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Induction of Labour

Objectives:

- Differentiate between IOL and augmentation of labor.
- List the indications and contraindications for IOL.
- List the methods used for IOL and their complications:
  - Mechanical
  - Artificial rupture of Membranes (ARM)
  - Pharmacologic:
    - Prostaglandin
    - Oxytocin

Resources: 435 slides - Hacker and Moore's ob/gyn

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Difference between time of delivery:

Preterm: before 37 week. **Full term**: from 37-42 week. **Post term:** after 42 week

Post date: after 40 week, the expected date of delivery. But we start inducing at week 41 so that delivery happens at 42 week, we don't wait for the increase risk of placental insufficiency.

(IOL) of a Pre-term is indicated Only when the continuation of pregnancy represents a significant risk to the fetus or mother.

Induction of Labour

Difference between Induction and Augmentation of labour:

	Induction	Augmentation (not mentioned in slides but within objectives)
Definition	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**.[1] **But what is Labar?** is an **effective** **painful** **regular** uterine contractions. **What do we mean by effective?** Effective to **dilate of the cervix** and **descend the presenting part**. *Rupture of the membrane and effacement[2] of the cervix are **NOT** effective signs of labor! **What do we mean by regular?** uterine contractions within a **rhythm** that becomes more frequent with time (every 30 min, 15 min, 5 min .. etc). False contractions (not effective for labour) are called **Braxton Hicks**	Is the artificial stimulation of labor that has begun spontaneously.
Indications: **Maternal indications:**	**Maternal medical conditions:** DM, renal disease, HTN, gestational HTN, significant pulmonary disease, antiphospholipid syndrome. • DM is a very important consideration bec it's very common, endemic and cause a lot of problems (macrosomia, polyhydramnios, sudden IUFD [3].. etc) especially if not controlled or controlled with insulin. We start inducing at **38-39 weeks** • Uncontrolled HTN can cause IUFD or placental abruption. we start inducing at **34-36w** once we can't control it and mother is prone to preeclampsia.	Prolonged labor "Inadequate uterine activity". Prolonged 1st stage of labour: • latent phase • active phase
Feto-placental indications:	- **Post-term pregnancy (most common).** - PROM (premature rupture of membrane). They should go into labor within 24h. to avoid ascending infection from the vagina. 90-95% don't need induction (they have normal labor with in the 24h). We don't induce unless the baby **passed 28w** provided that there is no sign of infection. - Non-reassuring fetal surveillance. - IUGR (intrauterine growth restriction). - Chorioamnionitis (mother can develop **septicemia** and death if not induced). - Abruption. Which is separation of placenta before delivery , an Emergency -> C.S - Fetal death. To get him out , depends on gestational age.	

[1] **Induction is when pt is NOT in labor and you set her on in it**.
[2] **Cervical effacement** (**cervical ripening**) refers to a **thinning** of the cervix. Picture
[3] IUFD: intrauterine fetal death

Contra-indications	**Any contraindication to labor or vaginal delivery:** • Previous myomectomy entering the cavity • Previous uterine rupture • Fetal transverse lie C.S is needed • Placenta previa or Vasa previa (is a condition in which fetal blood vessels cross or run near the internal opening of the uterus) • Invasive Cervical Cancer. • Active genital herpes (risk of transmission to baby) • Previous classical (vertical cut) or inverted T uterine incision (Relative contraindication) (which is when we do lower segment transverse but still can't deliver the baby so we increase the ivision up). • 2 or more CS • **Absolute contraindication: Contracted Pelvis**, in which one or more of its diameters is reduced so that it interferes with the normal mechanism of labour.

❖ Risks of IOL:

- ❖ ↑ Rate of operative vaginal deliveries [4] and CS (c-section)
- ❖ Excessive uterine activity.
- ❖ Abnormal fetal heart rate patterns.
- ❖ Uterine rupture.[5]
- ❖ Maternal water intoxication.[6]
- ❖ Delivery of preterm infant due to incorrect estimation of gestational age (GA).
- ❖ Cord prolapse after Artificial rupture of Membranes (ARM) [7]
- ❖ Keep in mind you have to monitor the baby once u start inducing.

Prerequisites for IOL are to assess the following:

- ❖ Indication / any contraindications.
- ❖ Gestational age (GA). Incorrect estimation of GA leads to delivery of preterm infant.
- ❖ Cervical favorability (Bishop score). Table 8-3[8]
- ❖ Pelvis, fetal size & presentation, attitude, lie and position.
- ❖ Membranes status.
- ❖ Fetal heart rate monitoring prior to IOL.
- ❖ Elective induction should be avoided due the potential complications.

TABLE 8-3

BISHOP SCORE TO ASSESS LIKELIHOOD OF SUCCESSFUL INDUCTION OF LABOR

Physical Findings	Rating			
	0	1	2	3
Cervix				
Position	Posterior	Mid	Anterior	—
Consistency	Firm	Medium	Soft	—
Effacement (%)	0-30	40-50	60-70	≥80
Dilation (cm)	0	1-2	3-4	≥5
Fetal Head				
Station	−3	−2	−1	+1

[4] Vaginal delivery but with aid of instrument like forceps and vacuum.

[5] Progesterone effect last for 6h so there is a risk of hyperstimulation, continuous uterine contraction and rupture.

[6] side effect of IV oxytocin. Because it has antidiuretic effect

[7] Emergency!! Immediate C.S. if the cord is delivered out to the cold > clot may form> decrease of fetal blood supply. The concern with cord prolapse is that pressure on the cord from the fetus will cause cord compression that compromises blood flow to the fetus. Whenever there is a sudden decrease in fetal heart rate or abnormal fetal heart tracing, umbilical cord prolapse should be considered.

[8] A high score (9 to 13) is associated with a high likelihood of a vaginal delivery, whereas a low score (<5) is associated with a decreased likelihood of success (65-80%). Video: Bishop score

❖ Methods of IOL:

A. Cervical ripening[9] prior to IOL:

Indicated if the Bishop score is ≤ 6. The state of the Cervix is an important predictor of successful IOL. Ripening will increase the bishop score and thus success of delivery.

- **Intracervical PGE2 gel** 0.5 mg/6hrs (3 doses).
- **Intravaginal PGE2 gel** 1-2 mg/6hr (3 doses)
    - PGE2 gel:
        - ↓ The rate of not being delivered in 24 hrs
        - ↓ The use of oxytocin for augmentation of labor.
        - ↑ The rate of uterine hyperstimulation.
- **Misoprostol:** Should **NOT** be used for **term** fetuses.
- **Mechanical methods:** Mostly for pt with previous one C.S and can't be given PGE due to risk of uterine contraction and rupture.
    - **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 lying placenta, antepartum bleeding, ROM[10], or cervicitis.
        - No difference in operative delivery rate, or maternal or neonatal morbidity compared to PG gel.
    - **Hydroscopic dilators** (Eg.Laminaria tents)[11]. Higher rate of infections

IF delivery continues after ripening by herself -> very good! If not -> you rupture the membrane > wait > if continue by herself very good! If not -> give IV oxytocin.

- Be careful you have to be sure that the **presenting part** is down enough before deciding to rupture the membrane! Or you will end with **cord prolapse**!
- IV medication don't work until a cervix is already soft.
- The induction of labor for a specific indication generally should not exceed 72 hours. If adequate progress is not made within 12 hours of rupturing the membranes, a cesarean delivery may be performed.

B. Induction of uterine contractions:

1- Oxytocin with Amniotomy[12]:

- ➔ 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.

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[9] Cervical effacement and softening (ripening) occur before the onset of spontaneous labor. Cervical ripening frequently has not occurred before a decision to induce labor, yet the success of induction is dependent on these changes in the cervix.
[10] ROM= rupture of membranes.
[11] Absorb water and swell gradually to dilate cervix, not used because of its risk of infection
[12] Artificial rupture of the membranes (amniotomy) is not recommended as a method to induce labor.

- ➔ If there is hyperstimulation or nonreassuring fetal heart rate pattern, discontinue the 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- **Hyperstimulation** and thereby cause fetal distress from ischemia.
2- **Severe water intoxication** with convulsions and coma can occur rarely.
3- **Uterine muscle fatigue** (non-responsiveness) and **post delivery uterine atony** (hypotonus), which can increase the risk of postpartum hemorrhage.

2- PGE2:

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

3- Sweeping of the membranes[13]:

- ➔ 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 α production & release from decidua & membranes → onset of labor.
- ➔ ↑ The rate of delivery in 2-7 days (Thus If there is urgent indication for IOL, sweeping is not the method of choice).
- ➔ ↓ The rate of post-term.
- ➔ ↓ The use of formal induction methods.

❖ Specific circumstances or indications:

Prelabor SROM[14] [15] at term:

- ➔ 6-19%.
- ➔ IOL with oxytocin: ↓ risk of maternal infections (chorioamnionitis & endometritis) & neonatal infections.
- ➔ PG: ↓ maternal infections & neonatal NICU admissions.

IOL after previous CS:

- ➔ PG should not be used as it can result in rupture uterus.
- ➔ Oxytocin or foley catheter may be used

If you start inducing labour you **can't stop** you have to go through. If induction fails, do CS. thus before inducing you'll need to have **solid indication** that the inside environment in uterus is not appropriate and baby has to go out. Another reason is the complications of IOL (water intoxication or uterine rupture). **if you're not 100% sure, don't do it**

[13] does not necessarily speed up the onset of labor.
[14] Spontaneous rupture of membrane.
[15] don't examine repeatedly, increases the risk of infection! Only when really needed.

1) A 36 year old lady, G3 P2 +0, had two previous normal deliveries. She is a known case of essential hypertension. At 40 weeks, she developed proteinuria and her blood pressure increased to 150/100 mmHg in spite of using alpha methyldopa. How would you manage her?

a- Admit the patient for fetal surveillance
b- Dexamethasone for fetal lung maturity
c- Emergency caesarean section
d- Induction of labor

2) You have a primigravida who is a known care of HIV. Which of the following measures would you take to reduce the transmission of infection of the baby?

a. Elective cesarean section
b. Forceps delivery to shorten second stage
c. Induction of labor at 38 weeks
d. Rupture the membranes to expedite delivery when in labor

3) A 42-weeks pregnant lady admitted for induction of labor. Which one of the following should be included when assessing Bishop Score?

a. Cervical effacement
b. Position of the head
c. Presentation of the fetus
d. Status of the membranes

4) A primigravida admitted at 41+ weeks of gestation for induction of labor. Her vaginal digital examination revealed long, posterior cervix. What is the best method for induction of labor in this case?

A- Artificial rupture of membranes and oxytocin infusion
B- Misoprostol vaginal pessaries
C- Prostaglandin E2 vaginal pessaries
D- Sweeping of the membranes through digital examination.

5) A primigravida lady presented to the clinic at 42 weeks gestation with cephalic presentation and good fetal movements and no labor pain. How would you manage?

A- Await spontaneous delivery
B- Biophysical profile and Doppler
C- C-section
D- Induction of labor

Answers: 1) d 2) a 3) a 4) c 5) d