Universal Cervical Length:  
Yes or No

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Disclosures

• Nothing to disclose
Mechanisms of Preterm Birth

Traditional Model of Contractions as the Initial Step Preceding Is Challenged by the following observations:

- Current therapies to treat preterm labor are largely ineffective.
- Treatment of preterm birth has focused on inhibiting myometrial contractions.
- Growing body of clinical and animal studies now suggests that premature cervical shortening or ripening might be the primary mechanism.

Screening Modalities
Clinical Significance of Short Cervix

- Mid-trimester CL assessment by transvaginal ultrasound is the best clinical predictor of spontaneous PTB

- “short” ranges from 20 to 30mm

- Women with the shortest CL have the highest risk of prematurity

- Short CL, irrespective of history, is associated with an elevated risk of sPTB across different gestational age cutoffs and multiple populations

- History of a prior spontaneous PTB and a short CL are at the highest risk
Providers should adopt a plan to screen and treat patients at risk for preterm birth

The Practice Bulletin doesn’t say what plan

Should a women with a singleton pregnancy without a history of preterm birth be screened for a risk of preterm birth?

Should we be doing Universal Cervical Length Screening?

Proponents

- Potential to reduce preterm birth
- High quality evidence exists to support efficacy of treatment for positive test results (cervical length 20 mm or less)
- Cost Effective
- Safe
- Reliable (Reproducible, variability <10%)
- Recognizable early asymptomatic phase
- Valid (accuracy of prediction)
- Accepted by patients (> 90 % of pts)
- Widely available
Wilson and Jungner’s classic screening criteria

• The condition sought should be an important health problem.
  – PTB is associated with 1 million neonatal deaths worldwide.

• There should be an accepted treatment for patients with recognized disease.
  – Vaginal prog. is a proven Tx for PTB prevention in singleton gestations with a short cervix.

• Facilities for Dx and Tx should be available.
  – All pregnant women are offered US at 18-24 weeks of gestation and can be offered TV US cervical length.

• There should be a recognizable latent or early symptomatic stage.
  – A short TV US cervical length is an early predictor of PTB.

• There should be a suitable test or examination.
  – TV US is a validated reliable test for cervical length measurement.

• The test should be acceptable to the population.
  – TV US cervical length is acceptable by more than approximately 75% of women with singleton gestations and no previous spontaneous PTB.

• The natural Hx of the condition, including development from latent to declared disease, should be understood adequately.
  – TV US cervical length shortening precedes, by weeks or months, digitally detected cervical changes, symptomatic uterine contractions, and eventual PTB.

• There should be an agreed policy on whom to treat as patients
  – TV US cervical length ≤20 mm at <24 weeks of gestation is the currently accepted indication for treatment in singleton gestations without previous PTB.

• The cost of case-finding (including Dx and Tx of patients diagnosed) should be balanced economically in relation to possible expenditure on medical care as a whole.
  – Several studies have confirmed the cost-effectiveness of universal TV US cervical length screening.

• Case-finding should be a continuing process and not a “once and for all” project.
  – PTB prevention is a continuous process; PTB is not an infection for which a vaccine can be devised, and the disease eradicated.
Opponents

- Quality assurance of screening test
- Lack of availability of screening and patient access to qualified imaging
- Patient for patients to receive unnecessary interventions

Opponents

- Patients with a short cervix may be detected even without a policy for universal screening.
- Treatment is efficacious but it is unclear universal screening would be.
  - Control groups depend on the trial (treatment versus screening)
Measurement of the Cervix

A is the Funnel Length.
B is the Cervical Length.

Record B as THE Cervical Length.

C_A
C_P
C_Ant Lip Should = C Post Lip

Berghella, Ultrasound Obstet Gynecol 1997;10:161
Burger, Ultrasound Obstet Gynecol 1997;9:188
How should the current pregnancy be managed in a woman with a prior spontaneous preterm delivery?

Practice Bulletin No. 130 ACOG
Montecino randomized trial of cerclage for preterm birth prevention in high-risk women with shortened mid trimester cervical length

John Owen, MD; Gary Hanrath, MD; Jay D. Iams, MD; Vincenzo Berghella, MD; Joanne S. Sheffield, MD; Annette D. Dobbs, MD; Robert S. Egerman, MD; Deborah A. Wing, MD; Mark Townsend, MD; Richard Silver, MD; Susan M. Ramin, MD; Edwin R. Guzman, MD; Michael Gordon, MD; Helen Y. How, MD; Eric J. Kandilion, MD; Jeff M. Szychowski, PhD; Suzanne Clarke, MSPH; John C. Hauth, MD

OBJECTIVE: The objective of the study was to assess cerclage to prevent recurrent preterm birth in women with short cervix.

STUDY DESIGN: Women with prior spontaneous preterm birth less than 34 weeks were screened for short cervix and randomly assigned to cerclage if cervical length was less than 25 mm.

RESULTS: Of 1014 women screened, 302 were randomized. 46% of women not assigned and 32% of those assigned to cerclage delivered less than 35 weeks (P = .09). In planned analysis, births before 24 weeks (P = .01) and potential mortality (P = .02) were less frequent in the cerclage group. There was a significant interaction between cervical length and cerclage. Birth less than 25 weeks (P = .006) was reduced in the less than 15 mm stratum with a null effect in the 15-24 mm stratum.

CONCLUSION: In women with prior spontaneous preterm birth less than 34 weeks and cervical length less than 25 mm, cerclage reduced preventable birth and potential mortality but did not prevent birth less than 36 weeks, unless cervical length was less than 15 mm.

Key words: cerclage, cervical length, prior spontaneous birth, vaginal sonography

MC, RCT examined role serial TV CL with cerclage placement for those with a short cervix

- Patients with singleton and history of spontaneous preterm birth at less than 34 weeks
- CL q 2 weeks starting at 16 weeks thru 23 weeks
- If length between 25 and 29 mm screening increased to q week.
• Primary Outcome was PTB at 35 weeks
  – No significant difference RR, 0.78; 95% CI, 0.58-1.04

• However, cerclage was associated with a reduction in:
  – Deliveries before 24 weeks RR, 0.44; 95% CI, 0.21-0.92
  – Deliveries before 37 weeks RR, 0.75; 95% CI, 0.60-0.93
  – Perinatal death RR, 0.54; 95% CI, 0.29-0.99

• Secondary Analysis
  – Cerclage for cervical length less than 15mm was associated significant decrease in preterm birth at less than 35 weeks (RR, 0.23; 95% CI, 0.08-0.66)

What intervention have been shown to be beneficial for reducing the risk of preterm birth in women who do NOT have a history of preterm birth but who are found to have a short cervical length?
Progesterone and Short Cervix

- Multicenter RCT
- Women underwent CL screening at 20-25 weeks (median 22 weeks)
- 1.7% of 24,640 screened CL less than or equal to 15 mm
- Excluded fetal anomalies, uterine contractions, ROM, cerclage
- Women with CL 15 mm or less randomized to: vaginal micronized progesterone 200 mg every night vs placebo between 24 and 34 weeks

90% of the women in the study had a singleton
85% had no prior preterm birth
Less PTB < 34 weeks in progesterone group (19.2 vs 34.4%; RR, 0.56; 95% CI, 0.36-0.86)
44% decrease in spontaneous preterm birth at less than 34 weeks

Number need to avoid one spontaneous preterm birth < 34 week
- Screen - 387
- Treat - 7
Vaginal progesterone reduces the rate of preterm birth in women with a sonographic short cervix
Hassan et al., UOG 2011

**Phase III, prospective, randomized, placebo-controlled, double-masked, parallel-group, multi-center, international trial.**

**Objective**
To determine the efficacy and safety of vaginal progesterone gel in reducing the rate of PTB < 33 weeks in asymptomatic women with a mid-trimester sonographic short cervix.

**Journal Club slides prepared by Dr Asma Khalil (UOG Editor for Trainees)**

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**Clinical utility – Number needed to treat (NNT) to prevent adverse outcome**

<table>
<thead>
<tr>
<th>Intervention</th>
<th>NNT</th>
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<tbody>
<tr>
<td>Progesterone for prevention of PTB &lt; 33 weeks*</td>
<td>14</td>
</tr>
<tr>
<td>Progesterone for prevention of RDS*</td>
<td>22</td>
</tr>
<tr>
<td>MgSO4 for prevention of eclampsia†</td>
<td>100</td>
</tr>
<tr>
<td>Antenatal steroids for prevention of RDS‡</td>
<td>13</td>
</tr>
</tbody>
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*Hassan S et al., UOG 2011
†Altman D et al., Lancet 2002
‡Sinclair JC et al., AJOG1895

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**What steps should be performed to accurately evaluate the cervical length?**

- SMFM recommends that sonographers and/or practitioners receive specific training in the acquisition and interpretation of cervical imaging during pregnancy. GRADE 2B
  - Several training programs are available online, including the Cervical Length Education and Review (CLEAR) program (sponsored by SMFM and its Perinatal Quality Foundation, available at https://clear.perinatalquality.org), and the Fetal Medicine Foundation’s Certificate of Competence in cervical assessment (available at https://fetalmedicine.org).

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**Progesterone for the prevention of preterm birth in women with short cervix**

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<tr>
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<th>Placebo</th>
<th>Progesterone</th>
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<tr>
<td>&lt; 33 weeks (%)</td>
<td>16%</td>
<td>9%</td>
</tr>
<tr>
<td>N</td>
<td>235</td>
<td>N = 223</td>
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</tbody>
</table>

N = 458
Cervix: 10 to 20 mm (median 18 mm)
GA: 20 – 23 weeks (median 22 weeks)
Progesterone bioadhesive gel 90 mg PV daily
Duration: 20 – 36 weeks
No serious adverse events

Hassan S et al., UOG 2011

**Progesterone for the prevention of preterm birth in women with short cervix**

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<tr>
<td>&lt; 34 weeks (%)</td>
<td>34%</td>
<td>19%</td>
</tr>
<tr>
<td>N</td>
<td>125</td>
<td>N = 125</td>
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</tbody>
</table>

N = 250
Cervix: ≤ 15 mm (median 11.5 mm)
GA: 20 – 25 weeks (median 22 weeks)
Progesterone capsule 200 mg PV daily
Duration: 20 – 34 weeks
No serious adverse events

Fonseca EB et al., NEJM 2007

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**Journal Club slides prepared by Dr Asma Khalil** (UOG Editor for Trainees)
If the cervical length is assessed by ultrasound, when during pregnancy should it be evaluated?

- CL should be assessed between 16 - 24 weeks
- Before 16 weeks of gestation: the lower uterine segment is underdeveloped, making it challenging to distinguish this area from the endocervical canal.
- Routine CL screening is also not advised beyond 24 weeks of gestation, because studies of interventions have most often used 24 weeks of gestation as the upper gestational age limit for screening and initiation of therapies or interventions

How should the approach to cervical length screening differ for women with and without a prior preterm birth?

- Current SMFM and ACOG guidelines recommend women with a prior spontaneous PTB undergo CL screening with transvaginal ultrasound
- Serial assessment of CL (every 1-2 weeks as determined by the clinical situation) from 16 until 24 weeks of gestation
- SMFM recommends routine transvaginal CL screening for women with singleton pregnancy and history of prior spontaneous PTB. (GRADE 1A)

How should the approach to cervical length screening differ for women with and without a prior preterm birth?

- Universal transvaginal ultrasound CL screening of singleton gestations without prior PTB for the prevention of PTB remains an object of debate
- CL screening in singleton gestations without prior PTB cannot yet be universally mandated
- It can be viewed as reasonable, and can be considered by individual practitioners.
- Stretching the criteria and management beyond those tested in RCTs should be prevented
- Practitioners who decide to implement universal CL screening should follow strict guidelines (GRADE 2B)