

## Dysfunctional Labor and Induction and Augmentation of Labor



---

---

---

---

---

---

---

---

### What we need to know about dysfunctional labor and induction of labor

- ▶ List three causes of dystocia
- ▶ List four types of dysfunctional labor patterns and their management
- ▶ Summarize the pain/anxiety pathway leading to prolonged labor
- ▶ State indications and contraindications for labor induction
- ▶ Differentiate between common agents used for induction or augmentation of labor



---

---

---

---

---

---

---

---

### Definitions

- ▶ **Labor:** Uterine contractions of sufficient frequency, intensity and duration as to result in effacement and dilation of the cervix
- ▶ **Dystocia:** Long, difficult or abnormal labor
- ▶ Caused by one or more of the following conditions
  1. Dysfunctional labor - **\* POWER \***
  2. Fetal Conditions - **\* PASSENGER \***
  3. Abnormalities of the maternal pelvis or soft tissue abnormalities- **\* PASSAGE\***



---

---

---

---

---

---

---

---

### Assess the Powers, Passenger & Passage

#### Powers

**Dysfunctional labor** is abnormal progress of labor  
Can occur in both latent phase and active phase of labor

#### Risk factors include:

- ▶ Maternal age > 40 yo
- ▶ Body type
- ▶ Uterine anomalies, including over distention
- ▶ Malpresentation and malpositions of fetus
- ▶ Over stimulation with oxytocin
- ▶ Maternal fatigue, fear, dehydration or positioning during labor and birth



---

---

---

---

---

---

---

---

### Dysfunctional Labor Patterns

- ▶ **Prolonged latent phase**—lasts longer than 20 hours in nullipara and 14 hours in multipara
  - Associated with
    - An unripe cervix
    - Too-early use of analgesics or sedatives
    - Too-early use of conduction anesthesia
- ▶ **Treatment:**
  - Support and therapeutic rest with sedation
  - Oxytocin stimulation



---

---

---

---

---

---

---

---

### Dysfunctional Labor Patterns

- ▶ **Protracted Active Phase**—dilatation is less than 1.2 cm per hour in the nullipara and less than 1.5 cm per hour in the multipara
- ▶ **Associated with**
  - Cephalopelvic disproportion
  - Minor malpresentations, such as posterior or transverse occiput
  - Amniotomy before or at onset of labor
  - Administration of conduction anesthesia before active labor is well established



---

---

---

---

---

---

---

---

## Protracted Active Phase

- ▶ Treatment
  - Cesarean section for women with confirmed CPD
  - Support
    - Explain the situation of slow progress to the women and her family
    - Ensure adequate fluid and electrolyte intake
    - Anticipate with the woman and her family the course the labor is likely to take—slow but steady progress

---

---

---

---

---

---

---

---

## Dysfunctional Labor Patterns

- ▶ **Secondary Arrest of the active phase**—cervical dilatation stops in the active phase. Diagnosed when arrest has lasted for 2 hours or more, as assessed by 2 vaginal exams done 2 hours apart.
- ▶ Associated with
  - Use of excessive sedation or conduction anesthesia
  - Malpositions
  - CPD
  - AROM

---

---

---

---

---

---

---

---

## Secondary Arrest of Active Phase

- ▶ Treatment:
  - Immediate c-section for CPD
  - Oxytocin stimulation if pelvis is diagnosed as adequate
  - Depending on dx and cause of arrest, sedation for therapeutic rest, fluid and electrolyte therapy and watchful waiting

---

---

---

---

---

---

---

---

## Dysfunctional Labor

- ▶ **Precipitous Labor**—cervical dilatation is faster than 5cm per hour (or 1 cm every 12 mins) in nulliparas and 10cm per hour (1cm every 6 mins) in multiparas
- ▶ **Associated with**
  - Normal latent phase in nulliparas
  - Oxytocin administration
  - Twice as many multiparous labors as nulliparous labors
  - Uncomplicated and spontaneous vaginal deliveries



---

---

---

---

---

---

---

---

## Precipitous Labor

- ▶ **Treatment**
  - Anticipate the rapid descent of the fetus and a spontaneous delivery
  - Anticipate and prepare for a stressed newborn



---

---

---

---

---

---

---

---

## Physical Findings

- ▶ **Hypertonia**
  - usually occurs before 4 cm dilation
  - pain out of proportion to effectiveness of contraction
  - frequent, uncoordinated contractions, poor relaxation
  - Management: Therapeutic rest
- ▶ **Hypotonia**
  - most common type
  - occurs in active labor
  - normal progress of labor, then contractions decrease or stop
  - Management: Ambulation, Augment labor with amniotomy or oxytocin
- ▶ **Inadequate Expulsive Forces**
  - ineffective or no urge to push
  - Management: assist with positioning and coaching
  - forceps or vacuum assistance if needed



---

---

---

---

---

---

---

---

**PASSENGER**

**Fetal causes include:**

- › fetus > 4000 gm (8#13oz)
- › fetal anomalies
- › malpresentation – C/S
- › malposition – manual or forceps rotation, maternal position change

**Persistent OP**

- › comfort measures
- › positions to facilitate rotation of fetal head

---

---

---

---

---

---

---

---

---

---



**Passage**

1. **Pelvic contractures** can occur at the inlet, midpelvis or outlet; diminish the capacity of the pelvis

May be caused by:

- congenital abnormalities
- Trauma—compromise the capacity of the birth canal
- immature pelvis

2. **Soft tissue obstruction**

- leiomyomas
- ovarian tumors
- cervical stenosis
- excessively full bladder or rectum—(most common obstruction in labor is a full bladder)

---

---

---

---

---

---

---

---

---

---



**Psychological Maternal Response to Labor**

Pain → Anxiety → Release of stress hormones → Increase metabolism and oxygen consumption → Decrease uteroplacental perfusion → Decrease oxygen to the fetus and decrease strength of contractions =  
**PROLONGED LABOR**

**Positive emotional support and childbirth preparation may help reduce fear, pain and anxiety.**



Oh No!  
 Another contraction!

---

---

---

---

---

---

---

---

---

---





"We like to try all our options before using drugs to induce labor."

---

---

---

---

---

---

---

---

## Induction & Augmentation of Labor

- ▶ **Induction** of labor is the artificial stimulation of uterine contractions before the spontaneous onset of labor for the purpose of accomplishing vaginal birth.
- ▶ Considerations for induction should include:
  - Maternal or fetal factors
  - Gestational age
  - Cervical status
  - Clinical staff and facilities

---

---

---

---

---

---

---

---

Indications

<u>Maternal Factors</u>	<u>Fetal Factors</u>
<ul style="list-style-type: none"> <li>◦ Chorioamnionitis</li> <li>◦ Preeclampsia/PIH</li> <li>◦ Maternal medical conditions</li> <li>◦ Logistic</li> <li>◦ Psychosocial</li> </ul>	<ul style="list-style-type: none"> <li>◦ PROM</li> <li>◦ Post Term</li> <li>◦ Fetal Compromise               <ul style="list-style-type: none"> <li>▪ IUGR</li> <li>▪ ↓AF</li> <li>▪ Poor doppler studies</li> <li>▪ Isoimmunization</li> </ul> </li> </ul>

---

---

---

---

---

---

---

---

Contraindications	Relative Contraindications
<ul style="list-style-type: none"><li>▶ Same as for vaginal delivery</li><li>▶ Complete placenta previa or vasa previa</li><li>▶ Umbilical cord presenting</li><li>▶ Transverse lie</li><li>▶ Active HSV</li><li>▶ Previous transfundal uterine surgery</li></ul>	<ul style="list-style-type: none"><li>▶ Previous LT C/S</li><li>▶ Breech presentation</li><li>▶ Multifetal pregnancy</li><li>▶ Polyhydramnios</li><li>▶ Maternal heart disease</li><li>▶ Severe hypertension</li><li>▶ Abnormal FHR not necessitating emergent C/S delivery</li></ul>

---

---

---

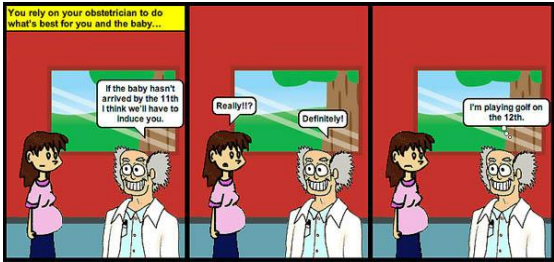
---

---

---

---

---



---

---

---

---

---

---

---

---

Yes, it's great to be pregnant, but a 22-months pregnancy is too long: I want to see my baby! >>

---

---

---

---

---

---

---

---

### Methods of Induction

- ▶ Mechanical Means
  - Amniotomy: Artificial rupture of membranes, usually combined with oxytocin infusion
  - Stripping the Membranes: separating the chorioamniotic membrane from the wall of the cervix
- ▶ Pharmacologic Means
  - Oxytocin: Posterior pituitary hormone acts on smooth muscle of the uterus to initiate uterine contractions

### Individual Response Varies Titrate Carefully!!!

### Oxytocin

- ▶ Oxytocin is a HIGH ALERT medication.
- ▶ All institutions should have standardized protocol for administration of oxytocin to help avoid errors.
- ▶ To work, oxytocin must bind with the oxytocin receptors in the uterus. These receptors increase throughout the gestation, reaching maximum levels at term.

### Oxytocin Regimen

- Infused via pump
- Uniform dilution of oxytocin throughout institution
- Standard interval for rate of increase or decrease
- Titrate to maternal & fetal response
- Documented indication for oxytocin use
- Guidelines for nursing care including staffing ratios
- Emergency C/S can be started within a maximum of 30 min



Typical Regimen

Starting Dose	Incremental Increase	Dose Interval	Max Dose
1-2 mu/min mu/min	1-2	30- 40 min mu/min	30-40

- ▶ Maintain dosage when normal labor pattern occurs

---

---

---

---

---

---

---

---

- ▶ Nursing assessment of uterine activity, FHR, BP & P, and maternal tolerance should be documented every 15-30 min. when evaluating or increasing dose



- ▶ **Oxytocin should be discontinued if tachysystole or concerning FHR occurs**
- ▶ **Other measures include:** Oxygen, bolus of mainline IV, turning woman to her side and notifying physician

---

---

---

---

---

---

---

---

- ▶ **Augmentation** is the stimulation of uterine contractions when spontaneous contractions have failed to result in progressive cervical dilation or descent of the fetus

Common Methods:

- amniotomy
- oxytocin infusion

Regimen and precautions same as for induction

---

---

---

---

---

---

---

---

- ▶ **Cervical Ripening** is the physical softening of the cervix in preparation for labor and birth

**Bishop Scoring System**

Cervix	0	1	2	3	Score
<b>Dilation</b>	Closed	1–2 cm.	3–4 cm.	≥ 5 cm.	
<b>Effacement</b>	0–30%	40–50%	60–70%	≥ 80%	
<b>Station</b>	- 3	- 2	- 1, 0	+1, + 2	
<b>Consistency</b>	Firm	Medium	Soft		
<b>Position</b>	Posterior	Midposition	Anterior		

---

---

---

---

---

---

---

---

---

---

**Common Cervical Ripening Techniques**

- ▶ **Mechanical Methods**
    - Laminaria
    - Synthetic osmotic dilators
    - Foley bulbs—transcervical balloon catheters
  - ▶ **Prostaglandins**
    - **Cervidil** (Dinoprostone insert)
    - **Prepadil** (Dinoprostone gel)
    - **Cytotec** (Misoprostol tablet)
- Off label use in obstetrics – consent**

---

---

---

---

---

---

---

---

---

---

**Cervidil Insertion**

The Cervidil® (dinoprost) insert is inserted into the vagina and the cervix is dilated.

The insert is fully inserted into the cervix.

The Cervidil® (dinoprost) insert is inserted into the cervix and the cervix is dilated.

**Prepadil Insertion**

---

---

---

---

---

---

---

---

---

---

- ▶ Oxytocin can be administered if labor has not begun after ripening techniques are used



**Always remember—Induction of labor carries risks**

**Maternal**

- Operative vaginal delivery
- Uterine rupture
- Postpartum hemorrhage
- Increased C/S rate

**Fetal**

- Hypoxemic event r/t tachysystole
- Bruising r/t rapid descent

---

---

---

---

---

---

---

---

---

---

*Induction of labor should only be undertaken when the benefits to the health of the mother or fetus outweigh the risks of continuing the pregnancy and risks associated with the procedure*

---

---

---

---

---

---

---

---

---

---

**Bibliography**

- ▶ Kennedy, Betsy B, Donna Jean Ruth, & E. Jean Martin. Intrapartum Management Modules: A Perinatal Education Program, 4<sup>th</sup> edition. Philadelphia: Lipincott, Williams, & Wilkins, 2009.
- ▶ Mattson, Susan and Judy E. Smith. Core Curriculum for Maternal–Newborn Nursing, 5<sup>th</sup> edition. Saint Louis: Saunders Elsevier, 2016.
- ▶ Simpson, Kathleen Rice and Patricia A. Creehan. Perinatal Nursing, 4<sup>th</sup> edition. Philadelphia: Lipincott, Williams, & Wilkins, 2014.
- ▶ Simpson, Kathleen Rice. Cervical Ripening and Induction and Augmentation of Labor, 4<sup>th</sup> edition. AWHONN, 2013.

---

---

---

---

---

---

---

---

---

---