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Induction of Labour (IOL)

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References: 436 doctor's slides and notes , 435 teamwork

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Objectives:

1. Differentiate between IOL and augmentation of labor.
2. List the indications and contraindications for IOL
3. List the methods used for IOL and their complications:
    a. Mechanical
    b. Artificial rupture of Membranes(ARM)
    c. Pharmacologic
        i. Prostaglandin
        ii. Oxytocin

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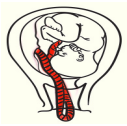
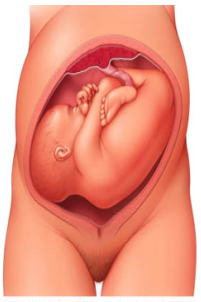
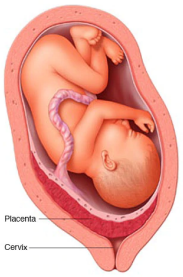
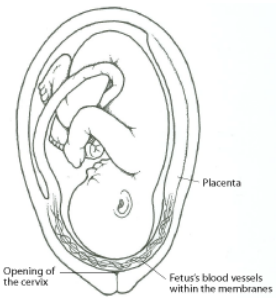
Induction Of Labor (IOL)

Definition	Induction of labour is defined as an intervention designed to artificially initiate uterine contractions leading to progressive dilatation and effacement (thinning) 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.
Risks of IOL	• Increased rate of operative vaginal deliveries. eg. forceps. • Increased rate of CS (cesarean section). • Excessive uterine activity. As ADR of medication 'what we give for induction'. • Abnormal fetal heart rate patterns. • Respiratory distress syndrome • Uterine rupture. • Maternal water intoxication[1]. eg. oxytocin infusion affects water balance. • Delivery of preterm infant due to incorrect estimation of GA. "Gestational age". • Cord prolapse (See pic) with ARM. "Artificial rupture of membranes". • Meconium fetal aspiration 
Indications	• Post-term pregnancy **most common** (≥ 42 weeks of pregnancy or gestation). Term = 40 weeks, if completed we give a chance one week (41 to 42 weeks) then start induction otherwise if we didn't the placenta تشيخ وتصير غير قادرة إنها تخدم البيبي (Calcification). • PROM. "Premature rupture of membranes" at term. ما أخليها تنتظر حتى لو ما وصلت 40 أسبوع. We try to protect them (the fetus & mother) from infection (Chorioamnionitis). We may give a chance 12-24h before induction not more that! • IUGR. "Intrauterine growth restriction" • IUGD • Non-reassuring fetal surveillance[2]. Which is Cardiotocography (CTG) • Maternal medical conditions: DM (Don't exceed 40 weeks for controlled DM, لما تكون على إنسولين أو السكر غير منتظم نولدها على 38 أسبوع)[3], renal disease, HPT, gestational HPT, significant pulmonary disease, antiphospholipid syndrome. • Chorioamnionitis[4]. Very serious you never wait just cover her with antibiotics then induce. She may have septicemia shock.

[1] One of the induction drugs is oxytocin, which has a potent antidiuretic effects (it's related structurally and functionally to vasopressin or antidiuretic hormone) can cause water intoxication, which can lead to convolution, coma and death.
[2] Is a term that may be used to describe a baby's health late in the pregnancy or during labor. It is used when test results suggest that the baby may not be getting enough oxygen.
[3] Term = 37 weeks. We give her one week bcs in diabetic mother the fetus lung growth delayed.
[4] AKA intra-amniotic infection (IAI) is an inflammation of the fetal membranes (amnion and chorion) due to a bacterial infection.

	• Abruption[5]. • Fetal death.
Contraindications (Contraindications to labor or vaginal delivery)	• Previous myomectomy[6] entering the cavity. They mean during that operation you opened the cavity. • Previous uterine rupture. • Fetal transverse lie. (See pic left) • Placenta previa. (See pic middle) • Vasa previa[7]. (See pic right) • Invasive Cx Ca. "Cervical cancer" • Active genital herpes. • Previous classical (السكار بالطول) or inverted T uterine incision[8]. • 2 or more CS. even if it was before 10 years.   
Prerequisites for IOL are to assess the following	• Indication/any contraindications. Must have a clear Indication. • GA. "Gestational age" • Cx "Cervix" favorability (Bishop score) see next page. ⬆Score → ⬆Success of induction. • Pelvis, fetal size & presentation. • Membranes status. • Fetal heart rate monitoring prior to IOL. • Elective induction should be avoided due to the potential complications. Which is social induction (without Indication) 'wish'

Modified Bishop score:

- Used to assess the cervix and the likelihood of a successful induction.
- Interpretation:

Bishop score ≥ 8 → favorable cervix for vaginal delivery

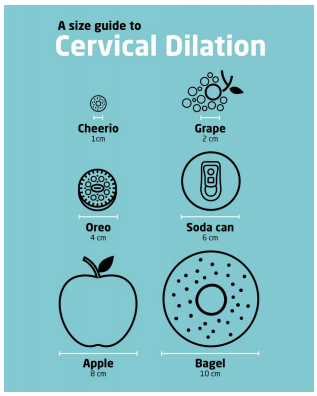
Bishop score ≤ 6 → unripe or unfavorable cervix; not ready for vaginal delivery

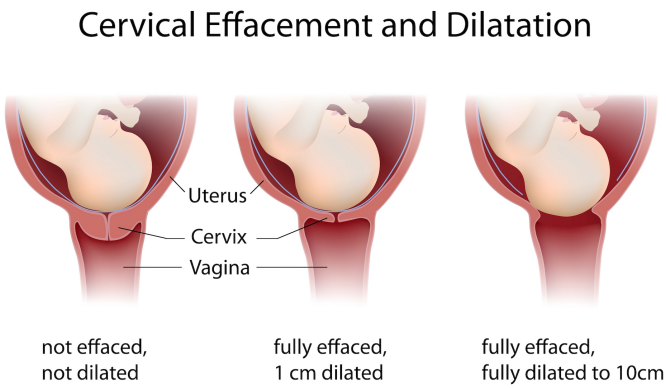
[5] When the placenta separates early from the uterus
[6] The surgical removal of uterine leiomyomas, also known as fibroids.
[7] A condition in which fetal blood vessels cross or run near the internal opening.
[8] The muscles arranged longitudinally so once you have previous longitudinal scar any uterine contractions may lead to rupture.

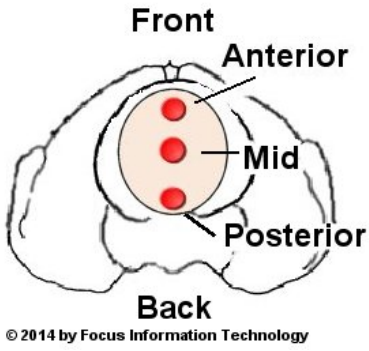
Simplified Bishop score: considers only fetal station, cervical dilation, and cervical effacement; a score ≥ 5 indicates a favorable cervix for vaginal delivery.

This whole table is not from the slides.

	Score			
	0 points	1 points	2 points	3 points
Cervical position see pic right	Posterior	Midline	Anterior	
Cervical consistency	Firm	Moderately firm	Soft (ripe)	
Cervical effacement 'how theck'[9] see pic middle	Up to 30%	31–50%	51–80%	> 80%
Cervical dilation see pic left	closed or 0 cm	1–2 cm	3–4 cm	> 5 cm
Fetal station[10]	- 3 cm	- 2 cm	- 1/0 cm	+ 1/+ 2 cm







Please understand how to calculate bishop score and the interpretation of the score

[9] Thinning of the cervix that occurs during labor. Usually reported in percentage.

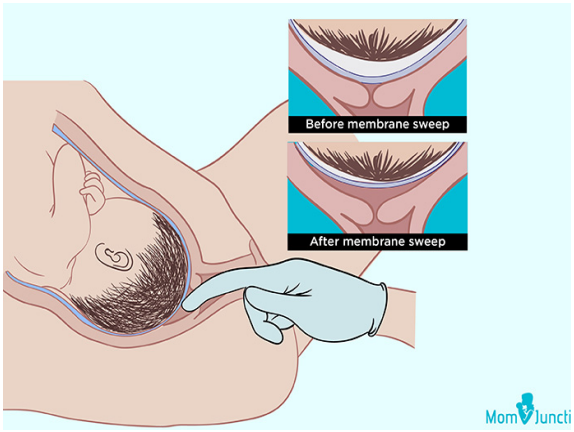
[10] Fetal station is the relation of the leading part of the fetus (e.g., vertex, breech) with the maternal ischial spines. A score of "0" indicates that the leading part is at the maternal ischial spines. A negative score indicates, in cm, how high above the maternal ischial spines the fetal presenting part is. A positive score indicates how many cm below the maternal ischial spines the presenting fetal part is.

Methods of IOL

Approach:

- Membrane sweeping (shortens time to onset of labor)
- If the cervix is still unfavorable: cervical ripening with prostaglandin E1 or E2 (e.g., misoprostol)
- Maternal oxytocin infusion.
- Consider amniotomy (only if the cervix is partially dilated and completely effaced, and the fetal head is well applied)
- Administer under fetal heart rate monitoring.

A. Sweeping of the membranes: Watch



- Vaginally the examining finger is placed through the os of the Cx & swept around to separate the membranes from the lower uterine segment leading to Increase local PGF2 α production & release from decidua & membranes leading to the onset of labor.
  كل ما زاد الألم كل ما صار أحسن
- Increases the rate of delivery in 2-7 days.
- Decreases the rate of post-term.
- Decreases the use of formal induction methods.
- If there is an urgent indication for IOL sweeping is **not** the method of choice.

B. Cervical ripening:

Indication: if the Bishop score is ≤ 6.

- The state of the Cx is an important predictor of successful IOL.
- For women with favorable Cx PGE2 decreases:
- The rate of operative delivery. 2- Failed IOL when compared to Oxytocin.

Methods:

- Intra**cervical** PGE2 gel 0.5 mg/6hrs----3 doses
- Intra**vaginal** PGE2 gel 1-2 mg/6hrs----3 doses "الجرعات ما ينسأل عنها لأنها تختلف"
  - PGE2 gel: Watch
    - Decreases the rate of not being delivered in 24 hrs
    - Decreases the use of oxytocin for augmentation[11] of labor.

[11] Is the artificial stimulation of labor that has begun spontaneously. Indications: Prolonged labor "Inadequate uterine activity". Prolonged 1st stage of labour: latent phase - active phase.

- Increase the rate of uterine hyperstimulation.

أول كانوا يستخدمونها كتحاميل (حبوب) بعدين جل "أسهل". وأخيرًا طلعت ال Propess اللي هو زي الشريط يلفّونه على السيرفكس ويطلّعون جزء منه برا لما نوصل للكونتراكشنز اللي نبيها بعدين نسحبه (أريح من الجل اللي كل ست ساعات نرجع نحط)

- **Misoprostol** Should **not** be used for term fetuses. We use it just in Abortions.
- **Mechanical methods:**
  - Foley Catheter: **Watch**
    - 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. الكاثيتر يحفّز إفراز البريشر حق البروستاقلاندين فينفتح السيرفكس.
    - We use to a women which have previous **ONE** CS and I want her to deliver vaginally. PGE2 should be avoided here to prevent hyperstimulation of uterine contractions and rupture.
    - Contraindications Low lying placenta, antepartum Hg, ROM, or cervicitis
    - No difference in operative delivery rate, or maternal or neonatal morbidity compared to PG gel.
  - Hydroscopic dilators (Eg. Laminaria tents): (See pic)
    - Higher rate of infections.

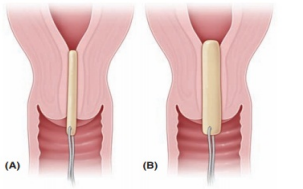


FIGURE 8.13. Use of laminaria. (A) Laminaria properly inserted just beyond the cervical os. (B) Properly placed laminaria that has expanded, causing cervical dilation.

Side effects: GIT, pyrexia & uterine hyperactivity.

C. 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 D/C "discontinue" infusion. ميزته نقدر نتحكم فيه
- Women who receive oxytocin were more likely to be delivered in 12-24 hrs than those who had amniotomy "known as artificial rupture of membranes (AROM)" alone & less likely to have operative delivery.

Specific circumstances or indications:

Prelabor SROM (Spontaneous rupture of membrane) **at term:**

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

IOL after CS:

- PG should **not** be used as it can result in rupture uterus.
- Oxytocin or foley catheter may be used. لأننا نقدر نتحكم فيها

Summary

Induction of Labour

Maternal indications	1- DM2. 2- renal disease. 3- HTN. 4- gestational HTN. 5- significant pulmonary disease. 6- antiphospholipid syndrome.
Feto-placental indications	1- Post-term pregnancy. 2- PROM. 3- Non-reassuring fetal. Surveillance. 4- IUGR. 5- Chorioamnionitis. 6- Abruption. 7- Fetal death.
Contraindications	1- Previous myomectomy entering the cavity 2- Previous uterine rupture 3.Fetal transverse lie 3- Placenta previa or Vasa previa 4- Invasive Cervical Cancer. 6.Active genital herpes 5- Previous classica 6- 2 or more CS
Risks of IOL	• ↑ Rate of operative vaginal deliveries and CS • Excessive uterine activity. • Abnormal fetal heart rate patterns. • Uterine rupture. • Maternal water intoxication. • Delivery of preterm infant due to incorrect estimation of gestational age (GA). • Cord prolapse after Artificial rupture of Membranes (ARM)
Methods of IOL	**A. Cervical ripening prior to IOL:** • Intracervical PGE2 gel 0.5 mg/6hrs (3 doses). • Intravaginal PGE2 gel 1-2 mg/6hr (3 doses) • 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 Hydroscopic dilators **B. Induction of uterine contractions:** 1. Oxytocin with Amniotomy 2. PGE2. B. Sweeping of the membranes .

MCQ

1- f 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.

Answers: 1- D. 2. A. 3- A.