Induction of Labor

429 OB/GYN Team

Sources: Dr. Mashael Al-Shebaili's lecture ppt., and Essentials of Obstetrics & Gynecology by Hacker & Moore

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Introduction

Definition

Induction = ↑ cervical ripening + uterine contractions

Induction *of labour is defined as an intervention designed to artificially initiate uterine contractions leading to progressive dilatation and effacement of the cervix and birth of the baby. This includes both women with intact membranes and women with spontaneous rupture of the membranes but who are not in labour.* ***Augmentation*** *is the artificial stimulation of labor that has begun spontaneously.*

Indications

- *Post-term pregnancy (most common)*
- *Premature rupture of membranes (PROM)*
- *Intrauterine growth retardation (IUGR)*
- *Non-reassuring fetal suvillence*
- *Maternal medical conditions (DM, renal disease, HTN, gestational HTN, significant pulmonary disease, antiphospholipid syndrome)*
- *Chorioamnionitis*
- *Abruption*
- *Fetal death*

Induction of labor before term is indicated only when the continuation of pregnancy represents a significant risk to the fetus or mother. In some situations, induction may be indicated at term (e.g. PROM). Induction at term for convenience is not appropriate.

Risks of IOL

- *↑ Rate of operative vaginal deliveries*
- *↑ Rate of CS*
- *Excessive uterine activity*
- *Abnormal fetal heart rate patterns*
- *Uterine rupture*
- *Maternal water intoxication*
- *Delivery of preterm infant due to incorrect estimation of GA*
- *Cord prolapse with ARM*

Contraindications

Contraindications to labor or vaginal delivery;

- *Previous myomectomy entering the cavity*
- *Previous uterine rupture*
- *Fetal transverse lie*
- *Placenta previa*
- *Vasa previa*
- *Invasive cervical cancer*
- *Active genital herpes*
- *Previous classical or inverted T uterine incision*
- *2 or more Cesarean section*

A previous lower transverse incision is no longer a contraindication to a trial of labor. This is referred to as vaginal birth after cesarean, or VBAC.

PREREQUISITES

To assess the following

- *Indications / any contraindications*
- *General anesthesia (GA)*
- *Cervix favourability (Bishop score)*
- *Pelvis, fetal size & presentation*
- *Membranes status*
- *Fetal heart rate monitoring prior to induction of labor*
- ***Elective induction should be avoided due the potential complications***

Assessment of fetal pulmonary maturity befor induction is very important.

It can often be accelerated within 24 to 48 hours by the use of glucocorticoids.

CERVIX RIPENING

INDICATION

- *If the Bishop score is ≤ 6*
- *The state of the cervix is an important predictor of successful IOL*

	RATING			
Physical Findings	**0**	**1**	**2**	**3**
CERVIX				
Position	Posterior	Mid	Anterior	-
Consistency	Firm	Medium	Soft	-
Effacement (%)	0-30	40-50	60-70	≥80
Dilatation (cm)	0	1-2	3-4	≥5
FETAL HEAD				
Station	-3	-2	-1	+1

METHODS

- *Intracervical PGE2 gel → 0.5 mg/6hrs (3 doses)*
- *Intravaginal PGE2 gel → 1-2 mg/6hrs (3 doses)*
  - *↓ the rate of not being delivered in 24 hrs*
  - *↓ the use of oxytocin for augmentation of labor*
  - *↑ the rate of uterine **hyperstimulation***
- *Misoprostol **Cytotec** (a PGE1; ripens the cervix) → Should not be used for term fetuses*
- *Mechanical methods*

A vaginal insert called cervidil (on a string), can be removed quickly if medication causes hyperstimulation

MECHANICAL METHODS

- *Foley Catheter*
  - *It is introduced into the cervical canal past the internal os; the bulb is inflated with 30-60 cc of water*
  - *It is left for up to 24 hrs or until it falls out*
  - *Contraindications: Low laying placenta, antepartum hemorrhage, ROM (rupture of membranes), or cervicitis*
  - *No difference in operative delivery rate, or maternal or neonatal morbidity compared to prostaglandin (PG) gel*
- *Hydroscopic dilators (Eg.Laminaria tents)*
  - ***Higher rate of infections***

Artificial rupture of the membranes (+ oxytocin) may be utilized to ↑ uterine activity & cervical change

INDUCTION

OXYTOCIN WITH AMNIOTOMY

- *IV*
- *Half-life 5-12 min*

- *A steady state uterine response occurs in 30 min or more*
- *Fetal heart rate & uterine contractions must be monitored*
- *If there is hyperstimulation or nonreassuring fetal heart rate pattern → discontinue infusion*
- *Women who receive OXYTOCIN were more likely to be delivered in 12-24 hrs than those who had amniotomy alone & less likely to have operative delivery*

COMPLICATIONS

1. *Uterine **Hyperstimulation** → **fetal distress** from ischemia.*
    a. *In rare situations, a tetanic contraction can occur and lead to **rupture of the uterus***
2. *Oxytocin has a similar structure to antidiuretic hormone → **antidiuretic effect** → increase water reabsorption from the glomerular filtrate.*
    a. *Severe **water intoxication with convulsions** and coma can occur rarely when oxytocin is infused continuously for **more than 24 hours**.*
3. ***Uterine muscle fatigue** (nonresponsiveness) and **postdelivery uterine atony** (hypotonus), which can increase the risk of **postpartum hemorrhage***

PROSTAGLANDIN E2

- *For women with favorable cervix → PGE2 ↓ the rate of operative delivery & failed IOL when compared to Oxytocin → PGE2 is better*
- *PGE2 → ↑ GIT side effects, pyrexia & uterine hyperactivity*

SWEEPING OF THE MEMBRANES

- *Vaginally the examining finger is placed through the os of the cervix & swept around to separate the membranes from the lower uterine segment → ↑ local PGF2 production & release from decidua & membranes → onset of labor*
- *↑ the rate of delivery in 2-7 days*
- *↓ the rate of post-term*
- *↓ the use of formal induction methods*
- *If there is urgent indication for IOL sweeping is not the method of choice*

SPECIFIC CIRCUMSTANCES OR INDICATIONS

PRELABOR SROM AT TERM

- *6-19%*
- *IOL with oxytocin → ↓ risk of maternal infections (chorioamnionitis& endometritis) & neonatal infections*
- *PG also ↓ maternal infections & neonatal NICU admissions*

IOL AFTER CESAREAN SECTION

- *PG should not be used as it can result in ruptured uterus*
- *Oxytocin or foley catheter may be used*