

# Induction & Augmentation Of Labor

# Introduction

- Induction and augmentation of labor is one of the most frequent procedures done to manage labor and delivery
- Induction is done when the benefits of delivery to the fetus or the mother exceed the benefits of continuing the pregnancy
- In the United States, the incidence of labor induction more than doubled from 9.5% (1991) to 23.2 % (2011)

# Definitions

- ***Induction of labor*** – is initiation of labor before the spontaneous onset of uterine contractions
- *Induction of labor* is a process by which medical or surgical means are used to initiate and maintain labor any time after the **28th week of gestation**
- **Augmentation of labor:** - Correction of dystocia due to inefficient uterine contractions (power) by the use of **oxytocin**

# Indications for induction

- Induction of labor:-*Planned (elective)*
  - Emergency*
    - a. Obstetrical
      - Hypertensive disorders of pregnancy
      - Post term pregnancy
      - Intra-uterine fetal death (IUFD)
      - Unexplained recurrent intrauterine fetal death near term
      - Monsters= **congenitally malformed**

# Indications for induction...

- Polyhydramnios
- Premature Rupture of Membranes
- Rh-Isoimmunization
- Intra-uterine Growth Retardation (IUGR)
- Placental Abruption and minor degree anterior placenta praevia
- Chorioamnionitis

# Indications for induction...

## b. medical disorders

- Chronic renal disease
- Chronic hypertension
- **Severe cardiac disease**
- Diabetes mellitus

# Indication for augmentation

- Poor progress of labor due to inefficient uterine contractions

# Contraindications

## a. Absolute

- Gross cephalo-pelvic disproportion (CPD)
- Transverse and oblique lie
- Footling breech
- Upper segment uterine scar
- Active or culture proven genital herpes
- Extensive genital wart
- Invasive cervical Ca.
- Pelvic tumor obstructing the birth canal
- Placenta praevia (major degree)
- Acute fetal distress
- Two or more previous lower uterine segment cesarean scar



# Contraindications...

## b. Relative

- Grande multiparity  $\geq 5$  deliveries
- Bad obstetric history
- Twin pregnancy
- Prematurity
- Macrosomia
- One previous lower segment c/s

# Conditions that should be fulfilled before induction

- Document the indication.
- Make sure that there are no contraindications.
- Do pelvic scoring (Bishop) and if unfavorable, consider cervical ripening.

### *Bishop Scoring*

Score	Dilation	Effacement (%)	Station*	Consistency	Position
0	Closed	0-30	-3	Firm	Posterior
1	1-2	40-50	-2	Medium	Mid position
2	3-4	60-70	-1,0	Soft	Anterior
3	≥5	≥80	+1, +2		

\*Station is graded from -3 to +3

#### *Interpretation of the Bishop's score:*

Score  $\leq 4$ : Unfavorable cervix is unlikely to yield for induction;

Cervical ripening is needed for success with induction.

Postpone induction for next week if possible or use cervical ripening and plan induction for next day.

Score 5-8: Intermediate

Score  $\geq 9$ : Favorable cervical condition and induction is likely to succeed. There is no need for cervical ripening. Induction using Oxytocin can be planned for next day.

# Factors Affecting Successful Induction

- Favorable factors include:
  - multiparity
  - body mass index (BMI) < 30
  - favorable cervix
  - birthweight < 3500 g

# PREINDUCTION CERVICAL RIPENING

- ❖ Some Commonly Used Regimens for Preinduction Cervical Ripening and/or Labor Induction
  - Pharmacological:
    - i. Prostaglandin **E2**:
      - Dinoprostone **gel**, 0.5 mg (Prepidil) Cervical 0.5 mg; repeat in 6 hr; permit 3 doses total
        1. Shorter I-D times with oxytocin infusion than oxytocin alone
      - Dinoprostone **insert**, 10 mg (Cervidil) Posterior fornix, 10 mg
        1. Insert has shorter I-D times than gel
        2. 6–12 hr interval from last insert to oxytocin infusion

# Cont'd....

## ii. Prostaglandin E1

- Misoprostol tablet, 100 or 200  $\mu\text{g}$
- Vaginal, 25  $\mu\text{g}$ ; repeat 3–6 hr prn
- Oral, 50–100  $\mu\text{g}$ ; repeat 3–6 hr prn
  1. Contractions within 30–60 min
  2. Comparable success with oxytocin for ruptured membranes at term and/or favorable cervix
  3. Tachysystole common with vaginal doses > 25  $\mu\text{g}$

# Cont'd.....

## b. Mechanical

### i. Transcervical 36F Foley catheter

- 30-mL balloon<sup>1</sup>.

1. Improves Bishop scores rapidly
2. 80-mL balloon more effective
3. Combined with oxytocin infusion is superior to PGE1 vaginally
4. Results improved with EASI with possible decreased infection rate

# Cont'd.....

## ii. Hygroscopic dilators

-> Laminaria

-> magnesium sulfate      ???????

1. Rapidly improves Bishop score
2. May not shorten I-D times
3. Uncomfortable, requires speculum and placement on an examination table



# Bishop's pelvic scoring system

## *5 criteria*

- *Dilatation of the cervix*
- *Effacement of the cervix*
- *Consistency of the cervix*
- *Position of the cervix*
- *Station of the fetal presenting part*

Scores : < 4 unfavorable

5 – 8 intermediate

>/= 9 favorable

# Procedures for induction of labor

- All inductions, **except emergency** inductions, should be started at **8 a.m.**
- Check indication and Bishop score.
- Explain the procedure to the patient.
- **Light sedation the previous night of induction.**
- **Encourage the mother to empty her rectum or give enema at 6:00 a.m. on the day of induction.**

## Cont'd....

- Light fluid diet or NPO in the morning.
- Monitor maternal v/s, uterine activity and FHB according to the protocol for the management of labor.
- Check recent hematocrit and other basic investigations, if not available order a new one.
- Place a **No.18** venous canula.
- Start oxytocin drip and label the bottle.

# OXYTOCIN

- Oxytocin infusion dosage
  - Aim to maintain the lowest possible dosage consistent with regular uterine contraction
  - Use 0.9% N/S or R/L for infusion solution
  - Increase the drop rate every 30 min. until 3-5 contractions are achieved in 10 min. each lasting 40-60 sec.sss

# Oxytocin Dosage

- A 1-mL ampule containing 10 units usually is diluted into 1000 mL of a crystalloid solution and administered by infusion pump.
- A typical infusate consists of 10 or 20 units, which is 10,000 or 20,000 mU or
- one or two 1-mL vials, mixed into 1000 mL of lactated Ringer solution.
- This mixture results in an oxytocin concentration of 10 or 20 mU/mL, respectively.
- Oxytocin is generally very successful when used to stimulate labor.

# Oxytocin Regimens

- Several regimens for labor stimulation are now recommended by the ACOG
- Highdose—4 to 6 mU/min—versus conventional low-dose—0.5 to 1.5 mU/min—regimens
- Increases at 20-minute intervals were provided as needed.
- Among 1112 women undergoing induction, the 6-mU/min
- High dose regimen resulted in a shorter mean admission-to-delivery time, fewer failed inductions, and no cases of neonatal sepsis.

**TABLE 26-3.** Various Low- and High-Dose Oxytocin Regimens Used for Labor Induction

Regimen	Starting Dose (mU/min)	Incremental Increase (mU/min)	Interval (min)
Low-dose	0.5–1.5	1	15–40
	2	4, 8, 12, 16, 20, 25, 30	15
High-dose	4	4	15
	4.5	4.5	15–30
	6	6 <sup>a</sup>	20–40 <sup>b</sup>

<sup>a</sup>With uterine tachysystole and after oxytocin infusion is discontinued, it is restarted at the previous dose and increased at 3 mU/min incremental doses.

<sup>b</sup>Uterine tachysystole is more common with shorter intervals.

- Uterine tachysystole is managed by oxytocin discontinuation followed by resumption when indicated and at **half the stopping dosage**
- Women assigned to the 20-minute interval regimen for labor augmentation had a significantly **reduced cesarean delivery rate for dystocia** compared with that for the 40-minute interval regimen—8 versus 12



# Amniotomy for Induction and Augmentation

- A common indication for artificial rupture of the membranes—*surgical amniotomy*—includes the need for direct monitoring of the fetal heart rate or uterine contractions or both.
- During amniotomy, to minimize cord prolapse risk, **dislodgement of the fetal head is avoided**.
- **fundal or suprapubic pressure or both may be helpful**.
- Some clinicians prefer to rupture membranes during a **contraction**.
- fetal heart rate should be assessed is before and immediately after amniotomy.

## ❑ Elective Amniotomy

- Membrane rupture with the intention of accelerating labor is often performed.
- Amniotomy at approximately 5-cm dilation accelerated spontaneous labor by 1 to 1½ hours.
- **There were no adverse** perinatal effects.

## ❑ Amniotomy Induction

- Artificial rupture of the membranes—sometimes called *surgical induction*—*can be used to induce labor*

## Cont'd.....

- **Amniotomy alone** or **combined** with oxytocin was superior to **oxytocin alone**.
- **Early amniotomy** was associated with a significant 4-hour reduction in labor duration.
- With early amniotomy, however, there was an increased incidence of chorioamnionitis.

### Amniotomy Augmentation

- It is **common practice** to perform amniotomy when labor is abnormally slow.

# Membrane Stripping for Labor Induction

- Labor induction by membrane “stripping” is a frequent practice.
- Several studies have suggested that membrane stripping is safe and decreases the incidence of post term pregnancy **without consistently** increasing the incidence of ruptured membranes, infection, or bleeding.
- eight women would need to undergo membrane stripping to avoid one labor induction
- Side effects are **discomfort and associated bleeding**

# Failed Induction

- There are currently **no standards** of what constitutes a failed induction.
- It is important for the clinician to recall that cervical ripening itself can take some time, and that the development of an active labor pattern should be achieved **before the determination that the induction has failed.**

# Risks Of Induction

- Increased cesarean delivery rate
- Chorioamnionitis
- Uterine scar rupture
- postpartum hemorrhage from uterine atony
- Water intoxication
- Amniotic fluid embolism

***THE END !!!***