



E-NEWS

Second Trimester Evaluation of Cervical Length for Prediction of Spontaneous Preterm birth... *The Time Has Come!*

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Preterm Birth

According to the Institute of Medicine report in 2006 the cost is \$26 billion per year, \$51,600 per infant born preterm. Approximately 12.5% of all US births in 2004 were preterm, 9.6% in 2014, but unfortunately it is beginning to increase again.

There has been a 30% increase since 1981. Although we have enjoyed significant improvements in treating infants born preterm and improving survival, little success has been attained

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in understanding and preventing preterm birth. Spontaneous preterm birth accounts for two thirds of all preterm deliveries.

Rationale For Measuring Cervical Length

Cervical shortening is one of the first steps in the processes leading to labor and can precede labor by several weeks. A decrease in cervical length in the second trimester is predictive of spontaneous preterm birth. The highest risk is in women with relatively substantial cervical shortening. Effacement begins from the internal os giving ultrasound the advantage over physical examination. Vaginal progesterone can reduce the risk of spontaneous preterm birth.

In a 2016 systematic review and meta-analysis of randomized trials, vaginal progesterone treatment of women with short cervix reduced frequency of preterm birth less than 34 weeks by 37% and reduced composite neonatal morbidity and mortality by 41%. Cervical length screening and intervention can be cost effective even though most women do not have a short cervix. Approximately 30% of women with short cervix will deliver before 35 weeks without intervention. Cost effectiveness analysis has suggested TVUS for cervical length can reduce cost. ([Romero R, Nicolaides KH, Conde-Agudelo A, et al. Vaginal progesterone decreases preterm birth \$\leq\$ 34 weeks of gestation in women with a singleton pregnancy and a short cervix: an updated meta-analysis including data from the OPPTIMUM study. *Ultrasound Obstet Gynecol* 2016; 48:308.](#))

Cervical length tends to be stable between 14 and 28 weeks gestation and is normally distributed. In the distribution of cervical length at 20 weeks

without prior spontaneous preterm birth: 15 mm–0.5th percentile, 20 mm–1st percentile, 25 mm–2nd to 3rd percentile. ([Iams JD, Goldenberg RL, Meis PJ, et al. The length of the cervix and the risk of spontaneous premature delivery. National Institute of Child Health and Human Development Maternal Fetal Medicine Unit Network. N Engl J Med 1996; 334:567.](#))

After 28-32 weeks a gradual decline in cervical length is normal. Median cervical length is 30mm after 32 weeks versus 35mm at 22-32 weeks and 40 mm prior to 22 weeks. This is not significantly affected by parity, race/ethnicity, maternal height.



Diagnosis of short cervix

Less than 25 mm at 16-24 weeks gestation is considered short. There is no threshold below which all patients deliver remote from term. One study showed 25% of women with no measurable cervix at 14-28 weeks delivered at later than 32 weeks. Another study where providers were blinded to cervical length at 24 weeks 82% of women with cervical length less than 25 mm and 50% less than 13 mm delivered at greater than or equal to 35 weeks.

Universal versus selective cervical length screening

In a large study in which universal length screening was introduced in singletons without previous spontaneous preterm birth, there was a significant decrease in the frequency of spontaneous preterm birth less than 37 weeks with adjusted odds ratio of 0.81, less than 34 weeks adjusted odds ratio 0.78, and less than 32 weeks adjusted odds ratio 0.76.

Restricting screening to those with historical risk factors would miss 40% of women with a short cervix. The number needed to prevent preterm birth is estimated at 913 with universal screening versus 474 in which only women with at least one risk factor were screened and 125 with 2 risk factors. Patients with a history of previous indicated preterm birth were also at increased risk for spontaneous preterm birth.



Recommendations from national and international organizations

SMFM ([Society for Maternal-Fetal Medicine \(SMFM\)](#)). Electronic address: pubs@smfm.org, [McIntosh J, Feltovich H, et al. The role of routine](#)

[cervical length screening in selected high- and low-risk women for preterm birth prevention. Am J Obstet Gynecol 2016; 215:B2.](#))

Routine screening is indicated between 16 and 24 weeks for women with a singleton pregnancy and prior spontaneous preterm birth. Screening is reasonable for women with no history of prior preterm birth. Routine screening is not recommend in women with a cerclage, preterm premature rupture of the membranes, or placenta previa. Routine screening is not recommended for women with multiple gestations, however a 2017 meta-analysis suggested possible benefit.

ACOG ([Committee on Practice Bulletins—Obstetrics, The American College of Obstetricians and Gynecologists. Practice bulletin no. 130: prediction and prevention of preterm birth. Obstet Gynecol 2012; 120:964. Reaffirmed 2018.](#))

ACOG in a practice bulletin did not recommend for or against universal screening.

FIGO ([Figo Working Group On Best Practice In Maternal-Fetal Medicine, International Federation of Gynecology and Obstetrics. Best practice in maternal-fetal medicine. Int J Gynaecol Obstet 2015; 128:80.](#))

Cervical length is recommended for all women 19-23+6 weeks gestation with transvaginal ultrasound. Women with cervical length less than or equal to 25 mm should be treated with vaginal progesterone.



Test performance

Positive predictive value is roughly 35-45% in the absence of intervention, higher when cervical length of less than 15 mm is used, 70% in women with early and/or repeated spontaneous preterm births.

Cervical length in non-pregnant women is not useful for predicting spontaneous preterm delivery.

Clinical approach

Routine transvaginal ultrasound should be considered at approximately 20 weeks gestation (18-24 weeks). Vaginal progesterone can be used in those less than or equal to 25 mm, with no history of preterm delivery. With a history of previous preterm delivery cerclage is recommended with cervical length less than or equal to 25 mm, although recent evidence suggests vaginal progesterone may be as effective in this setting. Bedrest does not prolong pregnancy in the setting of cervical shortening. Cervical length measurements after 30 weeks are not useful for predicting spontaneous preterm birth.

Technique

The patient should have an empty bladder. The

transducer is gently inserted into the anterior fornix until the cervix is visualized well, avoiding excessive pressure on the anterior cervical lip. The area of interest is enlarged to at least one half of the ultrasound screen and oriented so that cephalad is to the left of the screen. Fetal membranes within the cervical canal or beyond the cervix should be noted, if present. The internal os is located usually just below the lowest edge of the empty maternal bladder. The entire cervical canal should be in view. Next, withdraw the probe until the image blurs, then reapply only enough pressure to restore the image. The closed portion of the cervix is then measured. A curved cervical canal suggests normal length. Check 3 measurements and choose the “shortest best.” Fundal pressure can be considered if there is concern for a “dynamic” cervix, then use the shortest measurement.

A large metaanalysis (AJOG, Feb 2018, Romero, et al.) concluded vaginal progesterone decreases the risk of preterm birth and improves perinatal outcomes in singleton gestations with a mid-trimester sonographic short cervix, without any demonstrable deleterious effects on childhood neurodevelopment. In an editorial in the same issue by Dr. Stuart Campbell was entitled “Prevention of spontaneous preterm birth: Universal cervical length assessment and vaginal progesterone in women with short cervix: Time for action!”

I could not agree more!

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