Cervical Length Measurement – A Pictorial Review
G Coleman¹, JP Mayes²

Introduction
Preterm birth is one of the main causes of neonatal morbidity and mortality.¹ Surveillance of the cervical length is seen as a useful prediction tool for assessing women at high risk of premature delivery.² The main risk factors are identified as including previous preterm delivery, multiple gestation, previous cervical surgery or biopsy such as LLETZ or cone biopsy connective tissue disorder such as Ehlers Danlos syndrome. The transvaginal (TV) technique is seen as the gold standard due to the ability to standardisation of the technique, reproducibility and increased resolution whilst visualising the entire cervix.³ The measurement can also be performed transabdominally or transperineally.

Technique
Standardisation of technique enables reproducibility of the cervical length measurement. The following basic points should be considered:
- Patient information and consent
- TV probe clean prior to examination (as per departmental protocol)
- Transducer covering with a clean sheath
- Offering of a chaperone
- Patient bladder should be empty immediately prior to the TV examination
- Transducer introduced in a longitudinal plane to obtain a sagittal section of the entire length of cervix
- Withdraw transducer slightly to ensure minimal pressure applied to the cervix
- Enlarge the image to ensure the cervix occupies approximately 2/3 of the screen
- Optimise image settings to aid identification of the internal and external cervical os
- Observe the cervix for between 3-5 minutes and take several measurements over that time. Shortest most accurate measurement recorded on report
- Linear measurement made between the internal and external cervical⁴

Conclusion
With the correct technique, the cervical length measurement is a valuable tool in the surveillance and prediction of preterm labour. The technique can be difficult to master however by following a standardised protocol and knowing how to overcome common pitfalls can assist the reproducibility of the technique and reduce inter-operator variability. Cervical funnelling usually follows a distinct changing shape and therefore is important that the operator knows how to complete the measurement for accurate assessment.

This review has discussed the technique, anatomy and measurement process. This can be used as a tool for sonographers to ensure a standard technique is being followed in the measurement of cervical length.

References
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Caliper Placement
Calipers should be placed on the internal and external os where the opposite sides of the cervical tissue come together.

Anatomy
Longitudinal section of Cervical length. The cervical mucosa is seen as a hypoechoic area (indicated by yellow arrows). The internal os (red circle) and external os (blue circle) should be clearly identified for caliper placement.

Common pitfalls
Maternal bladder not emptied prior to examination This compresses the cervix and can cause false elongation of the length. If funnelling present, the bladder can also compress this and affect the true visualisation of the funneling. Solution: Ask patient to use bathroom to empty bladder.
Undue pressure on the cervix by the transducer The thickness of the anterior and posterior portions of the cervix should be equal. If undue pressure is applied the anterior portion will appear thinner and the pressure will elongate the cervix providing a false measurement. Solution: Withdraw the transducer slightly to relieve any pressure.
Uterine contraction can cause the cervix to appear longer than it actually is. A contraction may also hide the presence of funneling by contracting the uterine walls together. Solution: Continue the examination over 5 minutes to assess for resolution of any contraction. Assess the image to identify the true internal os by observing the cervical mucosa.
Curved cervix This is commonly seen, especially in a longer cervix. Linear measurement should still be performed. This may provide an under-measurement of the cervix but research performed by T et al⁴ found that on average this measurement was altered by 2.2mm. If the cervix is short it will also be straight.⁵ Solution: For standardisation and reproducibility of technique, linear measurement should always be performed.

Cervical Funnelling Progression
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