Screening and Treatment of Mid-trimester Short Cervix in Asymptomatic Pregnancies

I. Background
   • A short cervix identified in the midtrimester of pregnancy is a strong predictor of preterm birth in all populations studied \(^1\)
     o Effacement begins at internal cervix os and progresses caudally, thus precedes dilatation
   • Despite the strong association between short cervical length and preterm birth, most women with asymptomatic cervical shortening deliver at >35 weeks \(^2\)

II. Goals
   A. The purposes of cervical length screening are:
      1. Identify populations of patients in which the following interventions may be beneficial:
         • Vaginal progesterone
         • Cerclage
         • Antenatal corticosteroids
      2. Avoid unnecessary interventions and subsequent screening tests in women at low risk of preterm birth. Only extremely short cervical lengths in asymptomatic patients in the midtrimester are associated with a significant risk of impending preterm birth within 2-4 weeks.
         • Women with no measurable cervical length in the midtrimester have a median time from diagnosis to delivery of 3 weeks, 65% do not deliver within 2 weeks, with only 36% risk of delivery by 32 weeks of gestation. \(^3\)
   B. Protocols which incorporate universal cervical length screening have demonstrated a reduction in frequency of preterm birth, \(^4,5\) and have been found to be cost effective. \(^6,7\)
   C. Universal CL screening in all pregnant women is not mandated by ACOG, however, it is a reasonable evidence-based practice pattern. \(^8,9\)

III. Midtrimester (16-24 weeks) with Short Cervix
   A. Treatments with proven benefit for asymptomatic cervical shortening:
      1. Vaginal progesterone
         • Several vaginal progesterone preparations have reported efficacy for preterm birth prevention with short cervix. \(^4,5,10,11\) A meta-analysis of trials of vaginal progesterone has demonstrated efficacy in all patients studied with cervical length ≤25 mm. \(^12\)
         • The most commonly used preparation is Prometrium\textsuperscript{®} 200mg capsule PV qhs
         • Treatment can be discontinued at 37 wks or earlier if development of PROM.
         o 17-OHPC does not reduce the risk of PTB with incidentally noted short cervix and is not recommended as an alternative to vaginal progesterone in women with short cervix \(^13\)
      2. Cerclage
         Cerclage placement in women with a prior spontaneous preterm birth AND a short cervical length ≤ 25 mm at ≤ 22 6/7 weeks reduces the rate of preterm birth. \(^14,17\) These women may also be offered 17-OHPC based on their history (see Progesterone for Preterm Birth Prevention protocol)
         Women with asymptomatic cervical dilation may benefit from exam indicated cerclage \(^18\)
Cervical shortening often precedes asymptomatic cervical dilation. Up to one third of women with CL ≤11 mm on TVUS also have cervical dilation of ≥1 cm. Therefore, when asymptomatic cervical shortening is noted on ultrasound <23 weeks, digital cervical exam is advised to assess whether physical exam indicated cerclage should be offered.

3. Antenatal corticosteroids
   Improve neonatal outcomes when administered in pregnancies at risk of preterm birth. Optimum benefit is when administered in pregnancies likely to deliver within 2 weeks, i.e. in women with extremely short cervical lengths (less than 5 mm), see Glucocorticoid Steroids protocol.

4. Pessary
   There is conflicting evidence regarding the efficacy of cervical pessary for management of short cervix in pregnancy. A recently published meta-analysis concluded that current evidence does not support the use of cervical pessary to prevent preterm birth or to improve perinatal outcomes in singleton or twin gestations with a short cervix and in unselected twin gestations. At this time cervical pessary is not recommended for routine use in management of short cervix in pregnancy and is optimally limited to use in the context of a clinical trial or research protocol.

B. Treatments with NO proven benefit for asymptomatic cervical shortening
   1. Bed rest and pelvic rest
      Have not been proven to improve perinatal outcomes in women with mid-trimester cervical shortening and may in fact be harmful. Based on available evidence, we do not encourage activity limitations in women with asymptomatic cervical shortening in an effort to decrease preterm birth risk. Recommendations on activity limitations will be individualized after consultation with her primary OB care provider.

   2. Prophylactic tocolytic agents in patients with no evidence of preterm contractions (i.e. Indomethacin or calcium channel blockers)

   3. Prophylactic antibiotics in patients with no evidence of infection
Short Cervix Protocol
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IV. Cervical length screening in selected populations

A. History suspicious for cervical insufficiency

1. Women with the most concerning history suggestive of cervical insufficiency:
   Offer history-indicated cerclage placement at 12-14 weeks (i.e. women with one
   or more prior second-trimester loss related to painless cervical dilation or those
   with a history of successful cerclage in prior pregnancy). This prior history does
   not exclude women with current twin pregnancy.

2. Women with equivocal history, unclear whether there is cervical insufficiency:
   Offer serial CL screening and cerclage if short cervix identified. Initiate TV
   ultrasound cervical lengths at **14 weeks**
   - If CL ≥30 mm, repeat every 2 weeks until 22 6/7 weeks
   - If CL 25-29 mm, repeat every 1 week until 22 6/7 weeks
   - If CL ≤25 mm, offer cerclage placement

B. History of spontaneous preterm birth in prior pregnancy at 17 to <34 weeks (see figure)

1. Initiate TV ultrasound cervical lengths at **16 weeks**
   - If CL ≥30 mm, repeat every 2 weeks until 22 6/7 weeks
   - If CL 25-29 mm, repeat every 1 week until 22 6/7 weeks
   - If CL <25 mm, offer cerclage placement

2. No further scheduled CL screening after 22 6/7 weeks

3. Special scenarios:
   - In patients who are candidates for cerclage and decline, vaginal progesterone
     may be offered as a second line alternative as evidence suggests it may also
     effectively reduce PTB risk and improve neonatal outcomes
   - Women with history of preterm labor but delivered at term do not fit in this
     category and should be treated as Low Risk.

C. Multifetal gestation, uterine malformation, or prior LEEP (screening and
treatment similar to Low Risk women)

1. Single TV US cervical length at **18-24 weeks**, at anatomic survey
   - If ≤25 mm, vaginal progesterone
   - If >25 mm, routine care
   a. For short cervix, recommend vaginal progesterone
      i. Multiple studies and meta-analyses have demonstrated
         efficacy of vaginal progesterone to prevent preterm
         birth in twin gestations with short cervix ≤25 mm, 10,22
         Limited data to support treatment efficacy in other
         groups, although vaginal progesterone is reasonable
         and has no known risk 4
   b. Cerclage has no role in treatment of undilated short cervix in these
      populations and may worsen outcomes in otherwise uncomplicated
      twin pregnancies.12
   c. If asymptomatic cervical dilation is present in the patient presenting
      with short cervix, exam indicated cerclage may improve pregnancy
      outcome (including in twin gestations).18,23,24
D. **Low Risk singletons** (nulliparous women or multiparous with prior term birth), figure 1
   1. Recommended screening is:
      Single TVUS cervical length at **18-24 weeks**, at anatomic survey
      - If ≤25 mm, offer vaginal progesterone
      - If >25 mm, routine care
   2. There is a paucity of data supporting the efficacy of Cerclage in Low Risk singletons with short, undilated cervix and no prior history of preterm birth.

V. Counseling
   A. Provide patient information regarding estimated likelihood of PTB based on her specific CL at gestational age when assessed (see appendix, these data derived from high risk singleton pregnancies)
   B. Patients with normal cervical length > 25 mm, but otherwise at high risk of preterm birth (twins, prior preterm birth, etc) may be reassured regarding low risk of PTB by providing individualized risk assessment, see appendix

VI. Special Situations
   A. Cerclage during perivable period
      - Cerclage is typically placed prior to <23 weeks. Some patients may be candidates for cerclage between 23 0/7 - 23/6/7 weeks based on individualized counseling on risks/ benefits by MFM.
      - In most circumstances, women receiving u/s indicated cerclage during the 23rd week do not warrant perioperative ANCS.
      - Women receiving exam indicated cerclage during the 23rd week may be candidates for ANCS based on individualized counseling on risks/ benefits
   B. TTTS
      - Some women with TTTS and short cervix may be candidates for u/s indicated cerclage up to 23 6/7 weeks based on individualized counseling on risks/ benefits by fetal care team.
   C. Screening with TV CL after cerclage
      - Role of CL screening after intervention provided is uncertain and generally not advised.
      - For ultrasound and exam indicated cerclage, it is reasonable to repeat a cervical length one week following cerclage placement. There is no benefit to serial cervical length screening thereafter.
      - CL screening after cerclage may assist to identify patients at high risk of impending preterm birth (i.e. funnelling to the stitch or residual CL ≤5 mm). Therefore, in special circumstances, further cervical length screening after cerclage may be individualized.
   D. Inpatient admission and antenatal corticosteroid administration
      - Extremely short cervical lengths, ≤5 mm, prior to 28 weeks may be associated with a significant enough likelihood of preterm birth within 2 weeks to warrant inpatient management and steroid administration (mean latency with CL = zero is 3 weeks, 36% risk of delivery within 2 weeks)
      - Women with other concomitant risk factors may warrant inpatient management at CL >5 mm. Recommend individualized treatment with MFM consultation.
   E. Preterm contractions
      - Women with preterm contractions and short cervix are at especially high risk of preterm birth and should be managed by the Preterm Labor Protocol and not based on recommendations in this protocol, which is focused on the short cervix in asymptomatic women.
VII. Measuring the Cervix
- Cervical length should only be determined from images in which the lower most edge of the empty maternal bladder and the internal os and external os are visible and when the anterior and posterior lips of the cervix are of approximately equal thickness. The single shortest measurement should be reported.

Figure: Cervical Length Screening:

Universal Cervical length screening (include singleton/ twin gestation)

- No prior preterm birth
  - Single TVU CL at 18-24 weeks
    - CL ≤25 mm
      - Vaginal Progesterone
    - CL > 25 mm
      - Routine care

- Prior spontaneous preterm birth <37 weeks
  - Consider 17-OHPC
    - If prior sPTB <34 weeks
      - Serial TVU CL at 16-22 5/7 weeks
        - CL ≤ 25 mm
          - Offer cerclage
            - If receiving 17-OHPC, continue
        - CL > 25 mm
          - If receiving 17-OHPC, continue
References:

Singletons:

Estimate the risk of preterm birth by cervical length:
https://fetalmedicine.org/research/assess/preterm/cervix

Twins:

Figure 2 Predicted probability of delivery of twin pregnancies before 35 weeks’ gestation based on cervical length and gestational age (GA) at time of measurement. ◆, GA 16 weeks; ▲, GA 20 weeks; ◊, GA 24 weeks; ■, GA 28 weeks.