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Obstetrics & Gynecology

Maternal-Fetal Medicine

LABOR & DELIVERY



NO DISCLOSURES

OBJECTIVES

Information you should know prior to beginning the OB clerkship on:

- **Highlights of labor and delivery**
- **Fetal heart rate tracings**
- **Normal labor**
- **Abnormal labor**



LABOR & DELIVERY

Pearls for the L&D rotation:

- Speaking the language in OB
- Definition of normal labor
- Stages of labor
- Indications for a c-section
- Pain management options

UNIQUE TO OB: ABBREVIATIONS & ACRONYMS

EDC/EDD	Estimated date of confinement/delivery
EFW	Estimated fetal weight
LMP	Last menstrual period (first day of)
ROM	Rupture of membranes
BBOW	Bulging bag of water
AROM	Artificial rupture of membranes
SROM	Spontaneous rupture of membranes
PROM/PPROM	Premature (preterm) rupture of membranes
FHT/FHR	Fetal heart tones/rate
GFM	Good fetal movement
IUP	Intrauterine pregnancy
IUGR/FGR	Intrauterine/fetal growth restriction
IUFD	Intrauterine fetal demise
OA, OP, LOA, LOP, LOT, ROT, ROA, ROP	Fetal positions (O=occiput, A=anterior, P=posterior, T=transverse, R=maternal right, L=maternal left)
Vtx/Ceph	Vertex/cephalic
PIH	Pregnancy-induced hypertension
CST	Contraction stress test
NST	Non-stress test
CS/CD	Cesarean section/delivery
US	Ultrasound
PP	Postpartum
SVD	Spontaneous vaginal delivery
Toco	Tocometry (contraction monitor)

UNIQUE TO OB: G'S & P'S

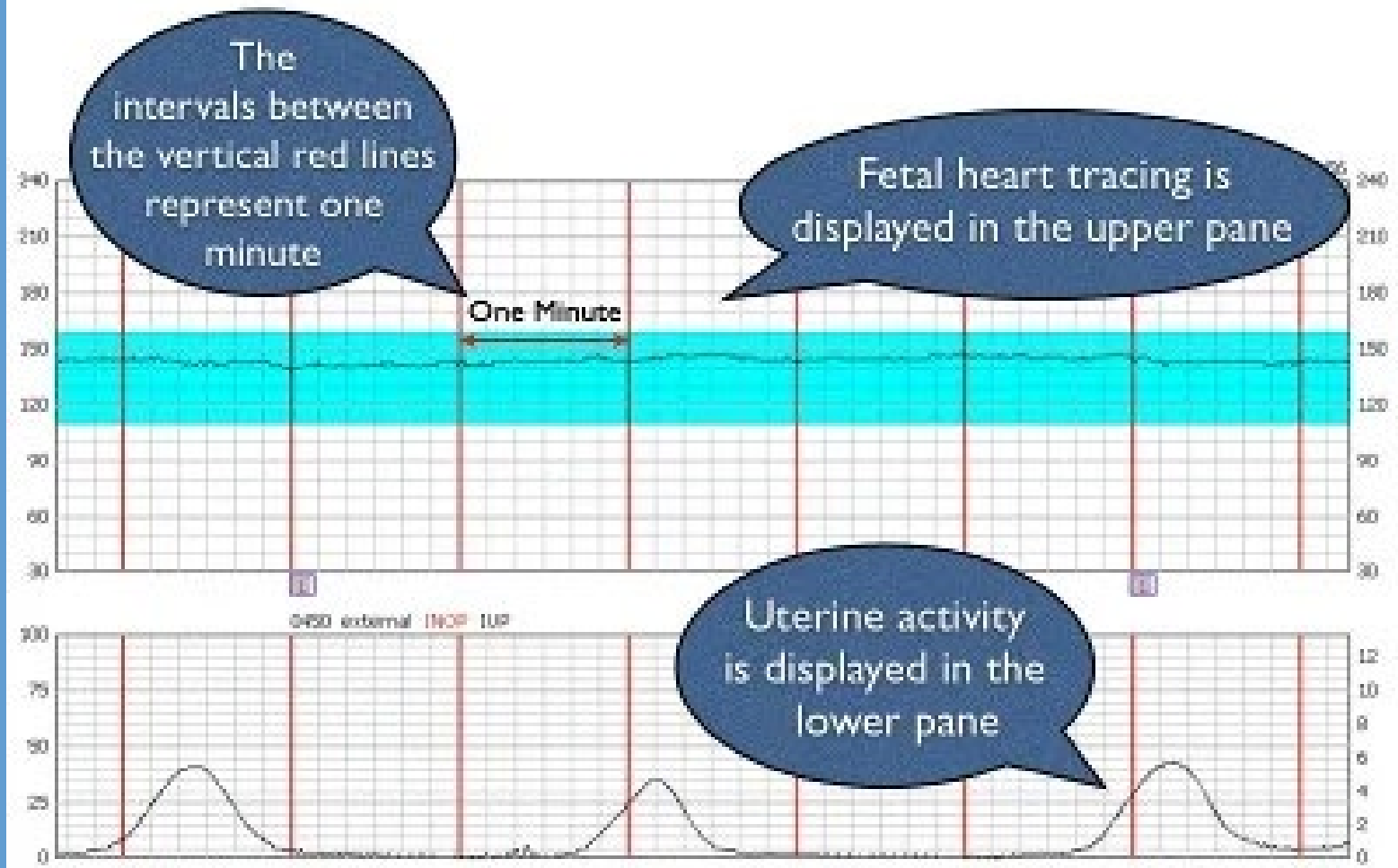
Obstetric history

- Part of the one-liner
- **G_#P_{TPAL}**
- **G = Gravida (# pregnancies)**
- **P = Para (outcomes)**
 - Term (37 wks)
 - Preterm (20-37 wks)
 - Abortions (<20 wks)
 - Living (Current living biological children)

Example: 30 year old G2P1001 at 28w0d with HTN

FETAL HEART RATE TRACINGS

FETAL HEART RATE TRACINGS

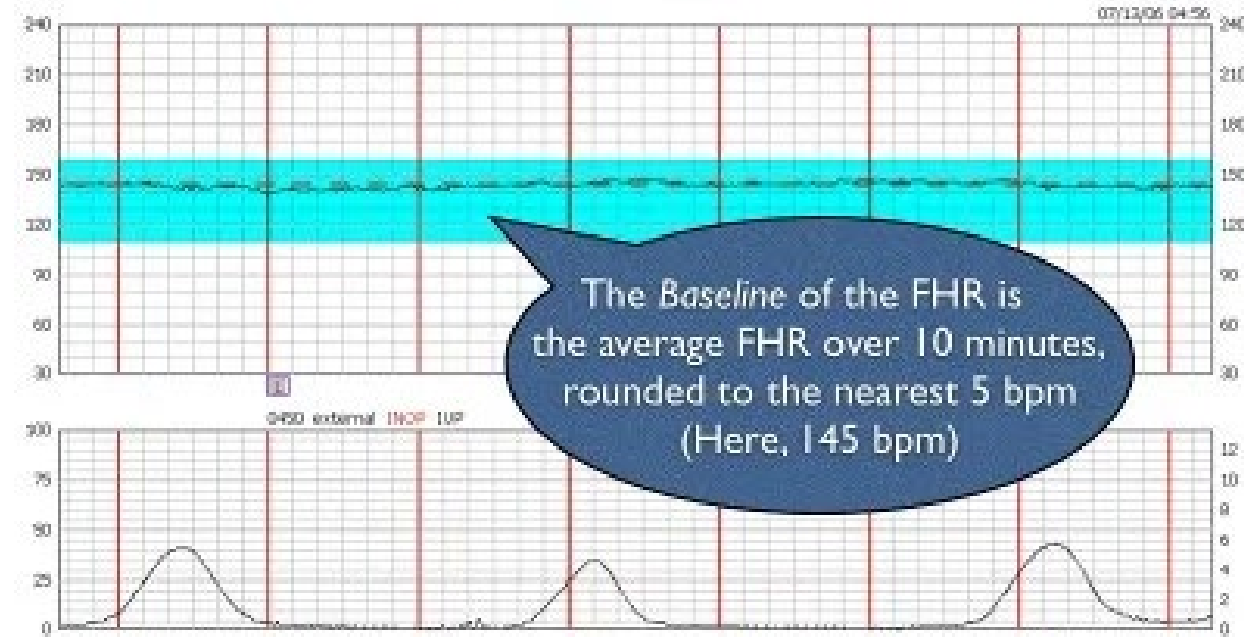


SYSTEMATIC APPROACH

The interpretation of the fetal heart rate tracing should follow a systematic approach with description of the following:

1. Baseline rate
2. Baseline fetal heart rate (FHR) variability
3. Presence of accelerations
4. Periodic or episodic decelerations
5. Changes or trends of FHR patterns over time
6. Frequency and intensity of uterine contractions

Baseline



Frequency of uterine
contractions:
Bottom tracing
Dark lines = 1 minute

>160 = tachycardia
<110 = bradycardia

VARIABILITY

Causes of decreased variability include:

Hypoxemia/acidosis

Fetal sleep cycles

Drugs (Analgesics, barbiturates, tranquilizers, phenothiazines, parasympatholytics, anesthetics)

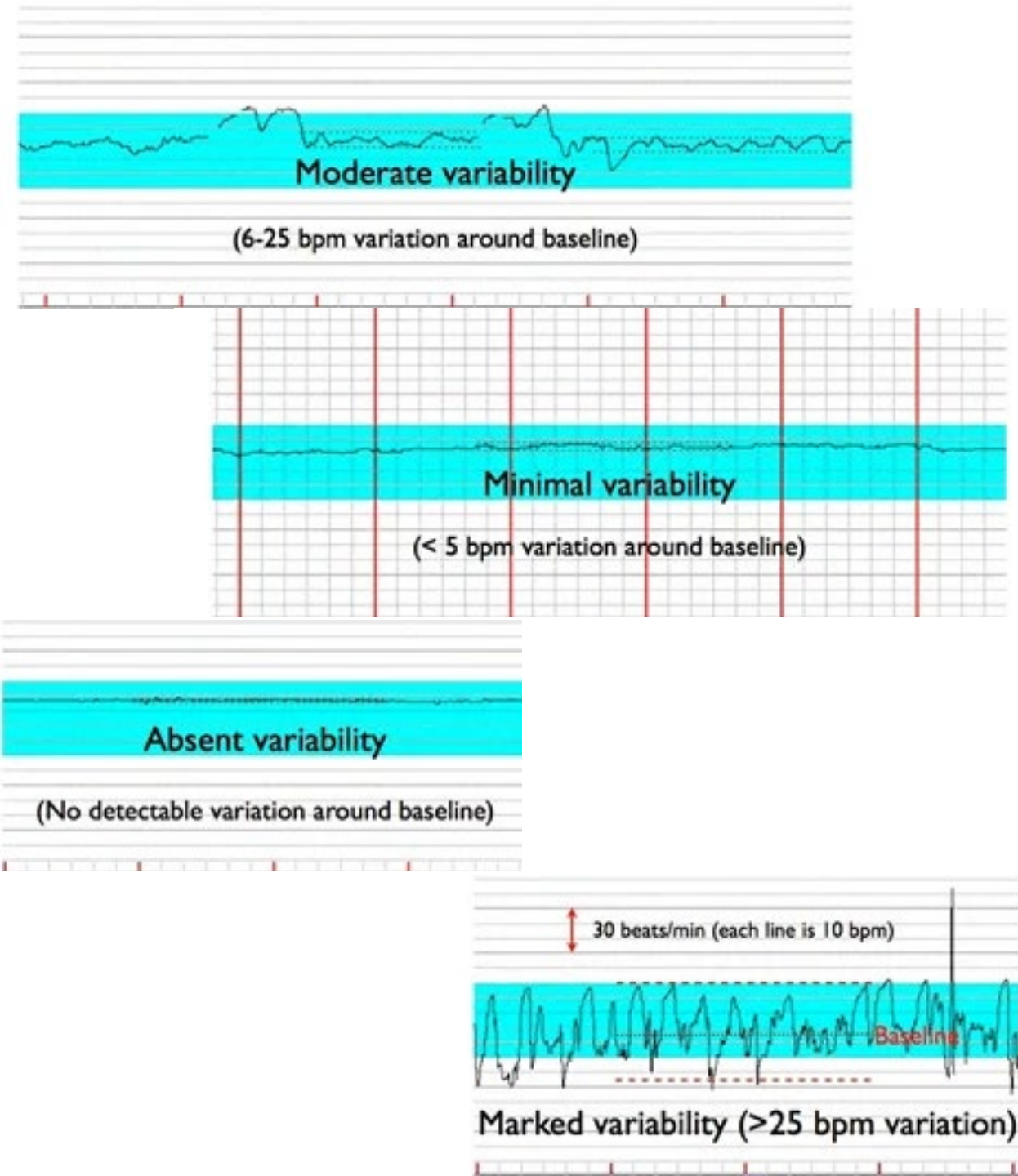
Prematurity

Arrhythmias

Fetal tachycardia

Preexisting neurological abnormality

Congenital anomalies

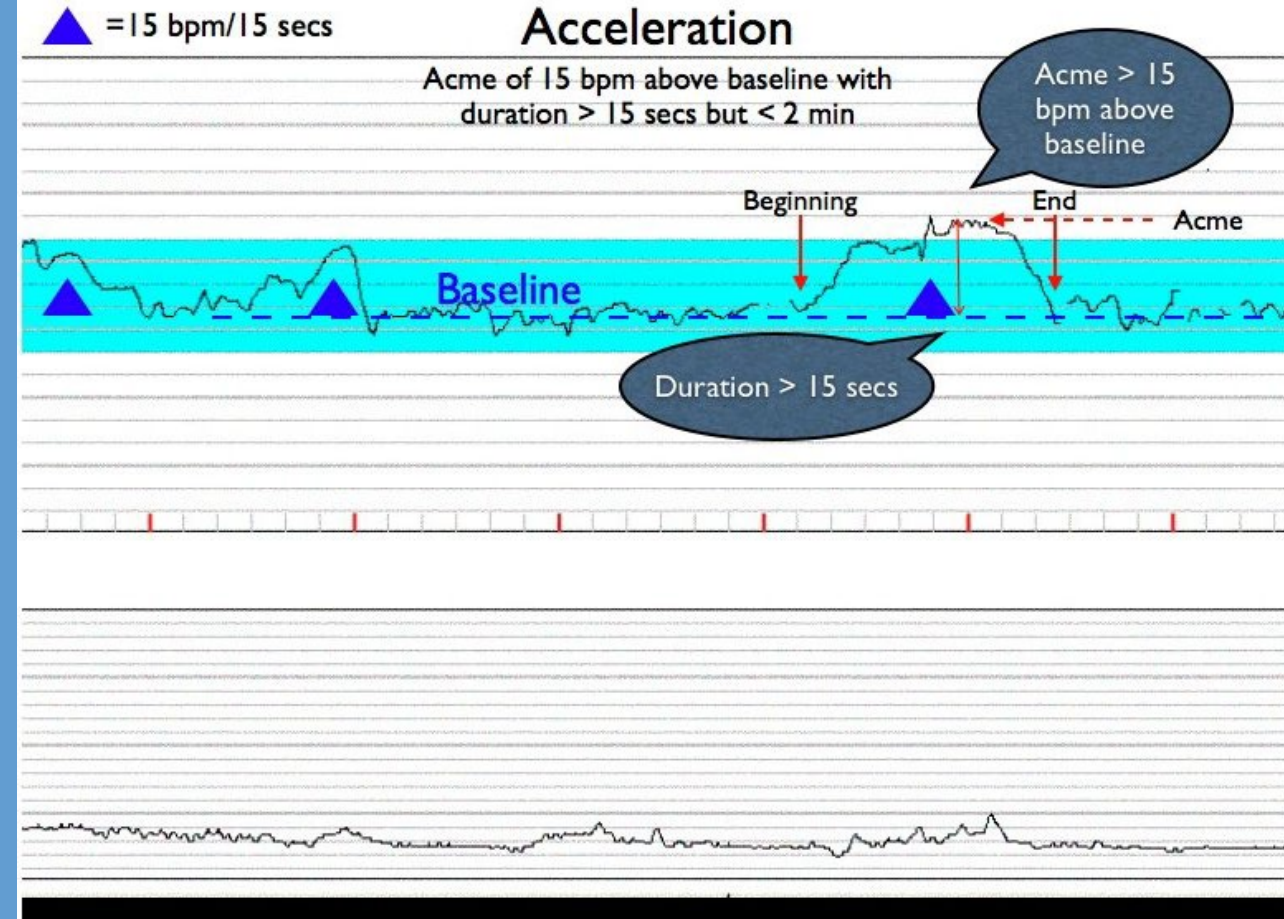


PRESENCE OF ACCELERATIONS

Visually apparent, abrupt (onset to peak < 30 seconds) increase in FHR from baseline.

< 32 weeks EGA: peak ≥ 10 bpm above baseline, duration ≥ 10 seconds but < 2 minutes from onset of the acceleration to return to baseline.

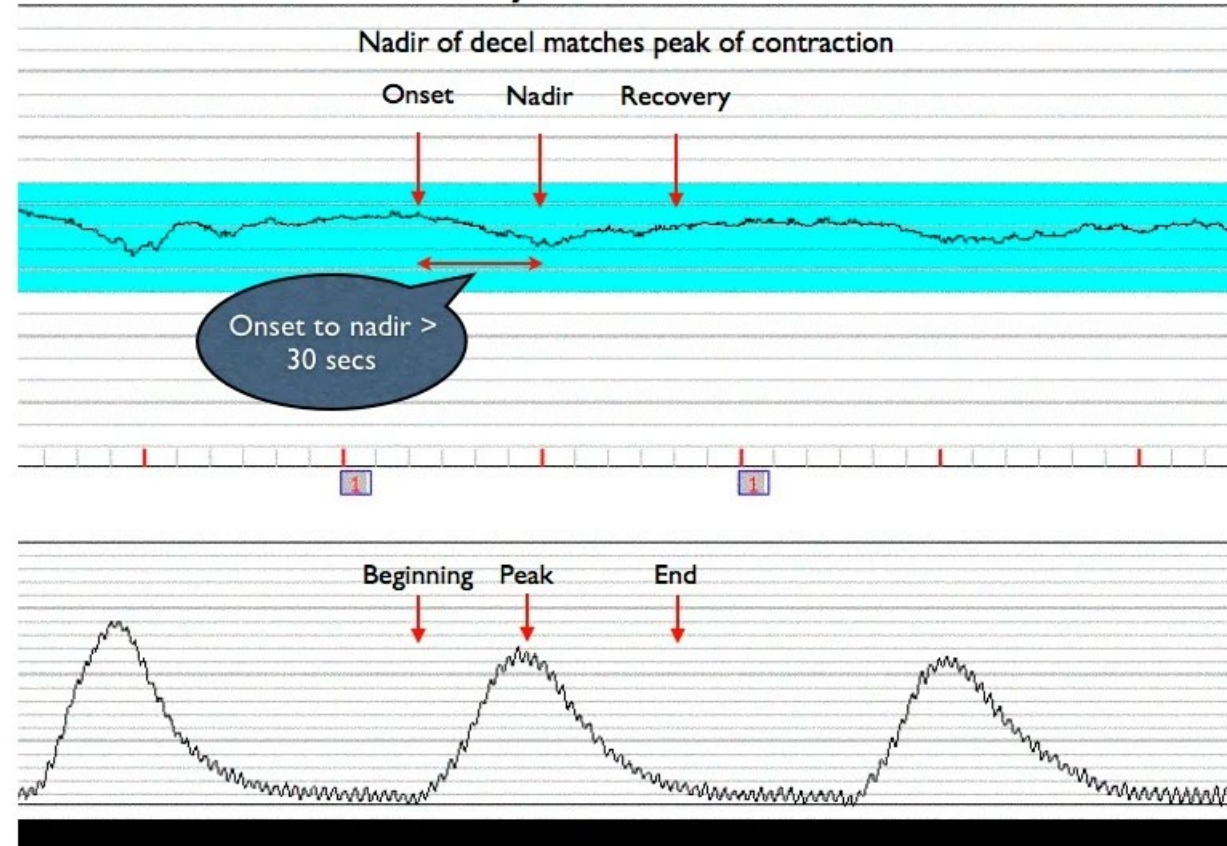
≥ 32 weeks EGA: peak ≥ 15 bpm above baseline, duration ≥ 15 seconds but < 2 minutes from onset of the acceleration to return to baseline.



DECELERATIONS

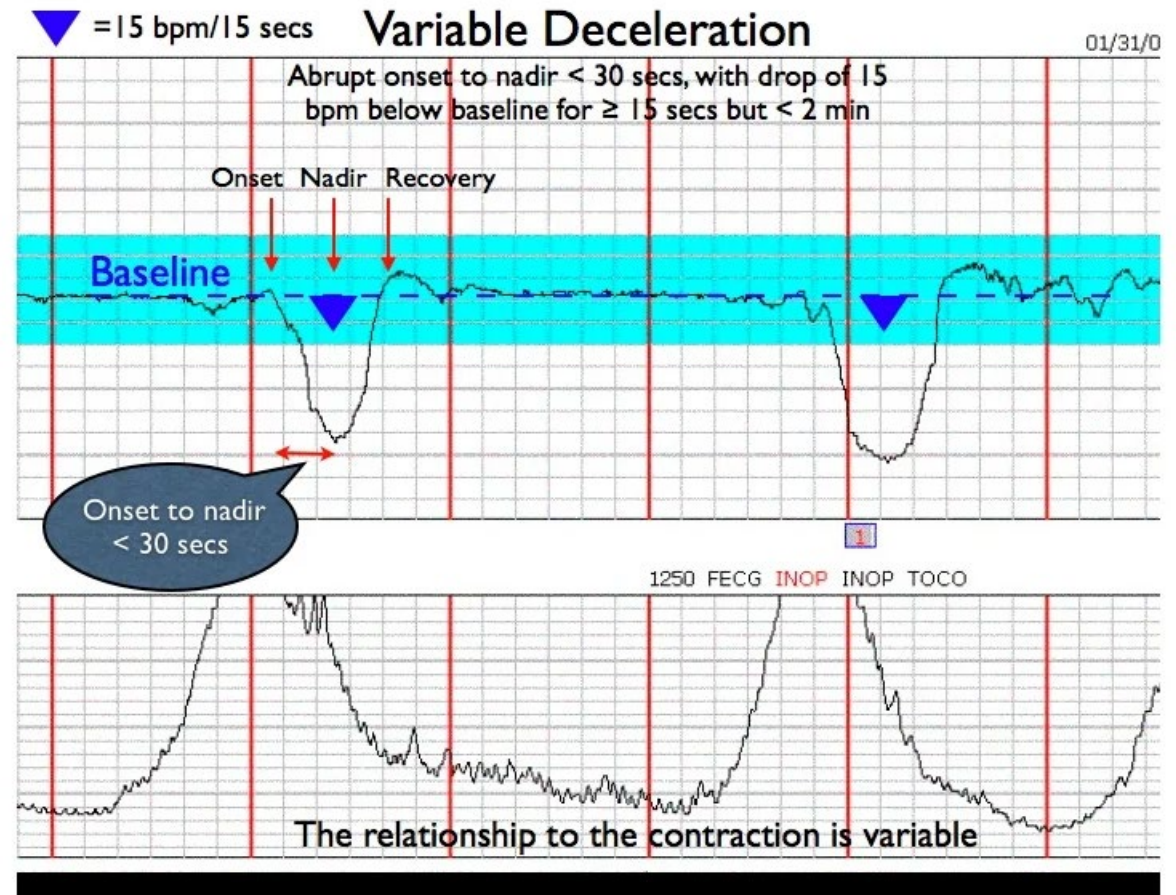
Type	Cause
Early	Head compression – good!
Variable	Cord compression
Late	Placental insufficiency
Prolonged	!!!!

Early Deceleration



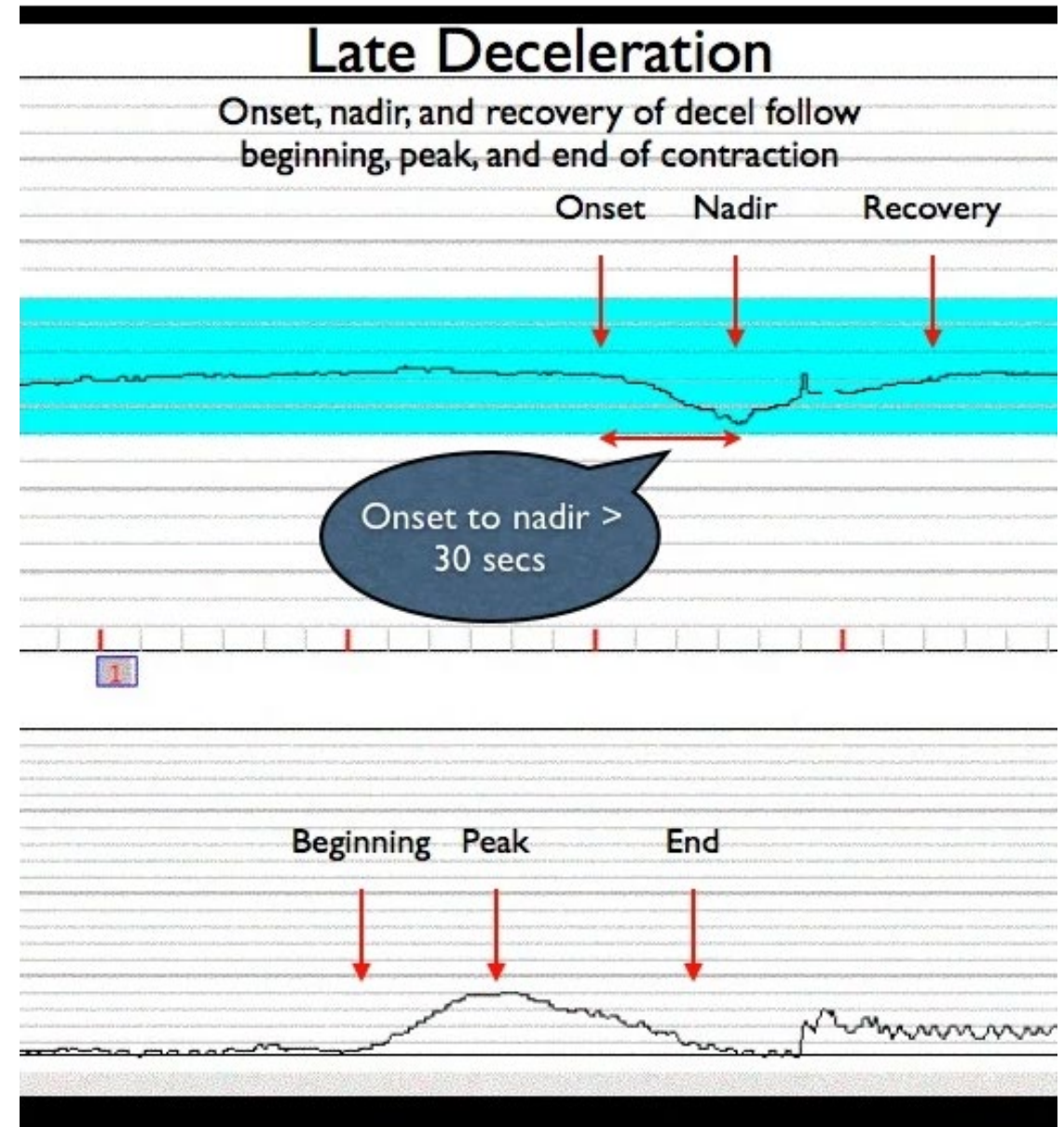
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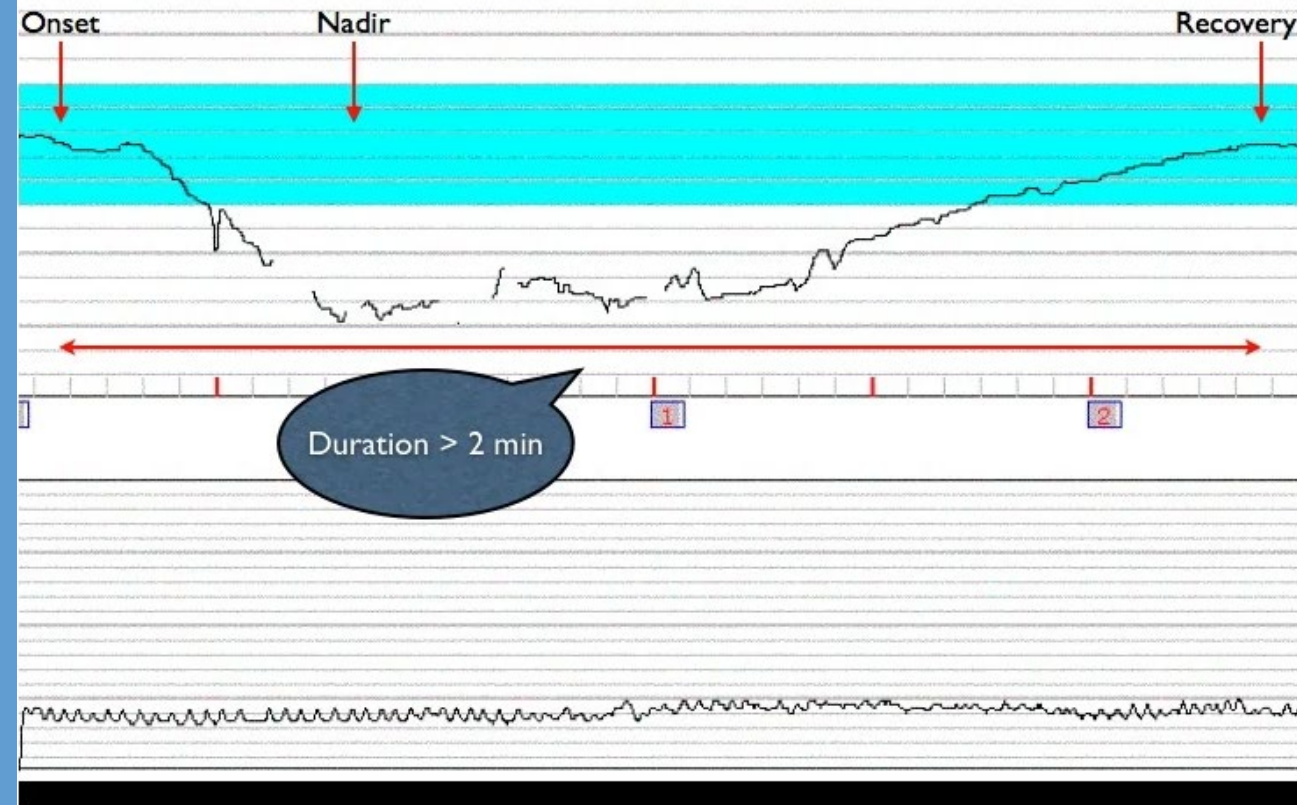


DECELERATIONS

Type	Cause
Early	Head compression – good!
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Prolonged	!!!!

Prolonged Deceleration

Decel is ≥ 15 bpm and > 2 min but < 10 min



THREE TIERED FHR INTERPRETATION SYSTEM

CATEGORY I	CATEGORY II	CATEGORY III
<p>Category I FHR tracings include all of the following:</p> <ul style="list-style-type: none">• Baseline rate: 110-160 beats per minute• Baseline FHR variability: moderate• Late or variable decelerations: absent• Early decelerations: present or absent• Accelerations: present or absent	<p>Everything else not cat I or cat III</p>	<ul style="list-style-type: none">• Absent baseline FHR variability and any of the following:<ul style="list-style-type: none">• Recurrent late decelerations• Recurrent variable decelerations• Bradycardia• Sinusoidal pattern

LABOR

NORMAL LABOR

Definition: regular (painful) contractions and cervical change

Stages of labor

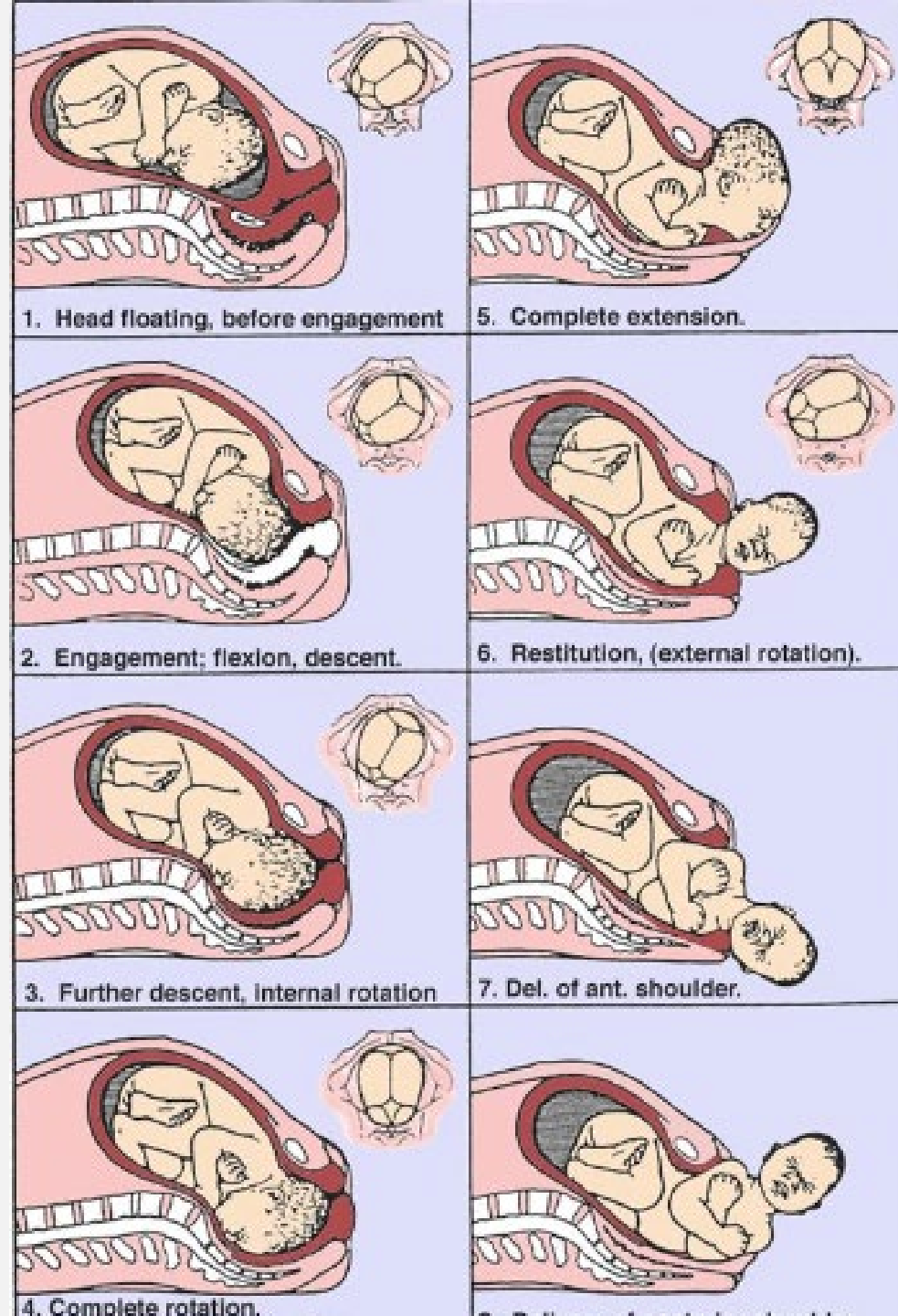
- **First stage – onset of labor to complete dilation (10 cm)**
- **Second stage -- complete dilation to fetal expulsion**
- **Third stage – fetal expulsion to placental expulsion**

Mechanics of labor

- **Power – uterine activity**
- **Passenger – fetal size, lie, position, and presentation**
- **Passage – maternal pelvis**

CARDINAL MOVEMENTS OF LABOR

- Engagement
- Descent
- Flexion
- Internal rotation
- Extension
- External rotation
- Expulsion



FIRST STAGE OF LABOR

- **Onset of labor to complete dilation**
- **Latent phase**
 - gradual cervical change
 - Prolonged if ≥ 20 hrs
- **Active phase**
 - rapid cervical change

Data from Zhang J, Troendle J, Yancey MK: Reassessing the labor curve in nulliparous women, *Am J Obstet Gynecol* 187:824, 2002.

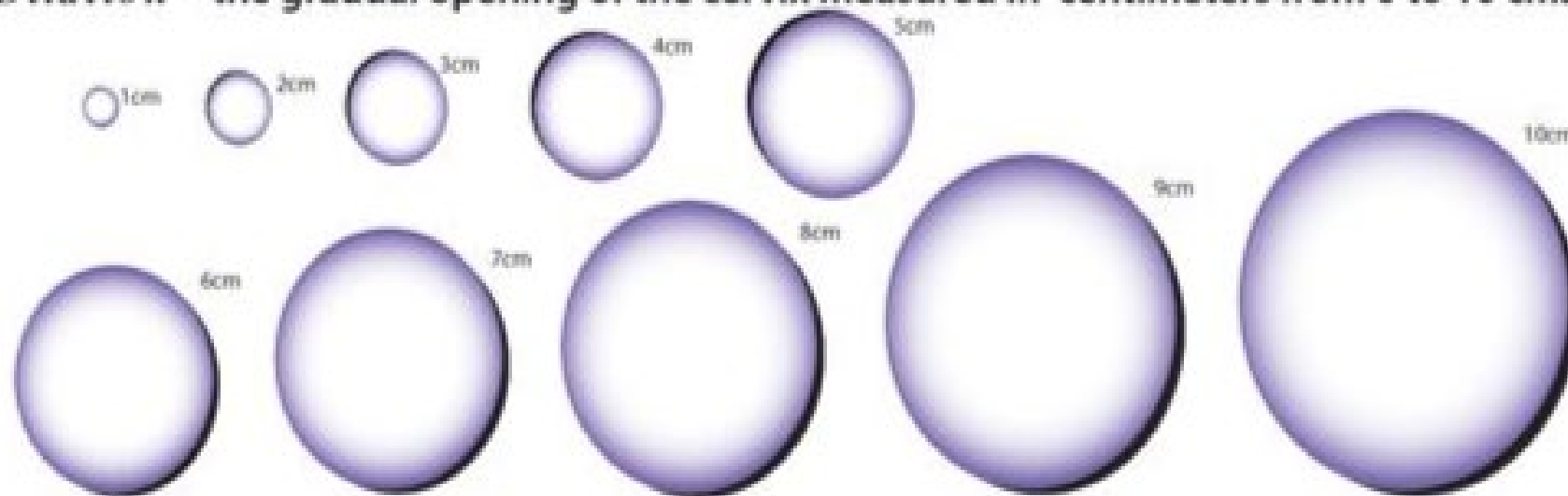
Cervical Dilation (cm)	Time Interval (hr)	Rate of Cervical Dilation (cm/hr)
From 2 to 3	3.2 (0.6, 15.0)	0.3 (0.1, 1.8)
From 3 to 4	2.7 (0.6, 10.1)	0.4 (0.1, 1.8)
From 4 to 5	1.7 (0.4, 6.6)	0.6 (0.2, 2.8)
From 5 to 6	0.8 (0.2, 3.1)	1.2 (0.3, 5.0)
From 6 to 7	0.6 (0.2, 2.2)	1.7 (0.5, 6.3)
From 7 to 8	0.5 (0.1, 1.5)	2.2 (0.7, 7.1)
From 8 to 9	0.4 (0.1, 1.3)	2.4 (0.8, 7.7)
From 9 to 10	0.4 (0.1, 1.4)	2.4 (0.7, 8.3)

Cervical Effacement & Dilation

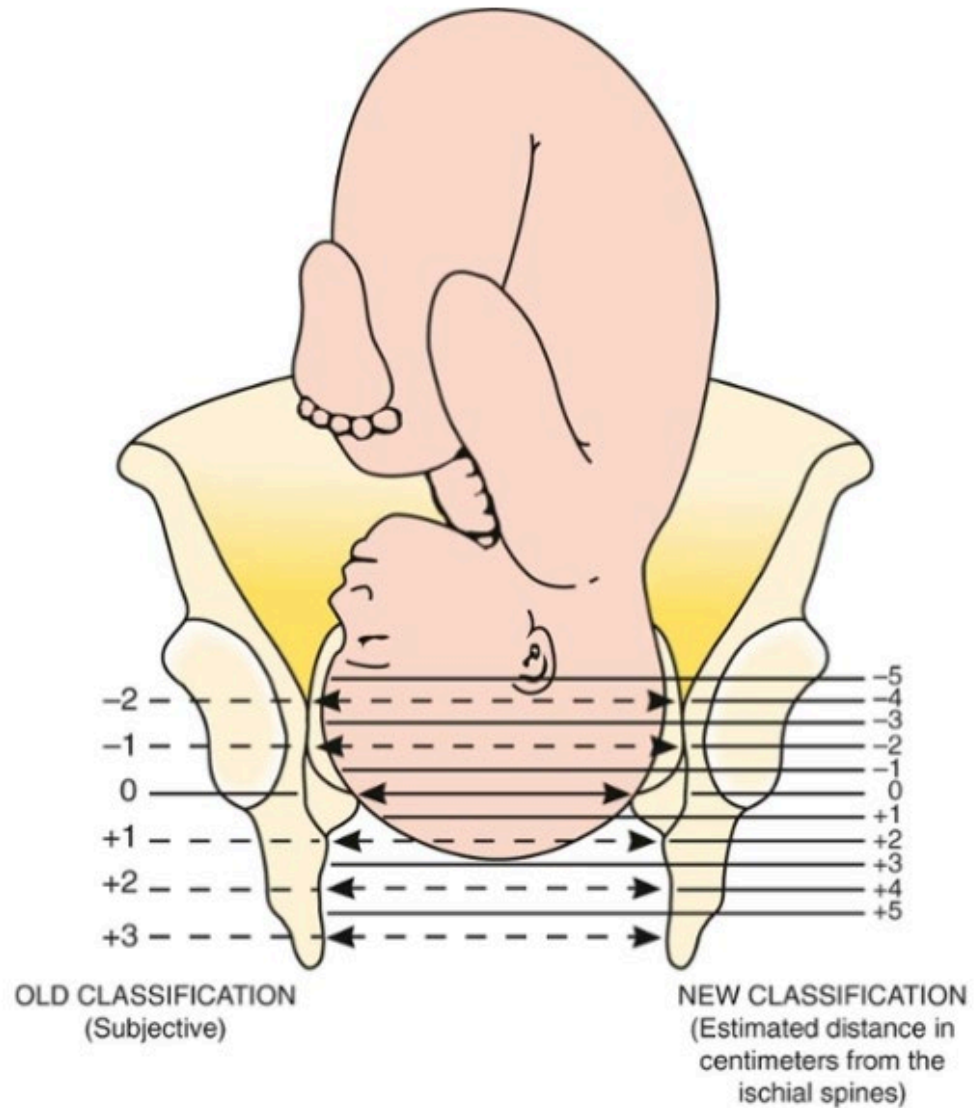
Effacement -the gradual thinning, shortening and drawing up of the cervix measured in percentages from 0 to 100%.



Dilation - the gradual opening of the cervix measured in centimeters from 0 to 10 cms.



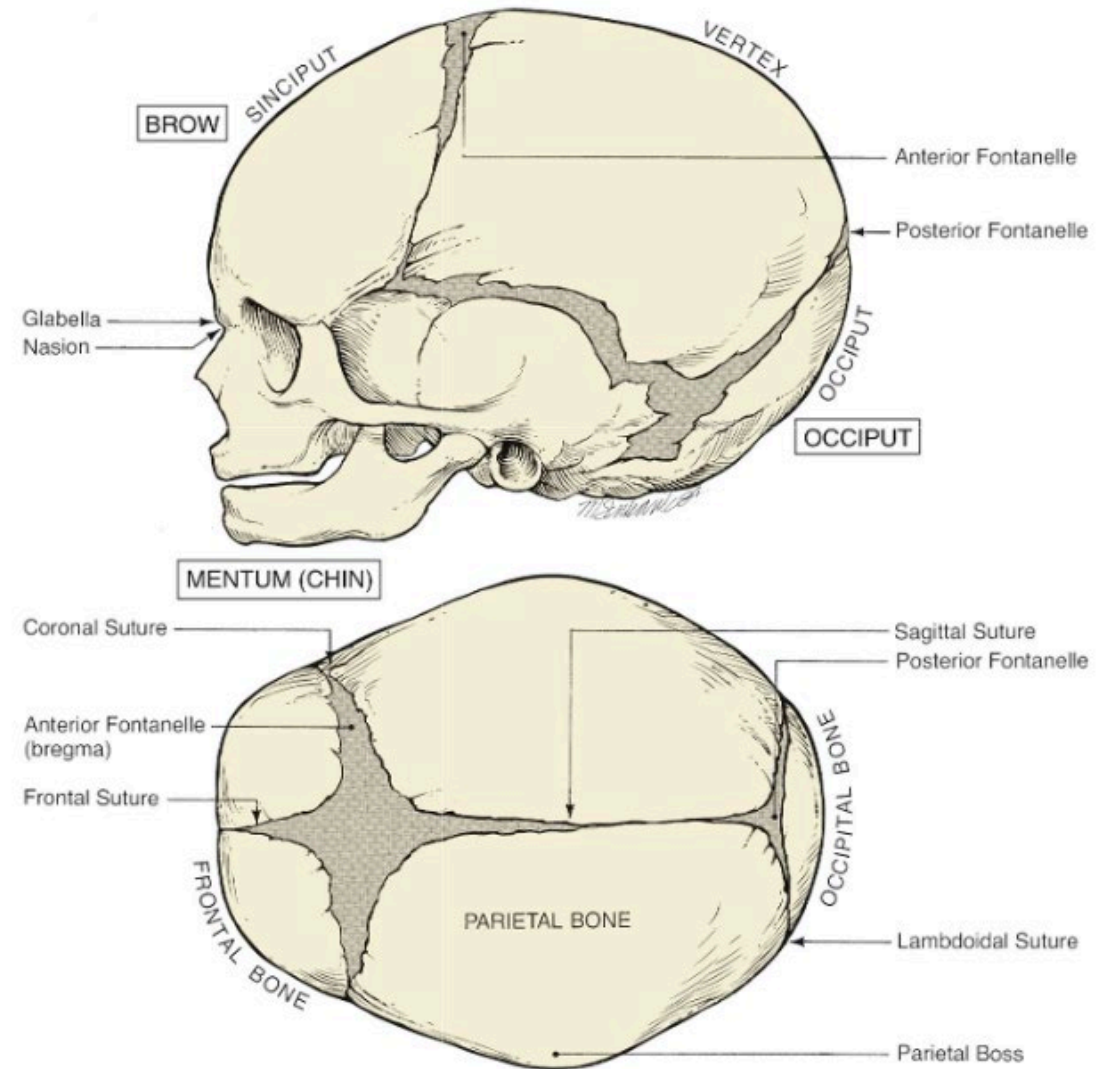
FETAL STATION

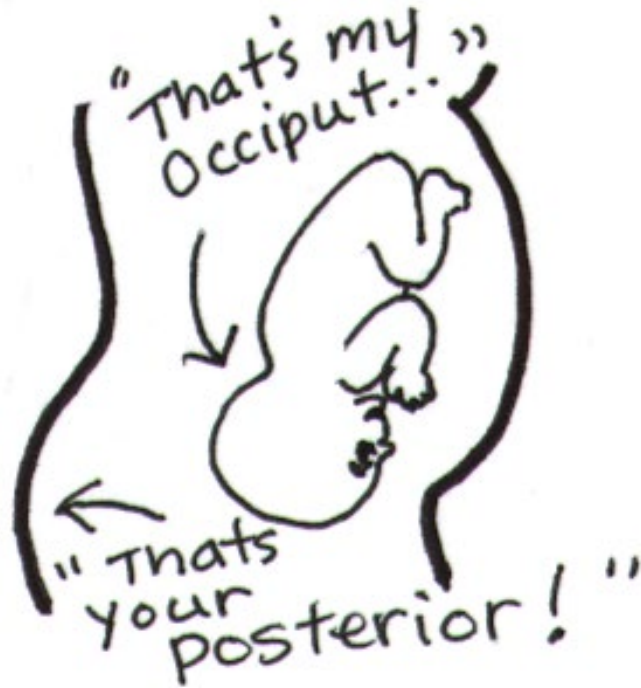


- Descent of the fetal vertex in relation to the ischial spine
- 0 station is the plane of the maternal ischial spines
- Part of cervical exam:
 - Dilation / effacement / station
 - Example: 2/50/-2

FETAL LANDMARKS

- Occiput anterior is easiest to push out
- Occiput posterior is more difficult
- Face presentation with persistent mentum posterior is an indication for CS





Occiput Posterior



Occiput Anterior

FETAL POSITION

An anatomical illustration of a fetus in the uterus, shown in a sagittal cross-section. A thin white line, likely a monitoring wire, runs from the fetus's head towards the top left. The fetus is positioned head-down, with its head near the cervix. The surrounding uterine and placental structures are depicted in various shades of pink and red.

FIRST STAGE PROTRACTION AND ARREST

Protracted labor

$\geq 6\text{cm}$ and dilating less than 1cm over 2 hrs

Begin pitocin

Perform amniotomy

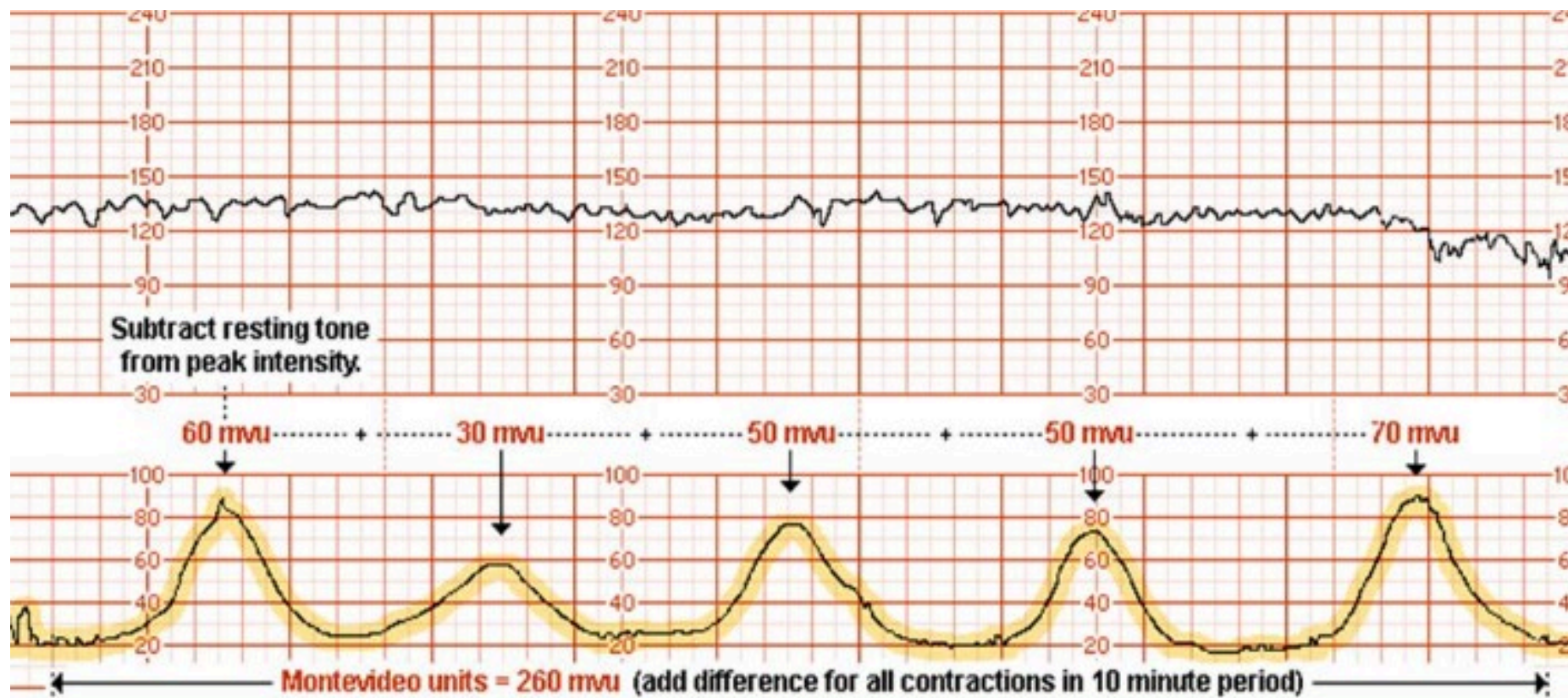
Arrest of dilation

$\geq 6\text{cm}$ with ruptured membranes

6 hrs of no cervical change with inadequate contractions

4 hours of no change with adequate contractions

->C-section



INTRAUTERINE PRESSURE CATHETER (IUPC)

SECOND STAGE OF LABOR

Complete dilation to expulsion of fetus

Passive phase

Complete dilation to beginning of maternal pushing

Active phase

Maternal pushing to expulsion of fetus

No absolute time limit as long as progressing

Nulliparous: 3 hours

Multiparous: 2 hours

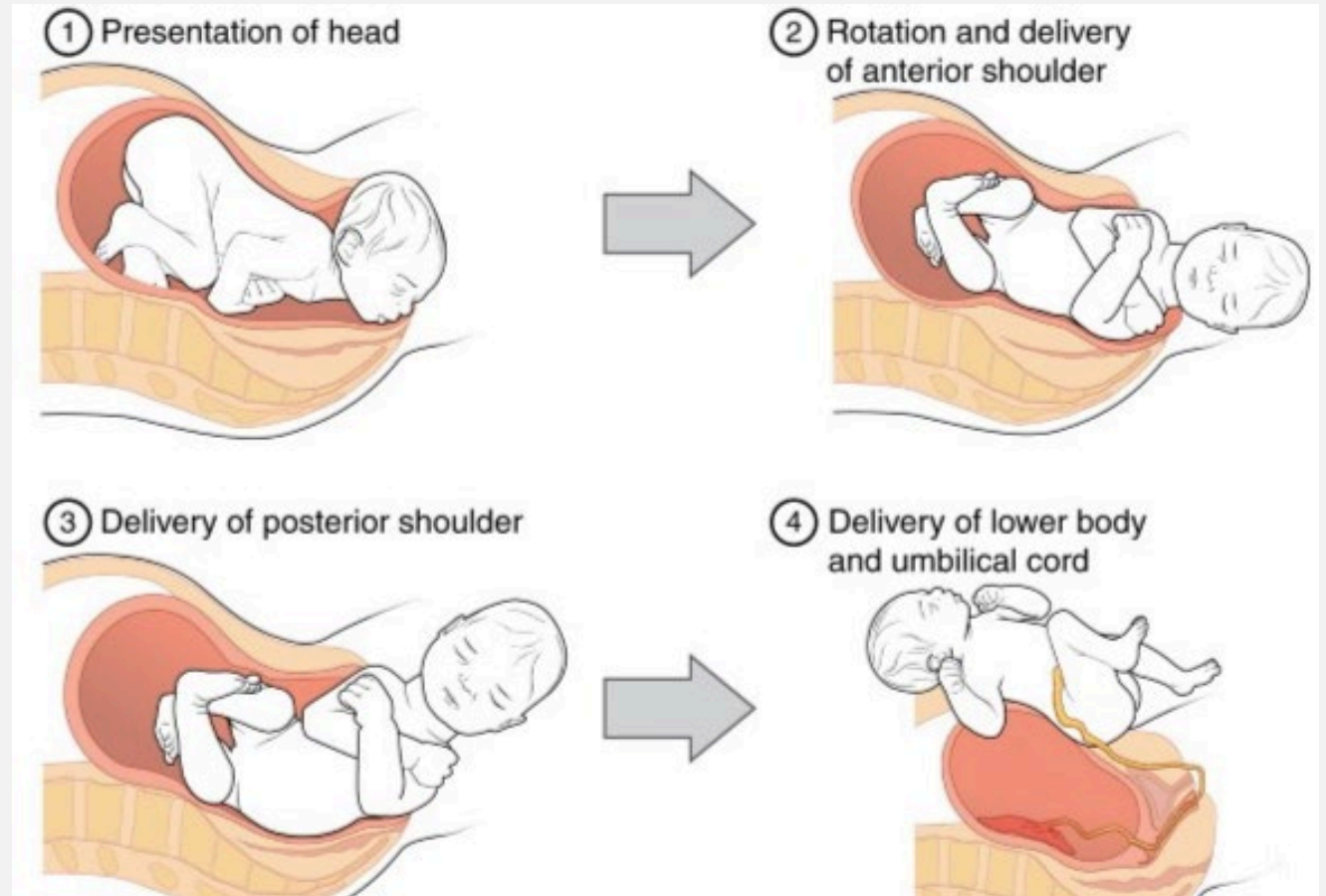
May allow an addition hour with an epidural

Begin pitocin if no descent in the first 60-90min of pushing

Option for operative delivery

Second stage arrest

C-section





THIRD STAGE OF LABOR

Expulsion of fetus to expulsion of placenta

Average length: 5-6 minutes

Maximum: 30 minutes

Signs of placental separation

Gush of blood

Lengthening of umbilical cord

Anterior-cephalad movement of uterus

Active management

Traction of umbilical cord

Uterotonic agent

LABOR PAIN MANAGEMENT

- **Non-pharmacologic**
 - Movement, massage, acupressure, breathing techniques
 - Aromatherapy, sterile water injections
- **Narcotics**
 - PCA
 - Nubain, Stadol
- **Nitrous oxide**
 - Self administered, begin 30 sec prior to contraction
- **Neuraxial anesthesia (epidural)**



OB TRIAGE PEARLS

4 questions:

- **Contractions**
- **Vaginal bleeding**
- **Leakage of fluid**
- **Fetal movement**

Common workups:

- **Preeclampsia labs (CBC, CMP, urine protein/Cr ratio)**
- **Rupture rule out (pool, nitrazine paper, ferning)**
- **Preterm labor (cervical exam)**

QUESTIONS?