## Mechanical Methods (and other methods) of Ripening and Labor Induction

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<tr>
<th>Method</th>
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| Membrane sweeping     | • Separation of chorionic membrane from wall of cervix and lower uterine segment  
                        | • Performed by digital cervical exam by rotating finger inside the cervix all the way around the cervix  
                        | • Releases prostaglandin F2α  
                        | • Usually performed in the office in an attempt to initiate onset of labor at ≥ 39 weeks gestation with a partially dilated cervix  
                        | • May be uncomfortable for the woman  
                        | • May experience some vaginal bleeding and irregular contractions in the first 24 hours | • No evidence of increased risk of maternal/neonatal infection  
                        | • Routine use not recommended as there is no evidence of improved maternal/neonatal outcomes  
                        |   o Simpson, 2020, p. s20  
                        | • Not enough data to guide clinical practice regarding the use of stripping in a woman who is GBS positive  
                        |   o ACOG, 2009, p. 3  
                        | • Recommend woman notify provider or come to the hospital if  
                        |   o Membranes rupture  
                        |   o Bleeding occurs  
                        |   o Fetal activity decreases  
                        |   o Fever develops  
                        |   o Regular contractions begin  
                        |   o Discomfort that persists between contractions  
                        |   o Simpson (2020, p. s20)  
                        | • Insufficient data to guide timing in patients who are receiving intrapartum GBS prophylaxis  
                        |   o ACOG, 2009, p. 3  
                        | | Amniotomy            | • Can be used for augmentation/induction of labor  
                        |   o Simpson (2020, p. s20) says it is effective for multips with a favorable cervix  
                        | • May result in more variable decelerations  
                        | • Early amniotomy is contraindicated when maternal infection is present such as HIV, active perineal Herpes, and possible viral hepatitis  
                        |   o Simpson, 2020, p. s20  
                        | • Insufficient data to guide timing in patients who are receiving intrapartum GBS prophylaxis  
                        |   o ACOG, 2009, p. 3  
                        | | **Risks of amniotomy:**  
                        |   • Umbilical cord prolapse  
                        |   • Infection  
                        |   • Fetal injury  
                        |   • Bleeding from undiagnosed vasa previa  
                        | | Nursing Care:  
                        |   • Explain procedure to patient  
                        |   • Help position patient  
                        |   • Assess FHR just before and immediately after the membrane rupture  
                        |   • Watch for a prolapsed cord  
                        |   • Assess and document the amniotic fluid  
                        |   o Amount  
                        |   o Color  
                        |   o Odor  
                        |   o Presence of any blood or meconium  
                        |   • Keep underpads dry and provide perineal care  
                        |   • Maintain bedrest until presenting part is firmly against cervix  
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<tbody>
<tr>
<td>Transcervical balloon catheters</td>
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<td>- Less tachysystole and FHR changes compared to prostaglandins (ACOG, 2009, p. 2)</td>
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<td></td>
<td>14-26 g Foley cath balloon</td>
<td>- Outpatient use is being researched...</td>
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<td></td>
<td>A double-balloon device has also been used (Atad Ripener)</td>
<td>- Foley and Simultaneous Use of Oxytocin: Findings</td>
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<tr>
<td></td>
<td>Inflated above internal cervical os with 30-80 ml sterile water</td>
<td>- Simultaneous use resulted in a significantly shorter interval to delivery</td>
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<td>Weight of inflated balloon puts pressure on lower uterine segment and cervix</td>
<td>- 15.92 vs 18.87 hours (P = .004)</td>
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<td></td>
<td><strong>Releases local prostaglandins</strong></td>
<td>- No difference in rate of cesarean delivery, estimated blood loss, postpartum hemorrhage,</td>
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<td></td>
<td>Results usually seen in 8-12 hours</td>
<td>chorioamnionitis, or composite neonatal outcome</td>
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<td>Balloon falls out when dilation occurs</td>
<td><strong>Connolly, Kohari, et al (2016)</strong></td>
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<td><strong>Transcervical Foley catheter ripening in vaginal birth after cesarean</strong></td>
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<td>- Studies show mixed results</td>
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<td>- Unknown if any increased risk</td>
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<td>- Given the lack of compelling evidence to show an increased risk</td>
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<td>- <strong>May be an option</strong> for TOLAC candidates with an unfavorable cervix</td>
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<td><strong>ACOG, 2019</strong></td>
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<tr>
<td>Hydroscopic/Osmotic Dilators</td>
<td>Natural: Laminaria(seaweed)</td>
<td>Rods (Dilapan-S) typically left in place up to 12 hours (but not longer than 24 hours)</td>
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<td>Synthetics: Dilapan/Lamicel</td>
<td>- Dilators and sponges are either removed or fresh ones replaced</td>
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<td>Release endogenous prostaglandins from fetal membranes and maternal decidua</td>
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<td>Also results in mechanical dilation</td>
<td>- Dilators removed if:</td>
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<td></td>
<td>Absorb fluid from cervical tissue</td>
<td>- Spontaneous onset of labor</td>
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<td>Used primarily for pregnancy termination rather than preinduction cervical</td>
<td>- Category III FHR tracing</td>
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<tr>
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<td>ripening in a term pregnancy</td>
<td>- Spontaneous rupture of membranes</td>
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<td>May insert a few larger diameter ones or a large number of small diameter</td>
<td>- Spontaneous expulsion of dilators</td>
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<td></td>
<td>ones</td>
<td>- No large studies to compare with other options</td>
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<td>Placed until cervix is full</td>
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| Hydroscopic/Osmotic Dilators (continued) | - Held in place with 4 x 4 gauze sponges  
- Documentation  
  - Number of dilators placed in cervix  
  - Number of sponges placed in vagina  
  - After removal all must be accounted for  
  - Simpson, 2020, p. s20 | - Although they can dilate the cervix  
  - They are inadequate in improving outcome of induction |
| Nipple stimulation          | • Only studied in low-risk pregnancies  
• Safety not established in high-risk pregnancies  
• In women with favorable cervices, nipple stimulation compared to no intervention  
• Showed a significant decrease in number of women not in labor at 72 hours  
• None of women had tachysystole with or without FHR changes  
• No difference in meconium staining or cesarean rates  
• Was associated with a decrease in postpartum hemorrhage rates  
  - Kavanagh et al (2005; no change to conclusions in 2010); ACOG (2009) |                                                                 |
| Sexual Intercourse          | • Underlying theory  
• Human sperm contains a high amount of prostaglandin  
• One study of 28 women  
• Not enough evidence  
• More research is needed  
  - Kavanagh et al (2001; no change to conclusions 2010) |                                                                 |
References:


Medicem Dilapan-S Hydroscopic Cervical Dilator instruction guide.