Transvaginal Ultrasound Scan
NORACT

Introduction

The scientific evidence for ultrasound assessment of cervical length in nonpregnant women is limited. However, several clinicians use this approach. Therefore, NORACT includes this measurement in selected cases (e.g. candidates with two prior conization).

Ultrasound photos can be flipped in accordance with the local guidelines
(In the illustrations below, the probe is at the bottom and cranial direction is to the right).

When measuring the cervical length, you should obtain three measurements of good quality and use the shortest measured length. You can either enter the measurement directly to REDCap or note it in the patient's record for later data collection.

When to measure the cervical length in NORACT

It is not mandatory to perform cervical ultrasound scans, but we encourage site investigators to perform them:

- At time of screening @laparoscopic site
- After insertion of cerclage
- In gestational age 18+0 – 21+6 (most important)
- In gestational age 22+0-25+6 (in view of planned sub-study)

How to measure the cervical length using transvaginal ultrasound

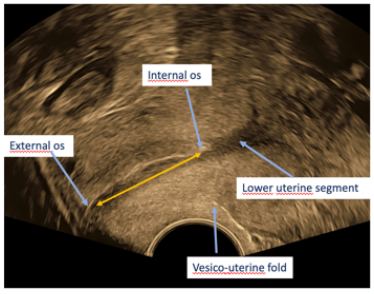
The cervical length is measured from the external os to the internal os.

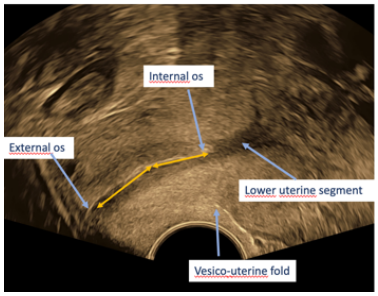
In the NORACT study, this is measured in two ways (please do both):

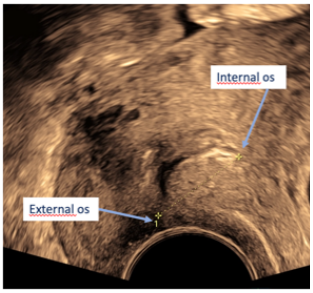
- One-line method: A straight line from the external os to the internal os.
- Two-line method: the sum of a linear distance from the internal os to the greatest cervical curvature and a linear distance from this point of the cervix to the external os.

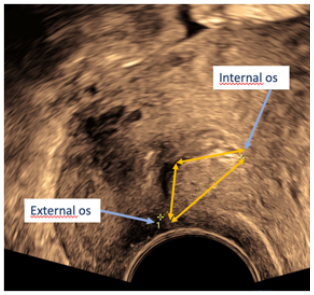
Since the cervical length can vary, for example due to contractions, the cervix shall be observed for some time to observe such changes.

- Avoid excessive pressure on the cervix, the diameter of the anterior cervical lip and the posterior lip shall be around the same.
- Observe for some time, since the cervical length can vary, for example due to contractions.







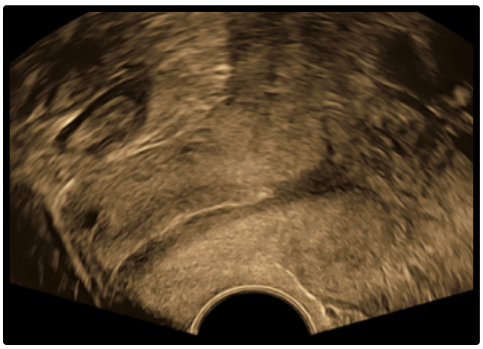


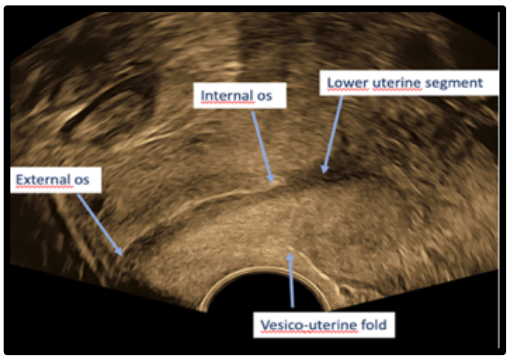
For non-pregnant/early pregnant women

In non-pregnant and in early pregnancy women, a gestational sac does not expand the lower part of the uterus. Therefore, it is challenging to distinguish the cervical canal from the isthmus and lower uterine segment. However, with the use of landmarks it is possible.

Technique:

- The woman's bladder must be empty.
- Insert the probe into the anterior vaginal fornix and obtain a sagittal view of the cervix
- Identify the cervical canal surrounded by the endocervical mucosa, which may be of increased or reduced echogenicity compared with the cervix. (1)
- Zoom – the cervix shall occupy 60-75% of the image.
- Identify the following landmarks: (see pictures below)
    - The full length of the cervical canal (line surrounded by the endocervical mucosa)
    - The internal os (the point where the cervical mucosa ends and changes to endometrium of the isthmus or the lower uterine segment)
    - The external os (the point where the anterior and the posterior ectocervix come together)





Ultrasound scan after insertion of cerclage

Measure:

- cervical length
- position of the cerclage
- funneling (2) (3)

The cervical length:

- No funneling: See above
- Funneling present: Define cervical length as the closed part of the cervix, i.e. from the apex of the funneling to the external os.

Position of the cerclage:

In case of two cerclage sutures, use the most proximal for these for measurements.

The cerclage line

- Identify the cerclage in the anterior and the posterior cervical lip.
- Place a straight line between these two positions of the cerclage (see US-picture below).

Measure (along the cervical canal):

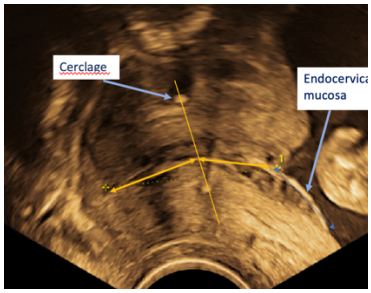
- The distance between the cerclage line and the internal os.
  - Positive figure, if internal os is distal the cerclage line.
  - Negative figure, if internal os is proximal to the cerclage line.
- The distance between the cerclage line and the external os.

Funneling

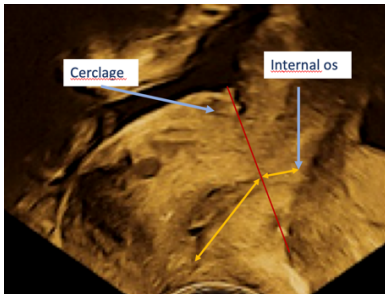
Definition: Opening of the internal os, and often protrusion of the amniotic membranes into the cervical canal.

Measure (if present)

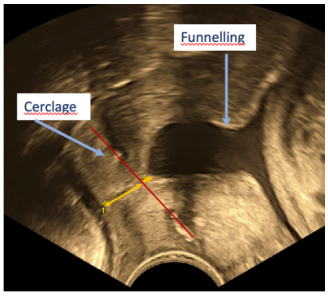
- The cervical length as the closed part of the cervix:
  - from the apex of the funneling to the external os (see US-picture below).
- The distance from apex of the funneling to the cerclage line.
  - Positive figure, if apex of the funneling is proximal the cerclage line.
  - Negative figure, if apex of the funneling is distal to the cerclage line.



Vaginal cerclage



Laparoscopic cerclage



Funneling

Quality assurance and feedback:

- Ultrasound photos can be send to auh.noract@rm.dk for review (downloaded from the US machine or just a photo with your smartphone).
  Ensure, that there is no patient identification data on the photos.
- The ultrasound quality committee will provide feedback.
- NORACT USS QUALITY COMMITTEE
  - Puk Sandager
  - Rikke Bek Helmig
  - Niels Uldbjerg

- Bo Jacobsson

Certification:

NORACT encourage all who measure the above mentioned variables to obtain NORACT-US-certification. This requires:

- Fetal Medicine Foundation (FMF) certification (https://fetalmedicine.org/fmf-certification-2/cervical-assessment-1).
  Requirements are: a short on-line course at the website and submission of two pictures to FMF.

  (Mail a copy of your certificate to auh.noract@rm.dk or mail that you are on the list of persons who have obtained the certificate on the Fetal Medicine Foundation homepage: https://fetalmedicine.org/lists/map/certified/cervical-assessment)

AND

- NORACT-USS-certification regarding cervical assessment in non-pregnant or early pregnant women

  - Mail two US-photos (with calipers placed correctly) from non-pregnant women to auh.noract@rm.dk
  - Mail two US-photos (with calipers placed correctly) from early pregnant women to auh.noract@rm.dk