INDUCTION OF LABOR

Induction of Labor: Oxytocin Administration and Amniotomy

SUMMARY: The goal of induction of labor is to achieve vaginal delivery by stimulating uterine contractions before the spontaneous onset of labor. The purpose of this document is to review current methods and practice guidelines for induction of labor.

Rationale: The goal of induction of labor is vaginal delivery.\(^1\) Cervical ripening is recommended for patients with an unfavorable cervix (for more information see the Toolbox document entitled “Induction of Labor: Cervical Ripening”).

When compared to spontaneous labor, induction appears to carry a 2-3 fold increased risk for cesarean delivery. However, when considering an induction of labor, the clinical choice is between induction and waiting for a later time, when either spontaneous labor, induction at a later date, or other obstetric complications may occur. When induction of labor is compared to expectant management (i.e. waiting for spontaneous labor to occur), cesarean rates may actually decrease.\(^2\)

The indications for and potential risks and/or benefits of labor induction should be carefully considered.\(^3\)

Eligible patients:

1. Any patient undergoing induction of labor for a viable pregnancy from the late 2\(^{\text{nd}}\) trimester through the post-term period.

2. Following are specific examples of fetal and maternal indications for induction of labor:\(^1\)
   - Abruptio placentae
   - Chorioamnionitis
   - Fetal demise
   - Gestational hypertension
   - Preeclampsia, eclampsia
   - Premature rupture of membranes
   - Term pregnancy (39 0/7 weeks or greater)\(^3\), especially late term (41 0/7 weeks or greater)
   - Maternal medical conditions (e.g., diabetes mellitus, renal disease, chronic pulmonary disease, chronic hypertension, antiphospholipid syndrome)
   - Fetal compromise (e.g., severe fetal growth restriction, isoimmunization, oligohydramnios)

Contraindications:\(^1\)

- Vasa previa or complete placenta previa
- Transverse or breech fetal lie
- Umbilical cord prolapse
- Previous classical cesarean delivery
- More than 2 prior cesarean deliveries
Active genital herpes infection
Previous myomectomy entering the endometrial cavity

Technique:

Oxytocin (Pitocin)

- Either a low or high dose oxytocin regimen is appropriate (Table). Low-dose regimens as well as less frequent increases in dose are associated with decreased uterine tachysystole and associated FHR changes. High dose regimens and more frequent dose increases are associated with shorter labor and less frequent cases of chorioamnionitis and cesarean delivery for dystocia, but increased rates of uterine tachysystole and associated FHR changes.
- The oxytocin dose is increased per the appropriate regimen until one of the following is achieved:
  - Contractions are 2-3 minutes apart, moderate to firm in intensity, and lasting for 60-90 seconds.
  - Contractions are adequate as determined by Montevideo units (MVUs) assessed by intrauterine pressure catheter (200-250 MVUs).
    - MVUs are calculated by subtracting the baseline uterine pressure from the peak contraction pressure of each contraction in a 10-minute window, and then adding the pressures generated by each contraction.
  - Normal labor progression.
- Oxytocin may be given concurrently with a cervical ripening balloon.
- Maximum doses of oxytocin infusion are not established, but limiting the rate to 30-40 mU/min is recommended.

<table>
<thead>
<tr>
<th>Regimen</th>
<th>Starting Dose (mU/min)</th>
<th>Incremental Increase (mU/min)</th>
<th>Dosage Interval (min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-Dose</td>
<td>0.5-2</td>
<td>1-2</td>
<td>15-40</td>
</tr>
<tr>
<td>High-Dose</td>
<td>6</td>
<td>3-6</td>
<td>15-40</td>
</tr>
</tbody>
</table>

Artificial Rupture of Membranes (i.e. “AROM” or amniotomy)

- AROM is the creation of a small hole in the amniotic sac to encourage or strengthen contractions.
- AROM is best used in combination with oxytocin infusion but may be used alone if the cervix is favorable.
“Early amniotomy” is artificial rupture of membranes performed at ≤4 cm cervical dilation or as early as can be done safely. It has been demonstrated to be a safe and effective adjunct to induction of labor.⁵

Special Considerations:

- Oxytocin should not be administered less than 4 hours after the last misoprostol dose.
- 30-60 minutes after removal of the dinoprostone vaginal insert prior to starting oxytocin is likely sufficient.
- Concurrent administration of oxytocin with a cervical ripening balloon is acceptable and may decrease the interval from induction start to delivery.⁶
- Because the goal of labor induction is vaginal delivery, adequate time to enter into or progress in labor should be allowed, provided that the mother and baby are stable. The diagnosis of failed induction should be reserved for those women who have not achieved regular (e.g. every 3 minutes) contractions and cervical change after at least 24 hours of oxytocin administration with artificial membrane rupture if feasible (after completion of cervical ripening, if performed) OR until at least 12 hours after membrane rupture.⁷

References:


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