



Aims

- Preterm birth accounts for 5–10% of all deliveries in developed countries.
- The mortality due to Preterm birth has declined due to use of steroids and improvements in NICU/SCBU care.
- Timely institution of such treatment depends upon accurate prediction of Preterm Labour by using tests like:
 - ✓ Cervical length ultrasound
 - ✓ Foetal fibronectin

Introduction

- Cervical-length measurement using transvaginal sonography (TVS) is an essential part of assessing the risk of preterm delivery.
- In women who present with threatened spontaneous preterm Contractions –
 - Only 15% of symptomatic will actually deliver within the next 7 days.
 - 1% of the women, the length ≤ 15 mm (define the high-risk group)
 - With a cut-off of ≤ 15 mm:
 - the sensitivity = 60%
 - false-positive rate = 10%
- Measurement of the cervix at the 11+0 to 13+6-week scan can help to establish the risk of preterm birth in combination with maternal history for risk factors - can detect about half of the pregnancies that result in preterm delivery before 34 weeks, for a false-positive rate of 10%.
- Cut off
 - * ≤ 25 mm in absence of antenatal risk factors
 - * ≥ 25 mm in presence of high risk antenatal history.

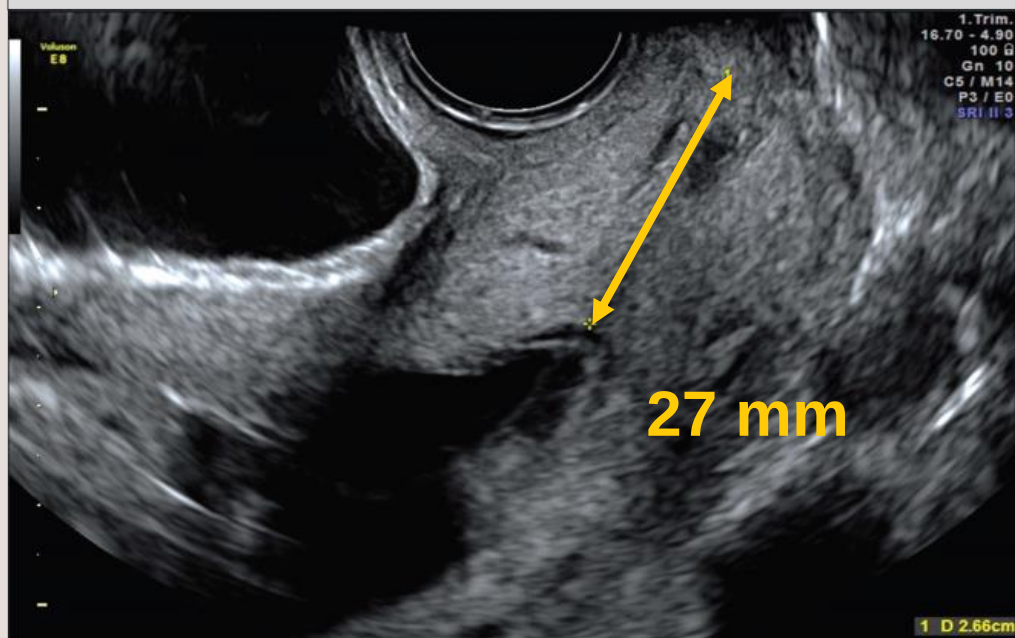
Method: Steps to perform cervical length scan

- 1) Ensure patient has emptied her bladder.
- 2) Prepare the cleaned probe using a probe cover.
- 3) TVS - performed with the patient in a dorsal lithotomy position
- 4) Gently insert the probe into the patient's vagina.
- 5) Guide the probe into the anterior fornix.
- 6) Obtain a sagittal, long-axis image of the entire cervix.
- 7) Remove the probe until the image blurs and then reinsert gently until the image clears (this ensures you are not using excessive pressure).
- 8) Enlarge the image so that the cervix occupies two thirds of the screen.
- 9) Ensure both the internal and external os are seen clearly.
- 10) Measure the cervical length along the endocervical canal between the internal and external os.
- 11) Repeat this process twice to obtain 3 sets of images/ measurements.
- 12) Use the shortest best measurement

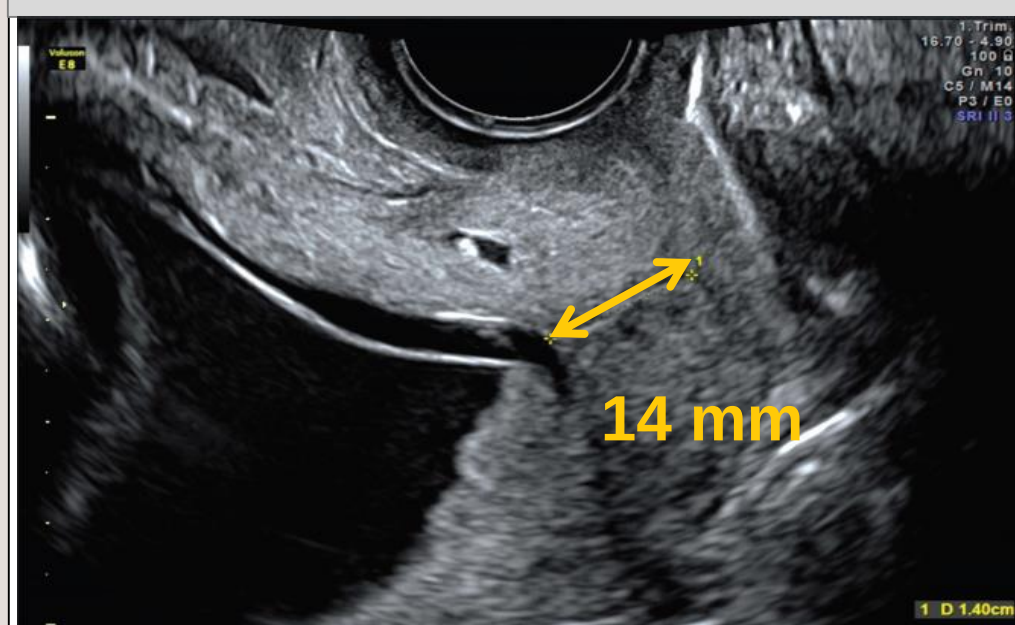
Factors needs to be taken in to account

1. Why Empty bladder:
 - Cervix is 4mm longer on full bladder.
 - It can obscure the presence of cervical funnelling by compressing the two halves of the funnel together.
2. A longitudinal view of the cervix should be obtained:
 - The cervical canal and surrounding cervical mucosa need to be identified.
 - This is usually hypoechoic, with respect to the surrounding stroma, though occasionally it can be slightly hyperechoic.
 - A thin line of demarcation between the stroma and the cervical mucosa can generally be identified on ultrasound.

TVS of cervical length in the same patient with Full Bladder



TVS of cervical length in the same patient with Empty Bladder



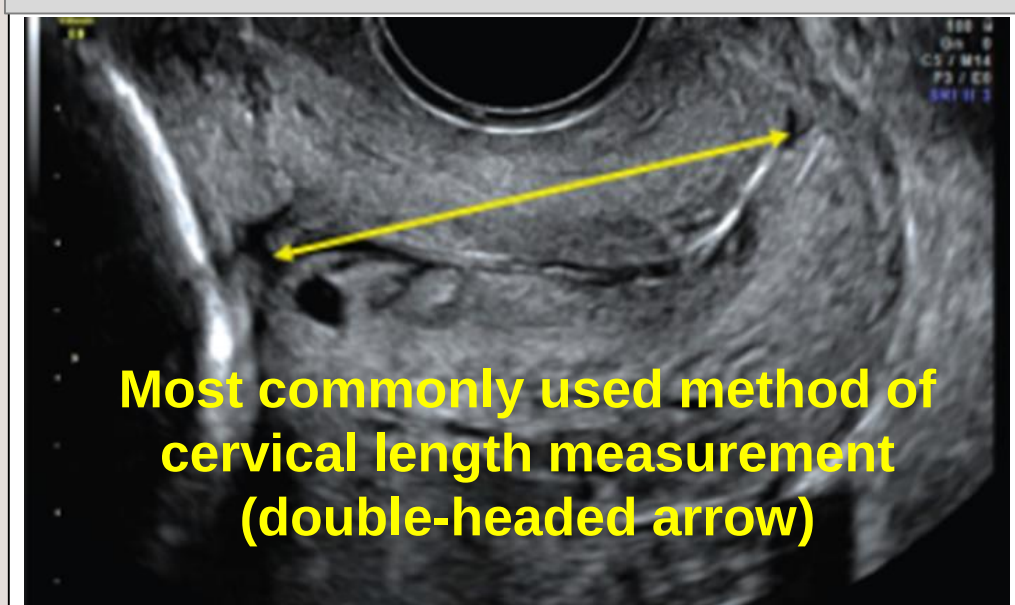
- The point at which the cervical mucosa ends is considered to be the internal cervical os.
- Of note, the mucosa of the lower uterine segment is much thinner than is the cervical mucosa and is usually difficult to identify on ultrasound.

3. Magnification of the ultrasound image needs to be appropriate:
 - The cervix should occupy approximately 50–75% of the image.

4. Pressure from the probe on the cervix should be as little as possible:
 - If excessive pressure is applied on the cervix by the probe, the cervix appears artificially to be longer and the presence of a funnel will be obscure.

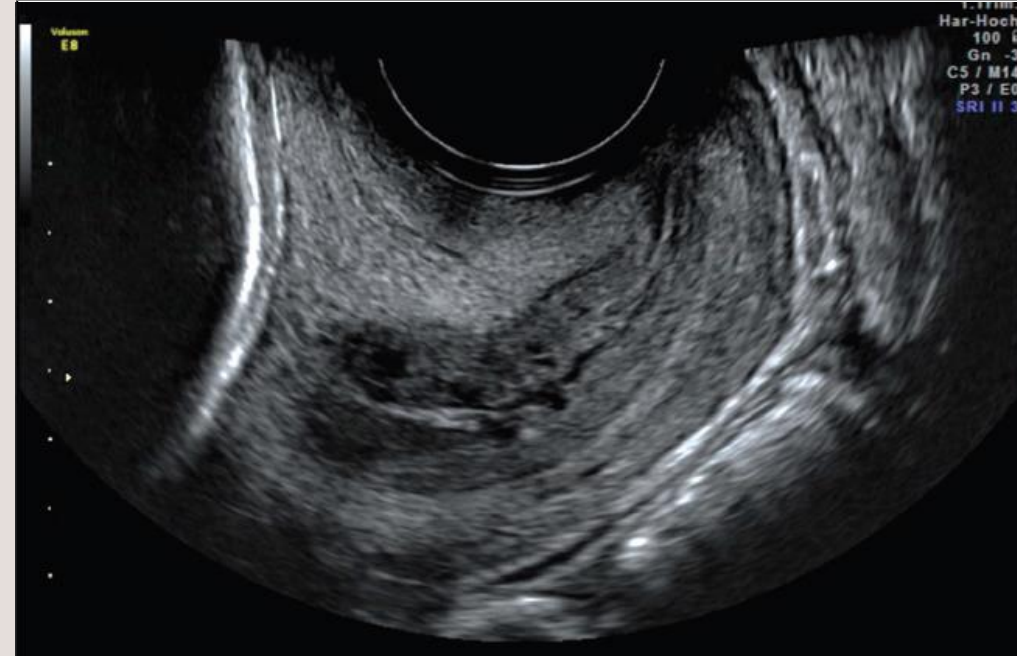
5. At least three measurements should be obtained during the course of the examination and the shortest measurement should be used for counselling.

TVS of Normal Cervix

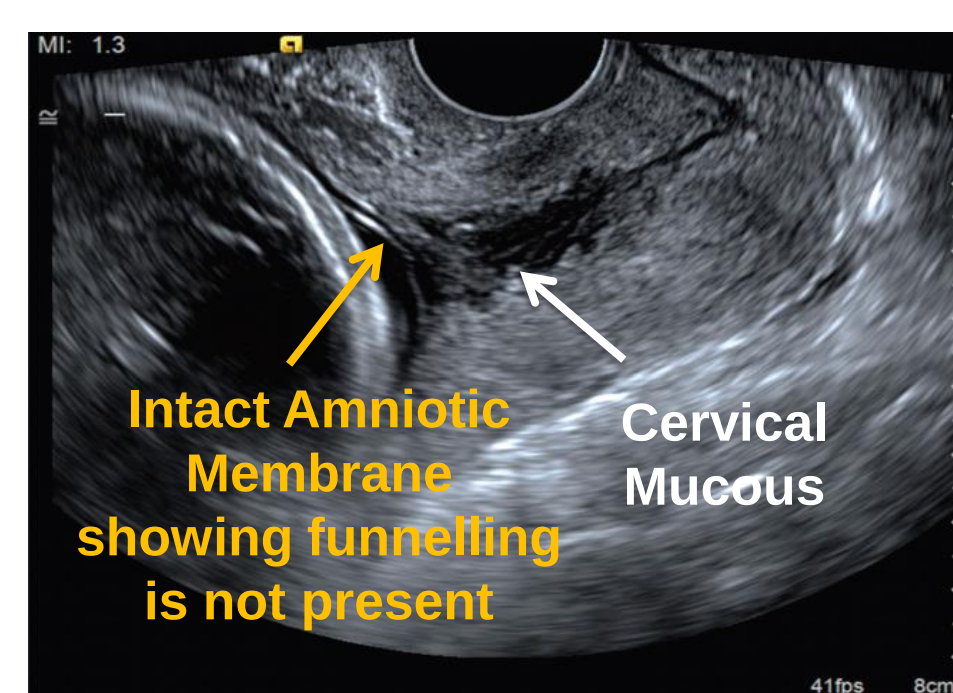


6. Callipers should be placed correctly:
 - Cervical measurement is obtained by placing callipers at the external and the internal os.
 - In 95% of cases, the difference between two measurements obtained by the same sonographer or by two different sonographers is about 4 mm.
 - In a curved cervix, the length is underestimated with a straight line.
 - If the cervix exceeds 25 mm in length, it will be curved in more than 50% of cases.
 - To correct for cervical curvature by obtaining the measurement either in two or more segments or by tracing the canal.
 - However, in patients with a pathologically short cervix (<16 mm), the cervical canal will be straight and this adjustment in measurement technique may not be required.
 - If there is funnelling, the calliper should be placed at the apex of the funnel.

TVS Image of Normal Cervix – showing cervical mucosa as a homogenous and hypoechoic structure compared to surrounding stroma.

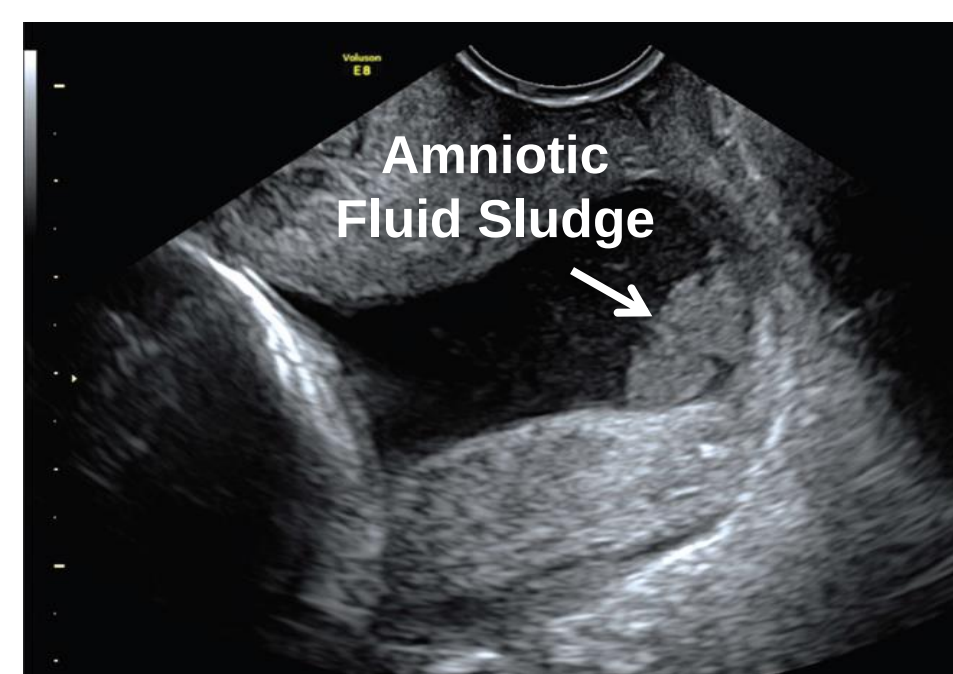
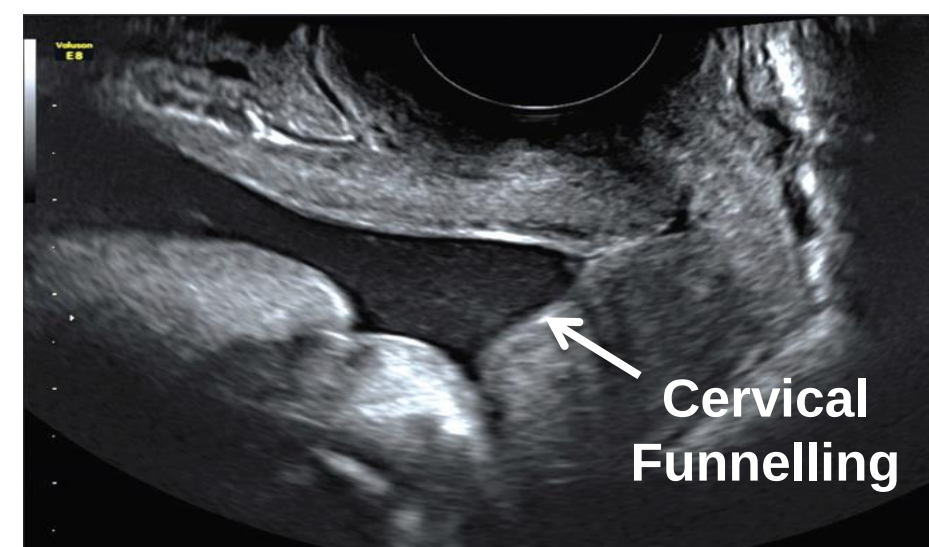


TVS of Cervix – showing Cervical Mucous



Identification of additional significant findings at TVS of cervix – Funnelling and Amiotic Fluid Sludge

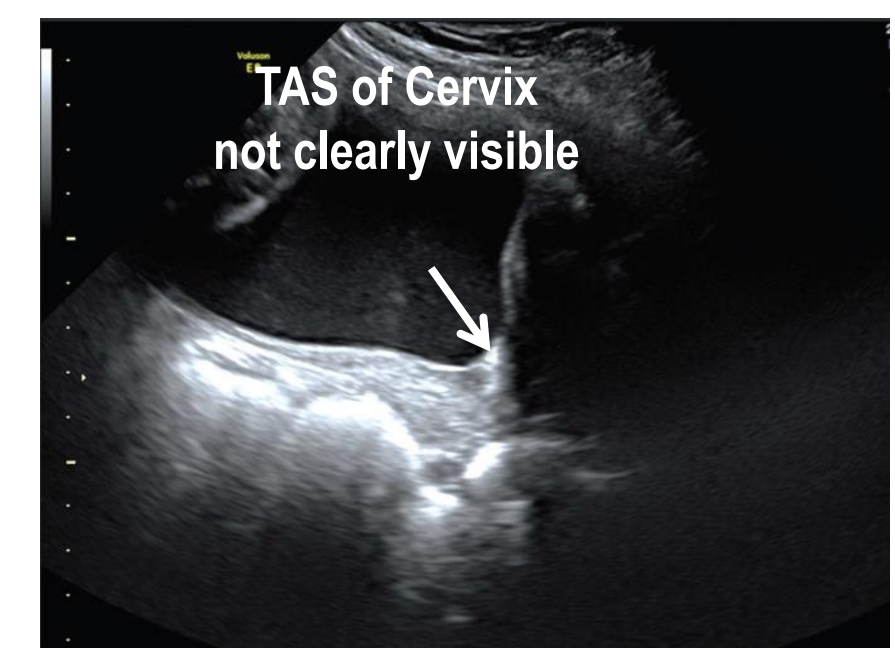
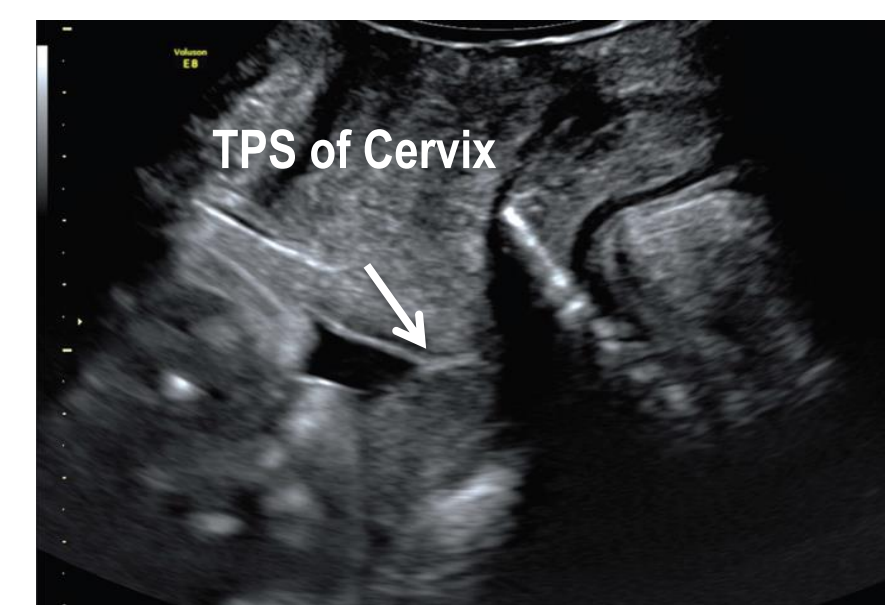
- a) Funnelling, defined as protrusion of the amniotic membranes into the cervical canal, is considered by some as an additional risk factor for preterm delivery - not an independent risk factor.
- b) Amniotic fluid sludge can be found as echogenic aggregates close to the internal os or within a funnel - associated with microbial invasion of the amniotic cavity - an independent risk factor for spontaneous preterm delivery, preterm rupture of membranes and histological chorioamnionitis in asymptomatic patients at high risk for spontaneous preterm delivery.



Other Approaches for cervical length USS: Trans Perineal vs Trans abdominal

1. In cases in which TVS should be avoided - preterm prelabour rupture of membranes, cervical length can be measured by (Trans perineal scan) TPS.
 - TPS: the transducer is placed on the perineum and rotated until the complete cervical canal and the internal and external os can be identified.
 - The placement of the probe is further away from the cervix than it is on TVS; therefore, there is a reduction in the detail in which the cervix is seen.
 - In 95% of cases, the difference between TVS and TPS measurements is within ± 5 mm.
2. Assessment of cervical length by Trans Abdominal scan (TAS) can be used as an initial evaluation but:
 - It should be borne in mind that, especially in cases with a short cervix, this modality tends to overestimate the true cervical length.
 - Therefore, a proper risk assessment should be based on a TVS or TPS measurement.

TPS and TAS Image of Cervix in same patient



Discussion and Conclusion

- a) Trans vaginal ultrasound should be offered to all patients in PTL on admission as per NICE guideline.
- b) People who have a cervical length at presentation of >15 mm, consideration should be given to withholding steroids and to discharge from hospital.
- c) A transvaginal scan should only be performed by a clinician trained in transvaginal ultrasonography.
- d) Regular Training of staff, therefore should be implemented in local teaching and training session

References

1. Preterm labour and birth – NICE Quality standard QS135 (October 2016)
2. Preterm labour and birth – NICE Guideline NG25 (November 2015) .
3. Preterm Birth: The value of sonographic measurement of cervical length (BJOG, 2006, Dec, 113, Suppl 3:52-6)
4. Andersen HF, Nugent CE, Wanty SD, Hayashi RH. Prediction of risk for preterm delivery by ultrasonographic measurement of cervical length (AJOG1990;163: 859 – 867)
5. Transvaginal cervical length ultrasound: a cost analysis of screening and treatment strategies in high-risk women. Lisa Gray, Neil Seligman, Tulin Ozcan, Vincenzo Berghella (AJOG, Jan 2015, Suppl 253)