To stitch or not to stitch… the controversial cervical cerclage

Jeanelle Sabourin, PGY-3
April 20th, 2010
Perinatology Rounds
Objectives

- Summarize the methods and evidence for cervical length measurement and describe its relationship to preterm birth
- List the indications and perioperative considerations for cervical cerclages
- Describe the methods for vaginal and abdominal cerclages
- Highlight the evidence (or lack of!) regarding cervical cerclages by discussing various clinical scenerios
US measurement of Cervical Length (CL)

- TVU - gold standard
- Highly reproducible (<10% inter/intra-observer variability)
- Acceptable to 99% women

- Consider only in HIGH RISK WOMEN!! (Test performance much better)

- Cervical effacement precedes PTB by several weeks…
  - Performs best for predicting PTB risk over the next 8 weeks rather than imminent delivery

- Timing
  - BETWEEN 16-30 WEEKS
    - In most women who will have a PTB, a short cervix is first noted at 18-22 wks
    - <14 wks: difficult to distinguish th lower uterine segment from the endocervical canal
      - Most women have normal CL
    - >30 wks: cervical shortening is normal in preparation for term labor (CL <25 mm is physiologic in asymptomatic women)
Effacement

- Starts at the internal cervical os and proceeds caudad over a period of weeks

- Relationship between the lower uterine segment and the axis of the cervical canal changes - Funneling
  - Trust Your Vaginal Ultrasound
Associated Findings

- **Funneling**: opening of the internal os on US
  - Associated with a short cervix
  - NOT an independent predictor
  - Funneling in high risk women associated with increased likelihood of PTB
  - Funneling without shortening has no clinical significance and does not increase risk
    - Usually related to lower uterine contraction

- **Debris or Sludge**
  - Suggest subclinical infection
  - Independent risk factor for histologic chorioamnionitis and microbial invasion of the amniotic cavity
  - Independent risk factor for PPROM and PTD
    - 71% of women with sludge delivered within 7d vs 16% without (Espinoza, 2005)
Sonographic Short Cervix

• Inverse relationship between CL and risk of premature delivery
  - Risk is strongest with history of PTB <32 wks

• Demonstrated in a variety in populations…
  - Absolute risk of PTB varies
  - Parity does not influence CL

• Not predictive of PTB with dilation >2 cm

5%ile - 20mm
10%ile - 25mm *
50%ile - 35mm
75%ile - 40mm
90%ile - 50mm

Varying results depending on the population studied...

- CL <25 mm consistently associated with an increased risk of PTB, but test performance varies by population

Table 3 Prediction of PTB by TVU in Different Populations of Pregnant Women

<table>
<thead>
<tr>
<th>Author</th>
<th>N</th>
<th>PTB (%)</th>
<th>PTB Defined (wks)</th>
<th>GA Studied (wks)</th>
<th>CL Cut-off (mm)</th>
<th>% Abn</th>
<th>Sens</th>
<th>Spec</th>
<th>PPV</th>
<th>NPV</th>
<th>RR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asymptomatic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Singleton: low-risk (Cross-sectional)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plams(^{13})</td>
<td>2915</td>
<td>4.3</td>
<td>&lt; 35</td>
<td>22-25</td>
<td>25</td>
<td>10</td>
<td>37</td>
<td>92</td>
<td>18</td>
<td>97</td>
<td>6.2*</td>
</tr>
<tr>
<td>Singleton: prior PTB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Owen(^{15})</td>
<td>183</td>
<td>26</td>
<td>&lt; 35</td>
<td>16-24</td>
<td>25</td>
<td>—</td>
<td>69</td>
<td>80</td>
<td>55</td>
<td>88</td>
<td>4.5</td>
</tr>
<tr>
<td>Singleton: prior cone biopsy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Berghe(^{23})</td>
<td>109</td>
<td>13</td>
<td>&lt; 35</td>
<td>16-24</td>
<td>&lt; 25</td>
<td>28</td>
<td>64</td>
<td>78</td>
<td>30</td>
<td>94</td>
<td>4.7</td>
</tr>
<tr>
<td>Singleton: mullerian anomaly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Airolid(^{24})</td>
<td>64</td>
<td>11</td>
<td>&lt; 35</td>
<td>14-24</td>
<td>&lt; 25</td>
<td>16</td>
<td>71</td>
<td>91</td>
<td>50</td>
<td>96</td>
<td>13.5</td>
</tr>
<tr>
<td>Singleton: prior D&amp;E</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visintine(^{25})</td>
<td>131</td>
<td>30</td>
<td>&lt; 35</td>
<td>14-24</td>
<td>&lt; 25</td>
<td>51</td>
<td>53</td>
<td>75</td>
<td>48</td>
<td>78</td>
<td>2.2</td>
</tr>
<tr>
<td>Twins</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goldenberg(^{26})</td>
<td>147</td>
<td>32</td>
<td>&lt; 35</td>
<td>22-24</td>
<td>≈ 25</td>
<td>18</td>
<td>30</td>
<td>88</td>
<td>54</td>
<td>74</td>
<td>3.2</td>
</tr>
<tr>
<td>Triplets</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guzman(^{27})</td>
<td>47</td>
<td>34</td>
<td>&lt; 32</td>
<td>15-20</td>
<td>≈ 25</td>
<td>8.5</td>
<td>25</td>
<td>100</td>
<td>100</td>
<td>72</td>
<td>NA</td>
</tr>
<tr>
<td>Symptomatic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Singleton with preterm labor</td>
<td>200</td>
<td>41</td>
<td>&lt; 37</td>
<td>19-36</td>
<td>&lt; 30</td>
<td>64</td>
<td>83</td>
<td>88</td>
<td>54</td>
<td>80</td>
<td>2.8</td>
</tr>
</tbody>
</table>

Abbreviations: PTB%, incidence of preterm birth; GA, gestational age; CL, cervical length; % Abn, percent abnormal; Sens, sensitivity; Spec, specificity; PPV, positive predictive value; NPV, negative predictive value; RR, relative risk compared to those with normal CL, except *there, comparison is for values above the 75th percentile; NA, Not Available.
Inverse relationship: CL and risk of PTB

Table 2. Predicted Probability of Preterm Delivery Before Week 35, by Cervical Length (mm) and Time of Measurement (Week of Pregnancy)

<table>
<thead>
<tr>
<th>Cervical Length (mm)</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
<th>21</th>
<th>22</th>
<th>23</th>
<th>24</th>
<th>25</th>
<th>26</th>
<th>27</th>
<th>28</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>69.8</td>
<td>68.7</td>
<td>67.5</td>
<td>66.3</td>
<td>65.2</td>
<td>64.0</td>
<td>62.7</td>
<td>61.5</td>
<td>60.2</td>
<td>59.0</td>
<td>57.7</td>
<td>56.4</td>
<td>55.1</td>
<td>53.8</td>
</tr>
<tr>
<td>5</td>
<td>62.5</td>
<td>61.3</td>
<td>60.0</td>
<td>58.7</td>
<td>57.5</td>
<td>56.2</td>
<td>54.9</td>
<td>53.6</td>
<td>52.2</td>
<td>50.9</td>
<td>49.6</td>
<td>48.3</td>
<td>47.0</td>
<td>45.7</td>
</tr>
<tr>
<td>10</td>
<td>54.6</td>
<td>53.3</td>
<td>52.0</td>
<td>50.7</td>
<td>49.4</td>
<td>48.1</td>
<td>46.7</td>
<td>45.4</td>
<td>44.1</td>
<td>42.8</td>
<td>41.6</td>
<td>40.3</td>
<td>39.0</td>
<td>37.8</td>
</tr>
<tr>
<td>15</td>
<td>46.5</td>
<td>45.2</td>
<td>43.9</td>
<td>42.6</td>
<td>41.3</td>
<td>40.1</td>
<td>38.8</td>
<td>37.6</td>
<td>36.3</td>
<td>35.1</td>
<td>33.9</td>
<td>32.8</td>
<td>31.6</td>
<td>30.5</td>
</tr>
<tr>
<td>20</td>
<td>38.6</td>
<td>37.3</td>
<td>36.1</td>
<td>34.9</td>
<td>33.7</td>
<td>32.5</td>
<td>31.4</td>
<td>30.3</td>
<td>29.2</td>
<td>28.1</td>
<td>27.0</td>
<td>26.0</td>
<td>25.0</td>
<td>24.0</td>
</tr>
<tr>
<td>25</td>
<td>31.2</td>
<td>30.1</td>
<td>29.0</td>
<td>27.9</td>
<td>26.9</td>
<td>25.8</td>
<td>24.8</td>
<td>23.9</td>
<td>22.9</td>
<td>22.0</td>
<td>21.1</td>
<td>20.3</td>
<td>19.4</td>
<td>18.6</td>
</tr>
<tr>
<td>30</td>
<td>24.7</td>
<td>23.7</td>
<td>22.8</td>
<td>21.8</td>
<td>21.0</td>
<td>20.1</td>
<td>19.3</td>
<td>18.5</td>
<td>17.7</td>
<td>16.9</td>
<td>16.2</td>
<td>15.5</td>
<td>14.8</td>
<td>14.2</td>
</tr>
<tr>
<td>35</td>
<td>19.1</td>
<td>18.3</td>
<td>17.5</td>
<td>16.8</td>
<td>16.1</td>
<td>15.4</td>
<td>14.7</td>
<td>14.1</td>
<td>13.4</td>
<td>12.8</td>
<td>12.2</td>
<td>11.7</td>
<td>11.2</td>
<td>10.6</td>
</tr>
<tr>
<td>40</td>
<td>14.6</td>
<td>13.9</td>
<td>13.3</td>
<td>12.7</td>
<td>12.1</td>
<td>11.6</td>
<td>11.1</td>
<td>10.6</td>
<td>10.1</td>
<td>9.6</td>
<td>9.2</td>
<td>8.7</td>
<td>8.3</td>
<td>7.9</td>
</tr>
<tr>
<td>45</td>
<td>11.0</td>
<td>10.5</td>
<td>10.0</td>
<td>9.6</td>
<td>9.1</td>
<td>8.7</td>
<td>8.3</td>
<td>7.9</td>
<td>7.5</td>
<td>7.2</td>
<td>6.8</td>
<td>6.5</td>
<td>6.2</td>
<td>5.9</td>
</tr>
<tr>
<td>50</td>
<td>8.2</td>
<td>7.8</td>
<td>7.4</td>
<td>7.1</td>
<td>6.7</td>
<td>6.4</td>
<td>6.1</td>
<td>5.8</td>
<td>5.5</td>
<td>5.2</td>
<td>5.0</td>
<td>4.7</td>
<td>4.5</td>
<td>4.3</td>
</tr>
<tr>
<td>55</td>
<td>6.0</td>
<td>5.7</td>
<td>5.5</td>
<td>5.2</td>
<td>4.9</td>
<td>4.7</td>
<td>4.5</td>
<td>4.3</td>
<td>4.0</td>
<td>3.8</td>
<td>3.7</td>
<td>3.5</td>
<td>3.3</td>
<td>3.1</td>
</tr>
<tr>
<td>60</td>
<td>4.4</td>
<td>4.2</td>
<td>4.0</td>
<td>3.8</td>
<td>3.6</td>
<td>3.4</td>
<td>3.3</td>
<td>3.1</td>
<td>3.0</td>
<td>2.8</td>
<td>2.7</td>
<td>2.5</td>
<td>2.4</td>
<td>2.3</td>
</tr>
</tbody>
</table>

Cervical Insufficiency

- Term used to describe a presumed structural weakness of cervical tissue
  - Present in women with a hx of painless cervical dilation leading to birth in T2 without contractions or labor
  - Associated with sonographic evidence of a short cervix

- Proposed causes
  - Surgical trauma: conization, LEEP, overdilation
  - Obstetrical laceration
  - Congenital müllerian anomalies
  - Deficiencies in cervical collagen and elastin
  - In utero DES exposure
Rationale behind cerclages

• Improve the presumed structural deficit by mechanically increasing the tensile strength of the cervix

• HOWEVER…
  ▪ Not universally successful in women with a hx of cervical insufficiency or short cervix on US
  ▪ Biochemical agents (ie: progesterone) show some benefit

• “It is likely a small percentage of T2 births are caused only by congenital/structural weakness of the cervix and can be treated with a cerclage.” (UpToDate)
  ▪ Most cases of T2 deliveries are probably caused by other factors
    • decidual inflammation/infection
    • hemorrhage
    • uterine over-distension
PROPOSED indications for cervical cerclage

• Poor obstetrical history
  ▪ elective cerclage at the end of T1 (12-14wks) to prevent occurrence of early preterm birth

• Cervical shortening on ultrasound
  ▪ urgent ultrasound indicated cerclage

• Advanced cervical dilation on exam
  ▪ emergent/rescue cerclage
Contraindications

- Fetal anomaly incompatible with life
- Intrauterine infection
- Active bleeding
- Active preterm labor
- Premature rupture of membranes
- Fetal demise

- Prolapsing membranes - RELATIVE CI
  - Risk of iatrogenic rupture of membranes >50%
  - May try steep Trendelenburg, nitroglycerin, retrofilling maternal bladder, traction sutures on cervix, reducing with Foley bulb, amnioreduction
Complications

- Contractions post-procedure
  - Common, not highly suggestive of increased risk of PTB
- PROM
  - 1-18% with elective cerclage vs 3 to 65% with advanced dilation and prolapsing membranes
- Chorioamnionitis
  - 1-6% elective cerclage vs 30-35% non-elective
- Suture migration
  - 3-13%
  - Often late in gestation and of no clinical significance
  - If early, studies suggest not to repeat procedure - worse outcomes
- Cervical dystocia in labor
  - <5%
- Other rare complications:
  - Excessive bleeding, maternal sepsis, fistula formation
Timing

- NOT WELL ESTABLISHED

- ???

- Considerations
  - Risk of miscarriage is high due to aneuploidy in early-mid T1
  - Waiting until end of T1 permits evaluation for some fetal anomalies, FTS or CVS
  - Delivery is likely to have a reasonably good outcome in T3
  - 24-28 wks- CONTROVERSIAL
    - High neonatal morbidity/mortality
    - Most avoid placement at this age given risk of iatrogenic ROM
Preoperative issues

- Ultrasound examination
  - Confirm viability
  - R/o identifiable structural anomalies (ie: anencephaly)

- First Trimester Screen

- FHR pre-procedure

- Consider evaluation and complete treatment of vaginal infections (STIs, BV)

- R/o PPROM, PTL, Abruption, Subclinical infection
  - May want to observe patient 24 hrs prior to non-elective cerclage placement

- Anesthesia: regional or general

- CONTROVERSIAL: amniocentesis to evaluate for subclinical infections
Procedures

• Transvaginal
  ▪ McDonald
  ▪ Shirodkar

  • Secondary analysis (n=277) using published data comparing the two methods in women with singleton pregnancy and short cervix on US showed no difference in PTB <33wks (20% vs 23%)


• Transabdominal
  ▪ Laparotomy
  ▪ Laparoscopy
Transvaginal - McDonald

- McDonald cerclage
  - Pursestring suture
  - No dissection
  - Passes through stroma
  - Not placed as close to internal os as Shirodkar
  - Most common type of cerclage used
Transvaginal - Shirodkar

- Shirodkar cerclage
  - Dissection of the bladder anteriorly and rectum posteriorly
  - Placed at the level of the internal os
  - Does not pass through cervical stroma
  - Often necessitates OR to remove...
  - May keep in situ for next pregnancy
    - C/S
    - Inflammation / subfertility / risk of erosion
Transabdominal cerclages

- **Recommended** for women having cervical insufficiency and 2+ failed transvaginal cerclages or in whom transvaginal cerclage not possible
  - Extreme shortening
  - Scarring/Laceration of cervix
- By laparotomy or laparoscopy
- Suture at the cervicoisthmic junction

- **TIMING** - no studies
  - Prior to conception
    - Less blood loss
    - No risk ROM
    - Theoretic risk- subfertility
  - 11-14 wks GA
- Delivery - elective CS 37-39wks
  - May/may not remove cerclage

- Advantages
  - More proximal to internal os
  - Decreased risk of suture migration
  - Absence of foreign body in vagina
  - May leave in for subsequent pregnancies
- Disadvantages
  - Potential need for 2 surgeries during pregnancy if cerclage must be removed
  - More morbidity vs vaginal
Transabdominal cerclages

• Management of fetal demise
  - T1 - Dilation and Curettage safe
  - T2 - not clear.... ?removal of cerclage through colpotomy

• Outcomes
  - No prospective studies...
  - Systematic review evaluating pregnancy in women with prior PTD despite transvaginal cerclage (n=157)
    - Lower likelihood of PTD <24 wks with transabdominal cerclage (6 vs 12.5%)

Postoperative issues

- FHR post procedure
- Bed rest...
- Avoid intercourse (no evidence)
- Tocolysis - no high quality evidence for this...
  - Indomethacin decreases post procedure-induced rise in PG level
  - BUT a retrospective cohort study found no evidence that use of indomethacin reduced the number of subsequent PTB
- Ultrasound evaluation
  - Length >10-18mm between closed cervix proximal to cerclage is desirable (better predictor than overall CL)
- FFN- should wait 4 wks... +ve result less reliable in this setting!
- Remove cerclages in PTL or with infection, 37 wks with vaginal cerclage
The evidence for/against cervical cerclages

- CASES...
  - What would you do?
  - **Disclaimer:** I am not a cerclage expert! Not all trials are reviewed here...
CASES

- G2P0@11 wks, 2 previous T2 losses
  - Elective cerclage?
  - Early PV exams?
  - Serial TVU CL?
    - How often, when?
    - Threshold?
  - Routine care?
  - Progesterone

- G2P1@10wks, previous PTB at 26wks (no apparent cause)
  - Elective cerclage?
  - Early PV exams?
  - Serial TVU CL?
  - Routine care?
  - Progesterone?
History indicated cerclage -
MRC/RCOG Multicentre RCT

<table>
<thead>
<tr>
<th>Subgroups</th>
<th>Delivery before</th>
<th>Miscarriage, stillbirth or death following livebirth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>33 completed weeks</td>
<td>37 completed weeks</td>
</tr>
<tr>
<td></td>
<td>$n$</td>
<td>(%)</td>
</tr>
<tr>
<td>All cases</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cerclage ($n=647$)</td>
<td>83</td>
<td>(13)</td>
</tr>
<tr>
<td>No cerclage ($n=645$)</td>
<td>110</td>
<td>(17)</td>
</tr>
<tr>
<td>Singletons, 1 STM or PTD (no previous cone biopsy or cervical amputation)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cerclage ($n=284$)</td>
<td>39</td>
<td>(14)</td>
</tr>
<tr>
<td>No cerclage ($n=270$)</td>
<td>45</td>
<td>(17)</td>
</tr>
<tr>
<td>Singletons, 2 STM or PTD (no previous cone biopsy or cervical amputation)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cerclage ($n=103$)</td>
<td>12</td>
<td>(12)</td>
</tr>
<tr>
<td>No cerclage ($n=93$)</td>
<td>13</td>
<td>(14)</td>
</tr>
<tr>
<td>Singletons, 3 STM or PTD (no previous cone biopsy or cervical amputation)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cerclage ($n=54$)</td>
<td>8</td>
<td>(15)*</td>
</tr>
<tr>
<td>No cerclage ($n=53$)</td>
<td>17</td>
<td>(32)</td>
</tr>
<tr>
<td>Singletons: cone biopsy or cervical amputation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cerclage ($n=70$)</td>
<td>13</td>
<td>(19)</td>
</tr>
<tr>
<td>No cerclage ($n=68$)</td>
<td>15</td>
<td>(22)</td>
</tr>
<tr>
<td>Singletons: other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cerclage ($n=124$)</td>
<td>10</td>
<td>(8)</td>
</tr>
<tr>
<td>No cerclage ($n=145$)</td>
<td>15</td>
<td>(10)</td>
</tr>
<tr>
<td>Twins</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cerclage ($n=12$)</td>
<td>1</td>
<td>(8)</td>
</tr>
<tr>
<td>No cerclage ($n=16$)</td>
<td>5</td>
<td>(31)</td>
</tr>
</tbody>
</table>

History indicated cerclage

<table>
<thead>
<tr>
<th></th>
<th>Oral tocolytics</th>
<th>Induction of labour</th>
<th>Caesarean delivery</th>
<th>Delivery before 33 completed weeks</th>
<th>Miscarriage, stillbirth or death following livebirth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( n ) (( % ))</td>
<td>( n ) (( % ))</td>
<td>( n ) (( % ))</td>
<td>( n ) (( % ))</td>
<td>( n ) (( % ))</td>
</tr>
<tr>
<td>MRC/RCOG</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cerclage (( n = 647 ))</td>
<td>215 (33)</td>
<td>107 (17)</td>
<td>95 (15)</td>
<td>83 (13)</td>
<td>55 (9)</td>
</tr>
<tr>
<td>No cerclage (( n = 645 ))</td>
<td>169 (26)</td>
<td>98 (15)</td>
<td>82 (13)</td>
<td>110 (17)</td>
<td>68 (11)</td>
</tr>
<tr>
<td>Rush et al. (1984)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cerclage (( n = 96 ))</td>
<td>12 (13)</td>
<td>9 (9)</td>
<td>19 (20)</td>
<td>12 (13)</td>
<td>9 (9)</td>
</tr>
<tr>
<td>No cerclage (( n = 98 ))</td>
<td>8 (8)</td>
<td>8 (8)</td>
<td>18 (18)</td>
<td>10 (10)</td>
<td>9 (9)</td>
</tr>
<tr>
<td>Lazar et al. (1984)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cerclage (( n = 268 ))</td>
<td>127 (47)</td>
<td>49 (18)</td>
<td>33 (12)</td>
<td>4 (1)</td>
<td>2 (1)</td>
</tr>
<tr>
<td>No cerclage (( n = 238 ))</td>
<td>73 (31)</td>
<td>39 (16)</td>
<td>22 (9)</td>
<td>1 (&lt;1)</td>
<td>1 (&lt;1)</td>
</tr>
<tr>
<td>Dor et al. (1982)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cerclage (( n = 25 ))</td>
<td>NS</td>
<td>NS</td>
<td>9 (36)</td>
<td>6 (24)</td>
<td>7 (28)</td>
</tr>
<tr>
<td>No cerclage (( n = 25 ))</td>
<td>7 (28)</td>
<td>5 (20)</td>
<td></td>
<td></td>
<td>6 (24)</td>
</tr>
</tbody>
</table>

- Only MRC/RCOG trial showed a statistically significant difference in prevention PTB<33 wks...

*Br J Obstet Gynecol 100:516 (1993)*
Cochrane Review

- 4 trials (n=2100) compared prophylactic cerclage and no cerclage (history indicated… only one used TVU)
  - No overall reduction in pregnancy loss and PTD <37, 32, 28wks
  - Cerclage associated with mild pyrexia, increased tocolytic use and hospital admission but no serious morbidity

Cervical stitch (cerclage) for preventing pregnancy loss in women (2010)
CASES

- G1P0 at 19wks with CL 25mm on routine US (no symptoms)
  - Urgent cerclage?
  - Serial TVU CL?
    - Threshold?
  - FFN?
  - Review gyne hx for additional risk factors?
    - And then what?

- G2P1@22 wks with CL 20mm, current twin pregnancy, previous term delivery
  - Urgent cerclage?
  - FFN?
Short Cervix on US

- **Meta-analysis (Berghella et al, 2005)**
  - 4 randomized trials (n=607) of pregnancies screened with cervical US and randomly assigned to cerclage or no cerclage if cervix was short (<15-25mm) at 14-27 wks

  - Overall, no significant reduction in PTB <35 wks (RR 0.84, CI 0.67-1.06) with mean GA 35 wks of both groups

  - Cerclage did significantly reduce the risk of PTB in
    - All singleton pregnancies (RR 0.74 CI 0.57-0.96)
    - Singleton pregnancies with prior PTB (RR 0.61 CI 0.40-0.92)
    - Singleton pregnancies with T2 loss (RR 0.57 CI 0.33-0.99)

  - Cerclage in twin pregnancies significantly increased risk of PTB 75 vs 36% (RR 2.15, CI 1.15-4.01)

<table>
<thead>
<tr>
<th>Population</th>
<th>Outcome</th>
<th>Cerrage (%)</th>
<th>No Cerrage (%)</th>
<th>RR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>PTB &lt; 37 wk</td>
<td>133/305 (43.6)</td>
<td>157/302 (52.0)</td>
<td>0.84 (0.71–0.99)</td>
</tr>
<tr>
<td></td>
<td>PTB &lt; 35 wk</td>
<td>89/305 (29.2)</td>
<td>105/302 (34.8)</td>
<td>0.84 (0.67–1.06)</td>
</tr>
<tr>
<td></td>
<td>PTB &lt; 34 wk</td>
<td>80/305 (26.2)</td>
<td>90/302 (29.8)</td>
<td>0.88 (0.68–1.14)</td>
</tr>
<tr>
<td></td>
<td>PTB &lt; 32 wk</td>
<td>65/305 (21.3)</td>
<td>74/302 (24.5)</td>
<td>0.87 (0.65–1.16)</td>
</tr>
<tr>
<td></td>
<td>PTB &lt; 28 wk</td>
<td>44/305 (14.4)</td>
<td>43/302 (14.2)</td>
<td>1.02 (0.69–1.49)</td>
</tr>
<tr>
<td></td>
<td>PTB &lt; 24 wk</td>
<td>14/305 (4.6)</td>
<td>12/302 (4.0)</td>
<td>1.15 (0.53–2.49)</td>
</tr>
<tr>
<td></td>
<td>GA at delivery</td>
<td>35.1 ± 5.3</td>
<td>34.8 ± 5.6</td>
<td>P = .51</td>
</tr>
<tr>
<td></td>
<td>PPROM</td>
<td>48/305 (15.7)</td>
<td>50/302 (16.6)</td>
<td>0.95 (0.66–1.35)</td>
</tr>
<tr>
<td></td>
<td>Perin mort</td>
<td>36/335 (10.7)</td>
<td>27/333 (8.1)</td>
<td>1.31 (0.82–2.10)</td>
</tr>
</tbody>
</table>

**Singletons**

<table>
<thead>
<tr>
<th>Population</th>
<th>Outcome</th>
<th>Cerrage (%)</th>
<th>No Cerrage (%)</th>
<th>RR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>PTB &lt; 35 wk</td>
<td>69/278 (24.8)</td>
<td>93/274 (33.9)</td>
<td>0.74 (0.57–0.96)</td>
</tr>
<tr>
<td></td>
<td>Perin mort</td>
<td>22/278 (7.9)</td>
<td>23/274 (8.4)</td>
<td>0.94 (0.54–1.64)</td>
</tr>
<tr>
<td>No risks for PTB</td>
<td>PTB &lt; 35 wk</td>
<td>31/121 (25.6)</td>
<td>38/114 (33.3)</td>
<td>0.76 (0.52–1.15)</td>
</tr>
<tr>
<td></td>
<td>Perin mort</td>
<td>10/121 (8.3)</td>
<td>8/114 (7.0)</td>
<td>1.18 (0.48–2.88)</td>
</tr>
<tr>
<td>No prior PTB</td>
<td>PTB &lt; 35 wk</td>
<td>44/171 (20.6)</td>
<td>54/173 (31.2)</td>
<td>0.84 (0.60–1.17)</td>
</tr>
<tr>
<td></td>
<td>Perin mort</td>
<td>13/171 (7.6)</td>
<td>14/173 (8.1)</td>
<td>0.94 (0.46–1.90)</td>
</tr>
<tr>
<td>Prior PTB &lt; 37 wk</td>
<td>PTB &lt; 37 wk</td>
<td>41/107 (38.3)</td>
<td>61/101 (60.4)</td>
<td>0.63 (0.48–0.85)</td>
</tr>
<tr>
<td></td>
<td>PTB &lt; 35 wk</td>
<td>25/107 (23.4)</td>
<td>39/101 (38.6)</td>
<td>0.61 (0.40–0.92)</td>
</tr>
<tr>
<td></td>
<td>PTB &lt; 34 wk</td>
<td>23/107 (21.5)</td>
<td>32/101 (31.7)</td>
<td>0.68 (0.43–1.08)</td>
</tr>
<tr>
<td></td>
<td>PTB &lt; 32 wk</td>
<td>17/107 (15.9)</td>
<td>28/101 (27.7)</td>
<td>0.58 (0.34–0.98)</td>
</tr>
<tr>
<td></td>
<td>PTB &lt; 28 wk</td>
<td>12/107 (11.2)</td>
<td>17/101 (16.8)</td>
<td>0.66 (0.34–1.29)</td>
</tr>
<tr>
<td></td>
<td>PTB &lt; 24 wk</td>
<td>4/107 (3.7)</td>
<td>7/101 (6.9)</td>
<td>0.54 (0.18–1.67)</td>
</tr>
<tr>
<td></td>
<td>Perin mort</td>
<td>9/107 (8.4)</td>
<td>14/101 (13.8)</td>
<td>0.62 (0.29–1.30)</td>
</tr>
<tr>
<td>Prior STL 16–23 wk</td>
<td>PTB &lt; 35 wk</td>
<td>15/68 (22.1)</td>
<td>20/51 (39.2)</td>
<td>0.57 (0.33–0.99)</td>
</tr>
<tr>
<td></td>
<td>Perin mort</td>
<td>4/68 (5.9)</td>
<td>5/51 (9.8)</td>
<td>0.62 (0.19–2.06)</td>
</tr>
<tr>
<td>Cone biopsy</td>
<td>PTB &lt; 35 wk</td>
<td>10/28 (35.7)</td>
<td>11/36 (30.6)</td>
<td>1.18 (0.57–2.45)</td>
</tr>
<tr>
<td></td>
<td>Perin mort</td>
<td>3/28 (10.7)</td>
<td>2/36 (5.6)</td>
<td>1.46 (0.34–6.32)</td>
</tr>
<tr>
<td>&gt; 1 D&amp;E</td>
<td>PTB &lt; 35 wk</td>
<td>19/66 (28.8)</td>
<td>23/65 (35.4)</td>
<td>0.91 (0.57–1.47)</td>
</tr>
<tr>
<td></td>
<td>Perin mort</td>
<td>5/66 (7.6)</td>
<td>9/65 (13.8)</td>
<td>0.61 (0.23–1.62)</td>
</tr>
<tr>
<td>GAShortCL &lt; 20 wk</td>
<td>PTB &lt; 35 wk</td>
<td>16/54 (29.6)</td>
<td>21/52 (40.4)</td>
<td>0.68 (0.41–1.15)</td>
</tr>
<tr>
<td></td>
<td>Perin mort</td>
<td>6/54 (11.1)</td>
<td>10/52 (19.2)</td>
<td>0.61 (0.23–1.60)</td>
</tr>
<tr>
<td>GAShortCL ≥ 20 wk</td>
<td>PTB &lt; 35 wk</td>
<td>53/224 (23.7)</td>
<td>70/222 (31.5)</td>
<td>0.75 (0.55–1.02)</td>
</tr>
<tr>
<td></td>
<td>Perin mort</td>
<td>16/224 (7.1)</td>
<td>16/222 (7.2)</td>
<td>0.95 (0.50–1.81)</td>
</tr>
<tr>
<td>CL &lt; 25 mm</td>
<td>PTB &lt; 35 wk</td>
<td>69/274 (25.2)</td>
<td>93/273 (34.1)</td>
<td>0.75 (0.58–0.97)</td>
</tr>
<tr>
<td></td>
<td>Perin mort</td>
<td>22/274 (8.0)</td>
<td>21/273 (7.7)</td>
<td>0.96 (0.55–1.67)</td>
</tr>
<tr>
<td>CL ≤ 15 mm</td>
<td>PTB &lt; 35 wk</td>
<td>54/182 (29.7)</td>
<td>71/183 (38.8)</td>
<td>0.77 (0.58–1.02)</td>
</tr>
<tr>
<td></td>
<td>Perin mort</td>
<td>18/182 (9.9)</td>
<td>17/183 (9.3)</td>
<td>1.07 (0.59–1.97)</td>
</tr>
<tr>
<td>FUN/CL &lt; 25 mm</td>
<td>PTB &lt; 35 wk</td>
<td>69/250 (27.6)</td>
<td>92/254 (36.2)</td>
<td>0.77 (0.60–1.00)</td>
</tr>
<tr>
<td></td>
<td>Perin mort</td>
<td>22/250 (8.8)</td>
<td>23/254 (9.1)</td>
<td>0.99 (0.57–1.72)</td>
</tr>
<tr>
<td>Twins</td>
<td>PTB &lt; 35 wk</td>
<td>18/24 (75.0)</td>
<td>9/25 (36.0)</td>
<td>2.15 (1.15–4.01)</td>
</tr>
<tr>
<td></td>
<td>Perin mort</td>
<td>11/48 (22.9)</td>
<td>3/50 (6.0)</td>
<td>2.66 (0.83–8.54)</td>
</tr>
</tbody>
</table>
### Fig. 2. Meta-analysis of cerclage for preterm birth at less than 35 weeks: total population.

<table>
<thead>
<tr>
<th>Study or sub-category</th>
<th>Treatment n/N</th>
<th>Control n/N</th>
<th>RR (fixed) 95% CI</th>
<th>Weight %</th>
<th>RR (fixed) 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Althuisius AJOG 2001</td>
<td>4/27</td>
<td>10/25</td>
<td>9.83 [0.13 - 1.03]</td>
<td>0.37</td>
<td>0.84 [0.67 - 1.06]</td>
</tr>
<tr>
<td>Rust AJOG 2001</td>
<td>41/120</td>
<td>42/121</td>
<td>39.61 [0.69 - 1.39]</td>
<td>0.98</td>
<td>0.97 [0.56 - 1.67]</td>
</tr>
<tr>
<td>Berghella AJOG 2004</td>
<td>14/31</td>
<td>14/30</td>
<td>13.48 [0.56 - 1.67]</td>
<td>0.76</td>
<td>37.08 [0.51 - 1.15]</td>
</tr>
<tr>
<td>To Lancet 2004</td>
<td>30/127</td>
<td>39/126</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total (95% CI)</strong></td>
<td><strong>305</strong></td>
<td><strong>302</strong></td>
<td></td>
<td><strong>100.00</strong></td>
<td><strong>0.84 [0.67 - 1.06]</strong></td>
</tr>
<tr>
<td>Total events: 89 (Treatment), 105 (Control)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for heterogeneity: Chi² = 3.73, df = 3 (P= 0.29), I² = 19.5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for overall effect: Z = 1.48 (P= 0.14)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Fig. 3. Meta-analysis of cerclage for preterm birth at less than 35 weeks: singleton gestations in women with a prior preterm birth at 16–36 weeks.

<table>
<thead>
<tr>
<th>Study or sub-category</th>
<th>Treatment n/N</th>
<th>Control n/N</th>
<th>RR (fixed) 95% CI</th>
<th>Weight %</th>
<th>RR (fixed) 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Althuisius AJOG 2001</td>
<td>0/14</td>
<td>6/12</td>
<td>17.10 [0.00 - 1.07]</td>
<td>0.07</td>
<td>0.75 [0.40 - 1.40]</td>
</tr>
<tr>
<td>Rust AJOG 2001</td>
<td>13/53</td>
<td>16/49</td>
<td>40.83 [0.40 - 1.40]</td>
<td>0.75</td>
<td>0.70 [0.33 - 1.46]</td>
</tr>
<tr>
<td>Berghella AJOG 2004</td>
<td>7/29</td>
<td>9/17</td>
<td>23.33 [0.33 - 1.46]</td>
<td>0.70</td>
<td>18.75 [0.27 - 1.77]</td>
</tr>
<tr>
<td>To Lancet 2004</td>
<td>5/21</td>
<td>8/23</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total (95% CI)</strong></td>
<td><strong>107</strong></td>
<td><strong>101</strong></td>
<td></td>
<td><strong>100.00</strong></td>
<td><strong>0.61 [0.40 - 0.92]</strong></td>
</tr>
<tr>
<td>Total events: 25 (Treatment), 39 (Control)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for heterogeneity: Chi² = 3.06, df = 3 (P = 0.36), I² = 1.9%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for overall effect: Z = 2.34 (P = 0.02)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Short Cervix on US

- **Low risk women**
  - Meta-analysis (Berghella et al, 2005)
    - No statistical difference PTB <35 wks (31/121- 25.6% versus 33/114- 33.3%) RR 0.76 (0.52-1.15)
  - Retrospective cohort (case-control) study
    - Women with cx ≤25 mm on TVU between 16 and 25 wks and no history of PTB or midtrimester losses
    - 31 underwent cerclage (had statistically significant shorter cervix and younger GA) and 36 managed with rest alone
    - No statistical difference in GA at delivery (37.6 ± 3.6 vs 38.5 ±2.1) or PTB <35 wks (5/31 versus 2/36)
    - Persisted after controlling for gestational age and initial CL
CASES

- G2P1@22wks, with previous PTB at 26wks (no cause)
  - Serial TVU CL: Cervix 24mm at 22 wks
    - Urgent cerclage?
    - Steroids at 24+ wks?
    - FFN?
• **Previous PTB**
  
  • Meta-analysis (Berghella et al)
    - Less PTB <35 wks in singleton pregnancies with prior PTB (RR 0.61 CI 0.40-0.92)


  • “VUCT”: 302 women with previous PTB <34 wks randomized to cerclage if CL <25mm
    - No statistical difference in PTD <35 wks (32% with cerclage vs 42% without, p=.09, OR 0.67 CI 0.42-1.07)
    - Less PTD <35 wks if cervix <15mm, no effect if cervix 15-24mm (OR 0.23 CI 0.08-0.66, p=.006)
    - Planned secondary analysis:
      - Significantly less previable birth <24wks (21 vs 9%) and perinatal mortality (16 vs 8.8%)

Survival curves of women who remained undelivered across gestation

Survival curves of women whose cervical length at randomization was <15 mm

Short Cervix on US

- High risk women for cervical insufficiency
  - “CIPRACT”, final analysis
    - Women with risk factors for cervical insufficiency (previous PTB <34 wks and clinical criteria for cervical insufficiency, PPROM<32 wks, hx of conization, DES exposure or uterine anomaly) <27wks GA
    - N=35, serial TVU, randomized to cerclage if CL<25mm or bedrest
  - PTB <34wks 0/19 with cerclage, 7/16 (44%) with bed rest only
  - Mean GA at delivery 37.9 ± 1.2 with cerclage vs 33.1 ± 6.4
  - No significant difference in neonatal survival, but higher compound neonatal morbidity in bed rest group

CASES

• Management of high risk women
  ▪ Serial TVU for CL?
    • When, how often?
    • Threshold for cerclage?
  ▪ Elective cerclage in T1?
History indicated vs US indicated cerclage

- Similarly effective in prevention of PTB

- Most studies show less procedures with ultrasound surveillance
  - Retrospective cohorts, matched case control studies
  - 36-60% require a cerclage (when CL <15-25mm) in monitored by US
History vs ultrasound indicated cervical cerclage

• “CIPRACT”, preliminary results
  - Women with previous PTB <34 wks and hx of cervical insufficiency or PPROM<32 wks without preceding contractions
  - Prospectively randomized to prophylactic cerclage at 10-12 wks (n=23) or observation (n=44) with q2wk TVU for CL until 27wks
  - 18/44 (41%) had CL<25mm and were randomized to bed rest (8) or therapeutic cerclage (10)
    - Prophylactic cerclage 3/23 (13%) PTD <34 wks
    - Observation group 6/44 (13.6%) PTD<34 wks
      - Bed rest: 5/8 (62.5%) PTD, GA at delivery 32 wks (20-38.1)
      - Therapeutic cerclage: 1/10 (10%) PTD, GA at delivery 37 wks (15.3-39.7)
    - No difference in neonatal survival

<table>
<thead>
<tr>
<th>Author</th>
<th>Study Design</th>
<th>Inclusion Criteria</th>
<th>Indications for US-Indicated Cerclage</th>
<th>Rate of PTB (History versus US-Indicated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guzman et al, 1998*</td>
<td>Retrospective cohort</td>
<td>Singleton pregnancies, at risk for pregnancy loss and/or early spontaneous PTB</td>
<td>CL &lt; 20 mm at &lt; 24 wk</td>
<td>29/81 (35.8%) vs 21/57 (36.8%); p = 1.000</td>
</tr>
<tr>
<td>Althuisius et al, 2000†</td>
<td>Randomized trial</td>
<td>Singleton pregnancies, spontaneous PTB (15–34 wk) with painless dilatation or PPROM not preceded by contractions</td>
<td>CL &lt; 25 mm at &lt; 27 wk</td>
<td>3/23 (13.0%) vs 1/36 (2.8%); p = 0.289</td>
</tr>
<tr>
<td>To et al, 2002†</td>
<td>Retrospective cohort</td>
<td>Singleton pregnancies, history of spontaneous PTB (16–33 wk) or STL</td>
<td>CL ≤ 25 mm at &lt; 24 wk</td>
<td>6/41 (14.6%) vs 9/43 (20.9%); p = 0.640</td>
</tr>
<tr>
<td>Berghella et al, 2002§</td>
<td>Retrospective cohort</td>
<td>Singleton pregnancies, history of spontaneous PTB or STL</td>
<td>CL &lt; 25 mm, funnelling &gt; 25% at ≤ 24 wk</td>
<td>15/66 (23%) vs 33/111 (30%); p = 0.3</td>
</tr>
<tr>
<td>Higgins et al, 2004‖</td>
<td>Prospective cohort</td>
<td>History of spontaneous PTB (20–36 wk) or STL, cervix torn, previous forced dilatation, or cone biopsy</td>
<td>CL &lt; 25 mm at ≤ 24 wk</td>
<td>18/97 (18.6%) vs 1/38 (2.6%); p = 0.034</td>
</tr>
<tr>
<td>Groom et al, 2004*</td>
<td>Case-controlled</td>
<td>History of spontaneous PTB, STL, or cervical surgery</td>
<td>CL ≤ 15 mm, progressive shortening to ≤ 25 mm, or funnelling &gt; 50% before the third trimester</td>
<td>15/39 (38.5%) vs 16/39 (41.0%); p = 1.000</td>
</tr>
</tbody>
</table>

*PTB was defined as delivery < 37 weeks, †< 34 weeks, §< 35 weeks, ‖and < 30 weeks. PTB, preterm birth; US, ultrasound; PPROM, preterm premature rupture of membranes; STL, second trimester loss.
History vs ultrasound indicated cervical cerclage

- **CIRCLE Trial**
  - RCT of 248 women <24wks with history of 1+ prior PTB at 15-34wks
  - History indicated cerclage (based on clinical preference before allocation) vs ultrasound indicated when CL <20mm (scans q2wks from entry to 24wks)
    - PTD 24-34 wks similar in both groups (19/125-15% history indicated vs 18/122-15% US indicated) RR 0.97 (CI 0.54-1.76)
    - Patients in US arm received significantly MORE cerclages (32% vs 19% RR 1.66 CI 1.07-2.47) and progesterone

• G2P1 @10 wks, cerclage in previous pregnancy (for??), went on to have term delivery
  - Cerclage?
    - Transvaginal or abdominal
  - Serial TVU for CL?
• Future pregnancy and previous cerclage
  - Risk of recurrent cervical insufficiency is 10-30%
  - 85% of women with previous PTB deliver at term!
  - 60% of women with hx of PTB or recurrent late miscarriages maintain CL >25mm and had low rates or recurrent PTB/loss without cerclage!

  - Most are offered repeat elective cerclage... BUT

  - If diagnosis of cervical insufficiency is unsure, may follow with TVU-CL
CASES

- G2P0, 2 previous T2 losses, @22 wks and CL of 18mm and complete placenta previa
  - Cerclage?
  - Bed rest?
Other specific circumstances

- Placenta previa and cervical insufficiency
  - Stable previa is not a CI to elective cerclage
    - Reduced risk of PTD <34 wks - RR 0.34 (CI 0.14-0.83)

UpToDate
CASES

- G3P0 @32 wks, PPROM, no signs of chorioamnionitis
  - Had elective cerclage at 11wks
    - Remove cerclage now?
    - Expectant management?
      - When would you remove the cerclage?

- G3P0 @25 wks, PPROM, no signs of chorioamnionitis
  - Had elective cerclage at 11wks
    - Remove cerclage now?
    - Expectant management?
      - When would you remove the cerclage?
Other specific circumstances

• PPROM
  ▪ Cerclage removal controversial
    • earlier delivery
    • foreign body may increase risk of infections

▪ Several observational studies - inconsistent results
  • GA at PROM is most important determinant of neonatal outcome

▪ Based on limited data, UpToDate recommends removing cerclage if there is any evidence of chorioamnionitis or GA >32 weeks
• G2P0, 2 previous T2 losses, @22 wks
  ▪ 3cm dilated with bulging membranes
    • Emergency cerclage?
    • Bed rest?
    • TVU for CL? *

• G1P0 @25 wks
  ▪ 5 cm dilated with prolapsing membranes
    • Emergency cerclage?
    • Betamethasone?
    • Bed rest?
    • Amniocentesis?
Emergency cerclages

- LIMITED EVIDENCE!!!
- Better than bedrest according to cohort studies

- Prospective randomized trial (n=23) to cerclage + indomethocin (13) vs bed rest alone (10) in women with membranes at/beyond dilated external os <27 wks
  - Non significant difference in GA at delivery (29.9±8.4 vs 25.9±4.3) but less PTB <34 wks with cerclage (7/13 vs 10/10)
  - No difference in neonatal survival, less compound mortality in cerclage group

- Consecutive women 20-27wks with dilation >4cm, treated at the discretion of their physician (22 cerclages, 15 bed rest)
  - Later GA at delivery with cerclage (33± 4.4 vs 28.8±4.4) p=.001
  - No difference in neonatal survival
• G4P0 @22 wks, history-indicated cerclage at 11 wks now with TVU CL of 14mm
  - Reinforcing Cerclage?
  - Bed rest/ Expectant management
Other specific circumstances

- Reinforcing cerclage

  - Retrospective study of 24 women with history-indicated cerclage who subsequently developed a short cervix <25mm on TVU and received either reinforcing cerclage or expectant management

  - Reinforcing cerclage group delivered earlier (20.8 vs 32.9 wks, \( p=0.002 \)) with 80% rate of PTB <24 wks vs 16%

CASES

- G4P1 @ 10 wks
  - 3 previous T2 losses including the last one at 23 wks despite McDonald cerclage at 12 wks
    - Elective cerclage?
      - Transvaginal
        - Shirodkar
        - McDonald
      - Abdominal
        - Laparotomy
        - Laparoscopy
    - Serial TVU for CL?
    - Off work, bed rest?
• **REMEMBER**
  - A short cervix can be from many causes...
  - *Cervical insufficiency* is likely when
    - There is a history of a cervical abnormality or injury AND
    - A prior second trimester loss AND
    - A short cervix AND
    - No evidence of inflammation (membrane separation, edema, intrauterine debris) or hemorrhage
Review

- **Candidates for cerclage…**
  - High risk women with singleton pregnancies... especially with CL <15-25mm
    - Previous PTB (mostly if unexplained) or T2 losses (especially 3 or more)
    - Some evidence for uterine anomaly, DES exposure, multiple late abortions

- **Avoid cerclage for…**
  - Short cervix but no history of PTB or cervical surgery
  - Prior PTB but cervical length remaining >25mm
  - Multiple pregnancy and short cervix
References

• UptoDate
  ▪ Cervical insufficiency
  ▪ Transvaginal cervical cerclage
  ▪ Transabdominal cervical cerclage
  ▪ Prediction of spontaneous preterm birth
  ▪ Prediction of prematurity by transvaginal ultrasound assessment of the cervix

• ACOG Practice Bulletin No. 48, “Cervical Insufficiency”, November 2003