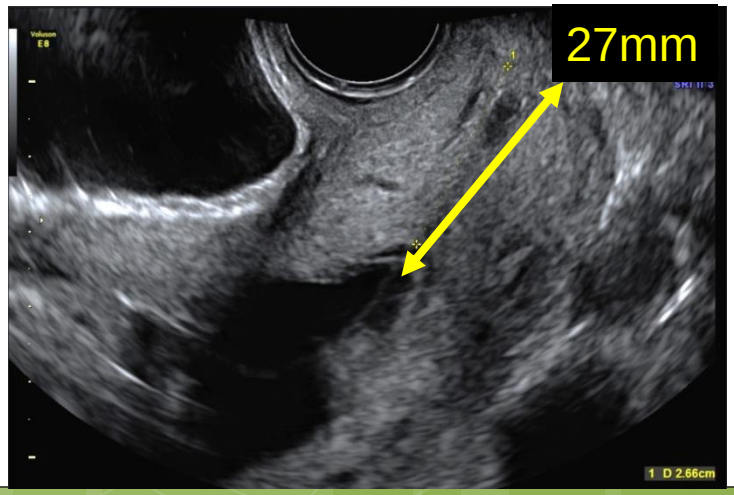
- Funneling is a protrusion of amnionic membranes into a portion of the endocervical canal that has dilated.
- Funneling is not an independent predictor of preterm birth
- The cervical length is measured distal to the funnel, because the base of the funnel becomes the functional internal os.

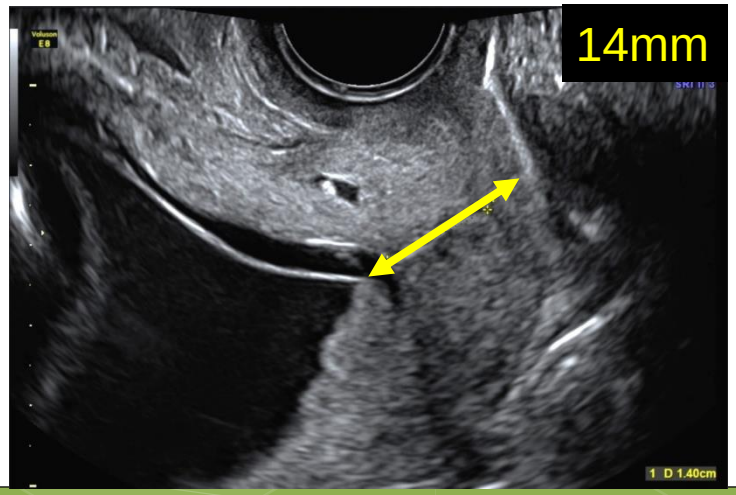
Cervical Length Assessment

- Amniotic fluid sludge can be found as echogenic aggregates close to the internal os or within a funnel.
- This appears to be associated with microbial invasion of the amniotic cavity.
- Sludge is an independent risk factor for spontaneous preterm delivery, preterm premature rupture of membranes, microbial invasion of the amniotic cavity and histological chorioamnionitis in asymptomatic patients at high risk for spontaneous preterm delivery.

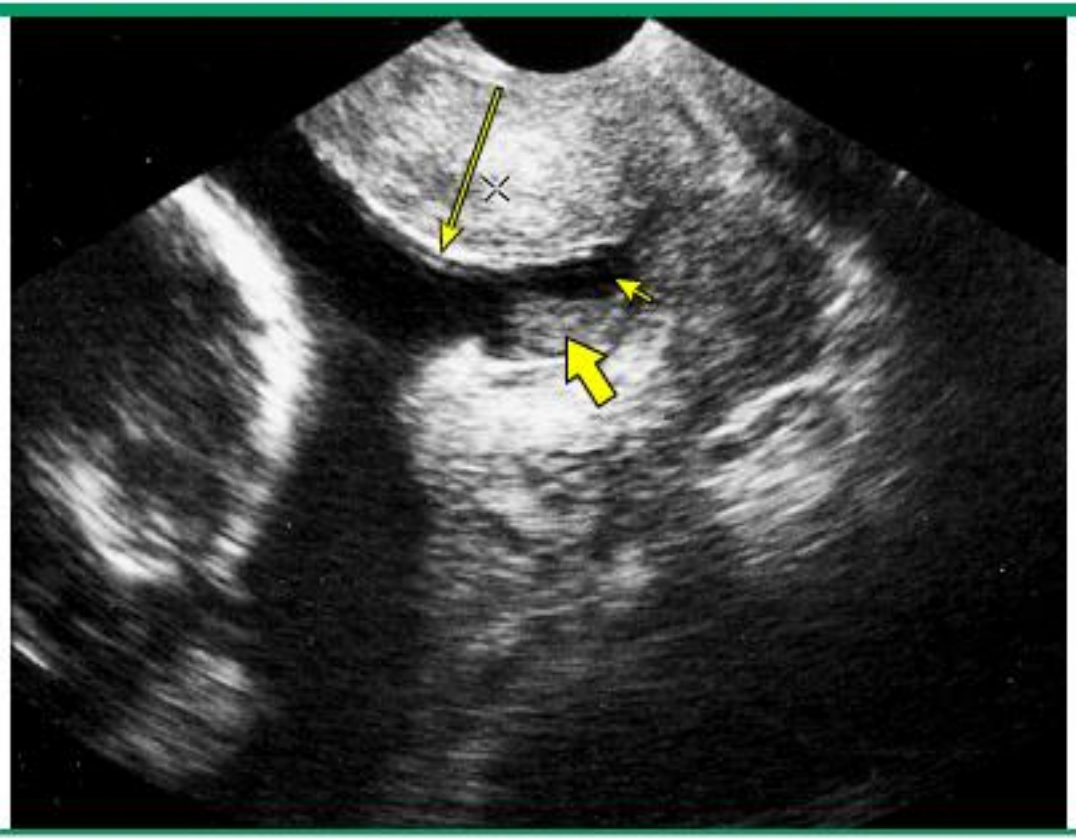
A full bladder can artificially increase the cervical length,mean difference between the cervical length measured with an empty and full bladder is about 4mm.

In addition, a full bladder can obscure the presence of cervical funneling by compressing the two halves of the funnel together



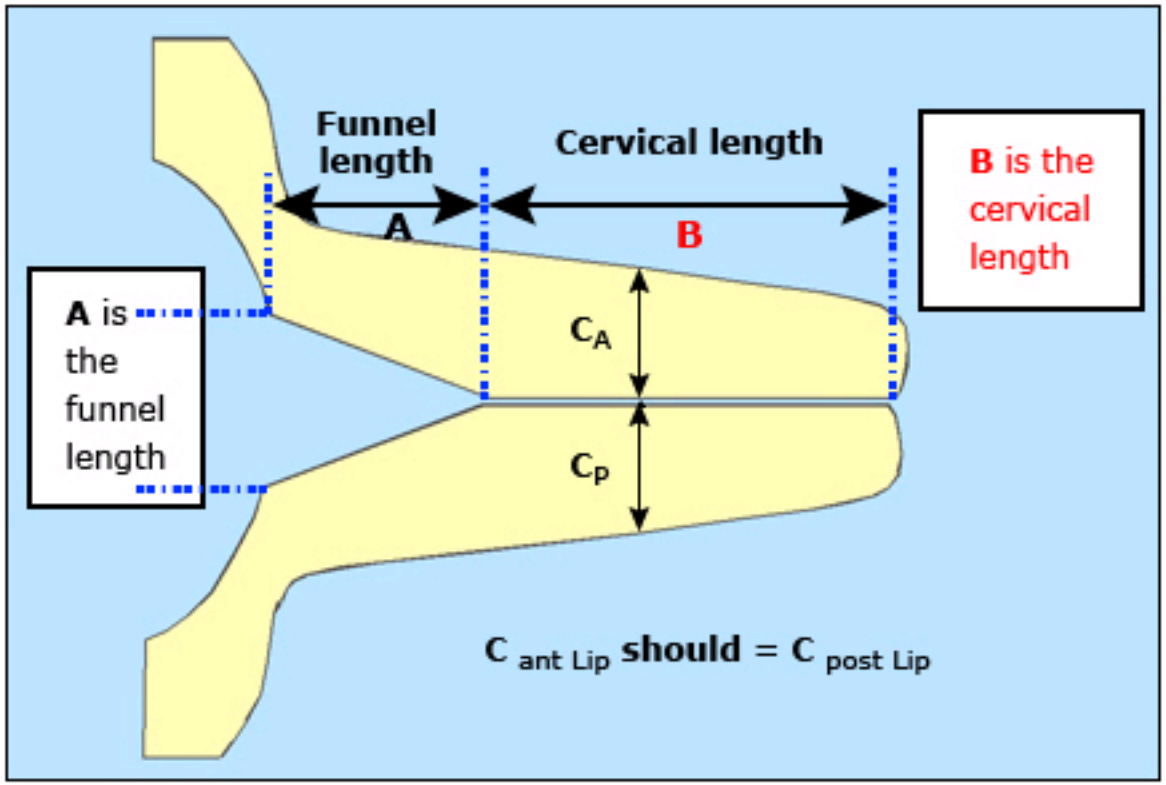


Ultrasound image of membrane separation



Transvaginal midline sagittal ultrasound image of the cervix showing funneling (long arrow), membrane separation from the decidua (along the anterior lip of the cervix; short arrow), and debris (diffuse area of echodensity resting within the amniotic fluid of the funnel on the posterior cervix; thick arrow).

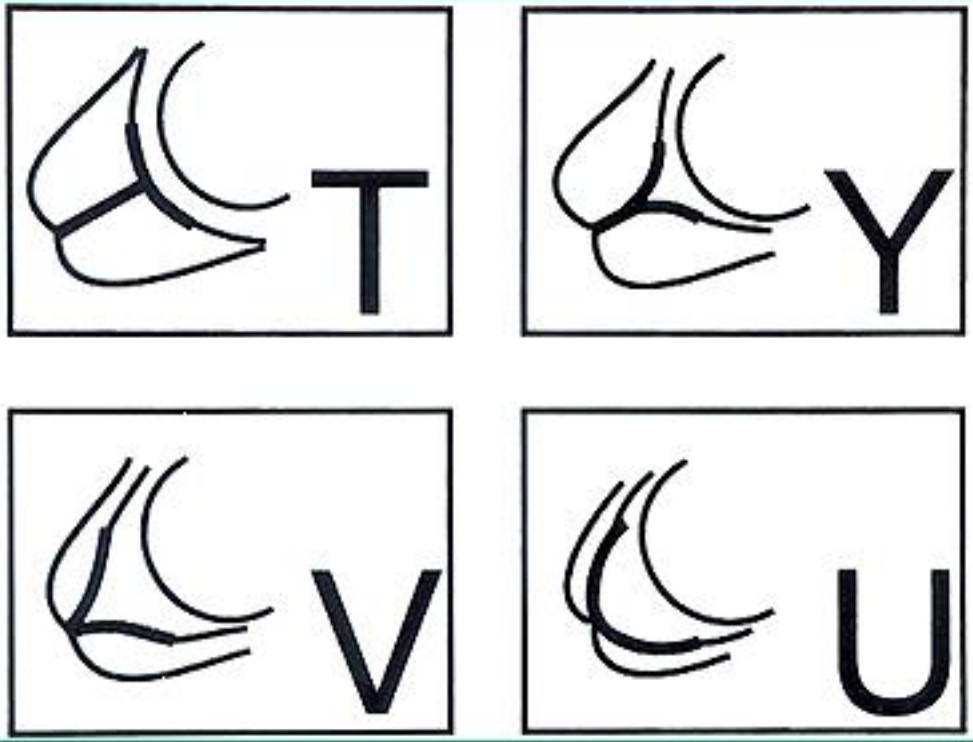
Measurement of the cervix



Funnel length should not be measured or recorded as it is not an independent predictor of preterm labor risk when the closed length of the cervical canal is considered.


Thank you

Diagram of cervical effacement



Progression of cervical effacement at the internal cervical os from completely uneffaced (T) to completely effaced (U).

Approach to transvaginal sonographic screening of cervical length in pregnancy and management of pregnant women with a short cervix