Dystocia: Abnormal Labor
A 23-year-old G1P0 woman at 40 weeks’ gestation is undergoing labor induction with oxytocin for oligohydramnios. She has been at 6-cm dilation for 3hr. A significant amount of caput is noted on cervical examination.

Her uterine contractions are every 2 to 3 min and palpate firm. Each contraction lasts for 60 sec. The estimated fetal weight is 7.5lb, and the pelvis seems clinically adequate. The fetal heart tones range from 145 to 150 bpm without decelerations.
Caput succedaneum is **swelling** of the scalp in a newborn. It is most often brought on by pressure from the uterus or vaginal wall during a head-first (vertex) delivery.
CASE

- What is your next step?
- What is the most likely diagnosis?
CONTENT

- DEFINITION
- CLASSIFICATION
- ABNORMAL PATTERNS OF LABOR
- MANAGEMENT
DEFINITION

- Dystocia is defined as difficult labor or childbirth. It may be associated with abnormalities involving the maternal pelvis, the fetus, the uterus and cervix, or a combination of these factors.
Dystocia is currently the most common indication for primary cesarean section, about 60 percent of cesarean deliveries in the United States are attributable to the diagnosis of dystocia.
CLASSIFICATION

- Abnormalities of the Passage
  size or configurational alterations of the bony pelvis, soft tissue abnormalities of the birth canal, reproductive tract masses or neoplasia, or aberrant placental location.

- Abnormalities of the Passenger
  Common fetal abnormalities leading to dystocia include excessive fetal size, malpositions, congenital anomalies, and multiple gestation.
Abnormalities of the Powers

Hypertonic, hypotonic, or discoordinated uterine activity is characteristic of ineffective uterine action.

Lack of voluntary expulsive effort during the second stage may also impede the normal course of delivery.
The Powers

- Uterine contractions
- Maternal intra-abdominal pressure
- Levator ani muscle contraction
Uterine contractions

Polarity and symmetry

regularity
PELVIC EXAMINATION
classified the 4 major types of adult pelvic types: gynecoid, android, anthropoid, and platypelloid. Pure forms of these pelvic types are rare; mixed elements are more often present in each type of pelvis.
Traumatic pelvic fractures, rachitic pelves, chondrodystrophic dwarf pelves, kyphotic and scoliotic pelves, exostosis, and bony neoplasms.
SOFT TISSUE DYSTOCIA

- uterine or vaginal congenital anomalies, scarring of the birth canal, pelvic masses, or low implantation of the placenta.
SOFT PASSAGE

hysteromyoma

ovarian cyst

uterine malformation
ABNORMALITIES OF THE PASSENGER

- Fetal dystocia is abnormal labor caused by malposition or malpresentation, excessive size of the fetus, or fetal malformation.
MALPOSITION AND MALPRESENTATION

- Fetal malpresentations are abnormalities of fetal position, presentation, attitude, or lie.

- persistent occiput posterior and occiput transverse positions, brow presentation, face presentation, transverse or oblique lies, and breech and compound presentation.
The lie is the relation of the long axis of the fetus to that of the mother.

- *longitudinal* and *transverse* and *oblique*
Fetal Presentation

- Fetal presentation describes that part of the fetus that is lowermost in the pelvis.

- cephalic, breech, shoulder
Cephalic presentation

Longitudinal lie. Cephalic presentation. Differences in attitude of the fetal body in (A) vertex, (B) sinciput, (C) brow, and (D) face presentations. Note changes in fetal attitude in relation to fetal vertex as the fetal head becomes less flexed.
BREECH PRESENTATION

Figure 24-1. Frank breech presentation.

Figure 24-2. Complete breech presentation

Figure 24-3. Double-footling breech presentation in labor
Fetal position

Figure 17-2. Longitudinal lie. Vertex presentation. **A.** Left occiput anterior (LOA). **B.** Left occiput posterior (LOP).
Fetal position

Figure 17-3. Longitudinal lie. Vertex presentation. A. Right occiput posterior (ROP). B. Right occiput transverse (ROT).
Fetal position

Figure 17-4. Longitudinal lie. Vertex presentation. Right occiput anterior (ROA).
Fetal position

Figure 17-6. Longitudinal lie. Breech presentation. Left sacrum posterior (LSP).
Fetal position

Figure 17-5. Longitudinal lie. Face presentation. Left and right anterior and right posterior positions.
**Fetal position**

*Figure 17-7. Transverse lie. Right acromiodorsoposterior (RADP). The shoulder of the fetus is to the mother's right, and the back is posterior.*
Persistent occiput posterior

- The occiput posterior position may be normal in early labor, with about 10–20% of fetuses in occiput posterior position at onset of labor.
- In 87% of cases, the head rotates to the occiput anterior position when it reaches the pelvic floor. If the head does not rotate, persistent occiput anterior position may result in dystocia.
Persistent occiput posterior may result from a contracted anthropoid or android pelvis or insufficient uterine action.

The use of epidural anesthesia and oxytocin augmentation have been associated with higher rates of occiput posterior presentation.
持续性枕后位、枕横位

枕后位分娩机制
The prognosis for the infant is excellent when these guidelines are followed.

Maternal morbidity, including extension of episiotomies, higher rates of anal sphincter injury, and other birth canal lacerations, occurs more frequently in occiput posterior deliveries.
Persistent occiput transverse

- occiput transverse is also frequently a transient position.
- In most labors, the fetal head spontaneously rotates to the anterior position.
- Persistent occiput transverse is associated with pelvic dystocia, uterine dystocia, and platypelloid or android pelves.
- Diagnosis, management, and prognosis are similar to those of persistent occiput posterior presentation.
Brow presentation

- Brow presentations usually are transient fetal presentations with deflexion of the fetal head.
During the normal course of labor, conversion to face or vertex presentation generally occurs.

If no conversion takes place, dystocia is likely.

Initial management is expectant, as spontaneous conversion to vertex presentation occurs in more than one-third of all brow presentations.
Face presentation

- In face presentation, the fetal head is fully deflexed from the longitudinal axis.

- Associated with grand multiparity, advanced maternal age, pelvic masses, pelvic contraction, multiple gestation, polyhydramnios, macrosomia, congenital anomalies including anencephaly and hydrocephaly, prematurity, cornual implantation of the placenta, placenta previa, and premature rupture of the membranes.
MENTUM POSTERIOR POSITIONS IN AVERAGE-SIZE FETUSES ARE NOT DELIVERABLE VAGINALLY.

WITH MENTUM ANTERIOR PRESENTATION, OXYTOCIN AUGMENTATION MAY BE CONSIDERED FOR ARRESTED LABOR IF CEPHALOPELVIC DISPROPORTION CAN BE RULED OUT.
There is little or no place for manual flexion of the fetal head or manual rotation from the mentum posterior position to the mentum anterior position.
Abnormal fetal lie

- In transverse or oblique lie

- Causative factors include grand multiparity, prematurity, pelvic contraction, and abnormal placental implantation.
TREATMENT

- external cephalic version with onset of labor or when the membranes rupture, prompt cesarean delivery is mandatory

- internal podalic version

- Abnormal axial lies have a 20 times greater incidence of cord prolapse than vertex presentations.
Fetus in transverse lie presentation
External cephalic version (ECV)  internal podalic version
A prolapsed extremity alongside the presenting part constitutes **compound presentation**
Prematurity and a large pelvic inlet are associated clinical findings.

Most commonly, a hand is palpated beside the vertex.

Labor in most of these patients will end in uncomplicated vaginal delivery.

Cesarean section should be done in the presence of dystocia or cord prolapse.
Attempts to reposition the fetal extremity are discouraged, except for gentle pinching of the digits to determine whether the fetus will retract the extremity.
Breech presentation is associated with similar causative factors as face presentation, as well as with previous breech presentation, congenital anomalies, and any anomaly that alters the normal piriform shape of the uterus.

Indications for cesarean section include contracted pelvis, secondary arrest of dilatation, fetal weight over 3500 g, hyperextended head, floating station, and an inexperienced practitioner.
FETAL MACROSOMIA

- Associated risk factors include maternal diabetes, maternal obesity (> 70 kg), excessive maternal weight gain (> 20kg), postdate pregnancy, and previous delivery of a macrosomic infant.

- However, less than 40% of macrosomic infants are born to patients with identifiable risk factors.
Shoulder dystocia

- difficult delivery of the shoulders after delivery of the fetal head

- It is an obstetric emergency, with high risk of fetal brachial plexus injury, hypoxia, or asphyxia.

- It is usually heralded by the classic turtle sign. After the fetal head delivers, it retracts back on the maternal perineum.
The first thing to do is to call for assistance.

Then if gentle posterior and inferior traction of the fetal head is not successful.
Application of suprapubic pressure. The patient’s legs are sharply flexed against her abdomen in an attempt to free the anterior shoulder of the fetus.
Wood’s screw maneuver, or Rubin’s maneuver rotates the shoulder so that it occupies a transverse or oblique diameter of the pelvis, facilitating fetal delivery.
R = Remove the Arm

- 顺着后臂往下达到肘部
  - 通常在胎儿胸前
- 在肘部使手臂弯曲
- 使前臂由胸前娩出
  - 直接抓手并拉出会导致骨折
R = Roll the Patient

在这一体位上先试娩后肩，而后可试行所有阴道内操作
If all else fails and there is a chance for a good fetal outcome, a symphysiotomy may be performed.
The Zavanelli procedure may be performed, it last maneuver consists of a replacement of the fetal head into the vagina in the flexed position, then an urgent cesarean section is performed.
ABNORMALITIES OF THE POWERS

Normal uterine activity during labor characteristics

- (1) the relative intensity of contractions is greater in the fundus than in the midportion or lower uterine segment (fundal dominance)

- (2) the average value of the intensity of contractions is more than 24 mm Hg (in the active phase of labor, pressures often increase to 40–60 mm Hg)

- (3) contractions are well synchronized in different parts of the uterus
(4) the basal resting pressure of the uterus is between 12 and 15 mm Hg

(5) the frequency of contractions progresses from one every 3–5 minutes to one every 2–3 minutes during the active phase

(6) the duration of effective contraction in active labor approaches 60 seconds

(7) the rhythm and force of contractions are regular.
Uterine dysfunction generally comprises 3 categories:

- hypotonic dysfunction
- hypertonic dysfunction
- uncoordinated dysfunction.
- **Hypotonic dysfunction** is uterine activity characterized by contraction of the uterus with insufficient force (> 24 mm Hg), irregular or infrequent rhythm, or both.

- Seen most often in primigravidas in the active phase of labor, it may be caused by excessive sedation, early administration of conduction anesthesia, twins, polyhydramnios, or overdistention of the uterus.
Hypotonic dysfunction responds well to oxytocin; however, care must be taken to first rule out cephalopelvic disproportion and malpresentation.

When these patterns occur in the latent phase of labor, sedation may be effective in converting hypertonic contractions to normal labor patterns.

Active management of labor has been shown to decrease perinatal morbidity and cesarean section rates.
Hypertonic uterine contractions and uncoordinated contraction often occur together and are characterized by elevated resting tone of the uterus, dyssynchronous contractions with elevated tone in the lower uterine segment, and frequent intense uterine contractions.
It is generally associated with abruptio placentae, overzealous use of oxytocin, cephalopelvic disproportion, fetal malpresentation.

Treatment may require tocolysis, decrease in oxytocin infusion, or cesarean section as indicated for concomitant malpresentation, cephalopelvic disproportion, or fetal distress.
ABNORMAL PATTERNS OF LABOR

- Labor is a dynamic process characterized by uterine contractions that increase in regularity, intensity, and duration, causing progressive dilatation and effacement of the cervix and descent of the fetus through the birth canal.

- The progress of labor is evaluated primarily through estimates of *cervical dilatation* and descent of the *fetal presenting part*. 
Friedman described four abnormal patterns of labor

(1) prolonged latent phase
(2) protraction disorders (protracted active-phase dilatation and protracted descent and protracted second stage of labor)
(3) arrest disorders (secondary arrest of dilatation, arrest of descent)
(4) precipitate labor disorders
Prolonged Latent Phase

- The latent phase of labor begins with the onset of regular uterine contractions and extends to the beginning of the active phase of cervical dilatation.

- The latent phase is abnormally prolonged if it lasts more than 20 hours in nulliparas or 14 hours in multiparas.

- China: more than 16 hours
ETIOLOGICAL FACTOR

- Excessive sedation or sedation given before the end of the latent phase
- Unfavorable cervix
- Weak, irregular, uncoordinated, and ineffective uterine contractions
- Fetopelvic disproportion
TREATMENT

- therapeutic rest regimens or active management of labor. After 6–12 hours of rest with sedation and hydration.

- 85% of patients spontaneously enter the active phase of labor, and further progression in dilatation and effacement may be expected.
10% of patients will have been in false labor, and may be allowed to return home to await the onset of true labor if fetal status is reassuring.

In the remaining 5% of patients, uterine contractions remain ineffective in producing dilatation.

In the absence of any contraindication, active stimulation of labor with oxytocin infusion may be effective in terminating the latent phase of labor.
The prognosis for vaginal delivery after therapeutic measures is excellent.

After abnormalities in the latent phase have been corrected, patients are not at any greater risk of developing subsequent labor disorders than are patients who have experienced a normal latent phase.
**Protraction Disorders**

- Protracted cervical dilatation in the active phase of labor and protracted descent of the fetus constitute the protraction disorders.

- Protracted active-phase dilatation is characterized by an abnormally slow rate of dilatation in the active phase. The active-phase lasts more than 8 hours.

- Protracted descent of the fetus is characterized by a rate of descent under 1 cm/h in nulliparas or under 2 cm/h in multiparas.

- Protracted second stage of labor is protracted when it exceeds 2 hours in nulliparas or 1 hour in multiparas.
UNDERLYING PATHOGENESIS OF PROTRACTED LABOR

- Fetopelvic disproportion is encountered in about one-third of patients
- minor malpositions such as occiput posterior
- excessive sedation
- pelvic tumors obstructing the birth canal
- improperly administered conduction anesthesia (e.g., epidural anesthesia administered above dermatome T10 or given before the onset of the active phase)
TREATMENT

- Treatment of protraction disorders depends on the presence or absence of fetopelvic disproportion, the adequacy of uterine contractions, and the fetal status.

- If continued cervical dilation and effacement occur and there is no fetal compromise. approximately two-thirds of patients carry a good prognosis for vaginal delivery.
Cesarean section is indicated in the presence of confirmed fetopelvic disproportion.

In the absence of fetopelvic disproportion, conservative management, consisting of support and close observation, and therapy with oxytocin augmentation.
ARREST DISORDERS

(1) secondary arrest of dilatation, with no progressive cervical dilatation in the active phase of labor for 2 hours or more.

(2) arrest of descent, with descent failing to progress for 1 hour or more.
ETIOLOGICAL FACTOR

- About 50% of patients with arrest disorders demonstrate fetopelvic disproportion.

- Various fetal malpositions (e.g., occiput posterior, occiput transverse, face, or brow).

- Inappropriately administered anesthesia.

- Excessive sedation.
TREATMENT

- Thorough evaluation of fetopelvic relationships before initiating treatment is crucial.
- Evaluation should include a careful clinical pelvic examination for pelvic adequacy and estimation of fetal weight.
- If fetopelvic disproportion is established in the context of an arrest disorder, cesarean section is clearly warranted.
- If fetopelvic disproportion is not present and uterine activity is less than optimal, oxytocin stimulation is generally effective in producing further progress.
**Precipitate Labor Disorders**

- Precipitate dilatation occurs if cervical dilation occurs at a rate of 5 cm or more centimeters per hour in a primipara or at 10 cm or more per hour in a multipara.

- Precipitate descent occurs with descent of the fetal presenting part of 5 cm or more per hour in primiparas and 10 cm or more per hour in multiparas.

- **China:** the duration of whole labor less than 3 hours
ETIOLOGICAL FACTOR

- Precipitate labor may result from either extremely strong uterine contractions or low birth canal resistance.

- Strong uterine contractions (both in force and increased basal tone) may also accompany abruptio placentae.
TREATMENT

- If oxytocin administration is the cause of abnormal contractions, it may simply be stopped. The problem typically resolves in less than 5 minutes.

- If excessive uterine activity is associated with fetal heart rate abnormalities, c-section.
- when the birth canal is rigid and extraordinary contractions occur, uterine rupture may result. Lacerations of the birth canal are common.

- precipitate labor is one of the known antecedents of maternal amniotic fluid embolism.

- Perinatal mortality is increased secondary to hypoxia, possible intracranial hemorrhage, and risks associated with unattended delivery.
ALGORITHM FOR MANAGEMENT OF LABOR

Is the labor normal?  
N  
Y

Stage of labor?  
Observe  
Latent phase  
Active phase  
Assess 3 Ps

Protraction disorder  
Assess 3 Ps  
Observation vs. oxytocin  
Cesarean generally only for suspected cephalopelvic disproportion

Arrest disorder  
(no change for 2hr)  
Assess 3 Ps  
Are the powers adequate?  
Y  
N

c-section  
Oxytocin & reassess

CASE

Summary: A 23-year-old G1P0 woman at 40 weeks’ gestation is being induced. Her cervix has remained at 6-cm dilation for 3hr, and a significant amount of caput is noted on examination. Her uterine contractions are every 2 to 3 min and palpate firm. Each contraction lasts for 60 sec. The estimated fetal weight is 7.5lb, and the pelvis seems adequate.
Next step: cesarean delivery; some clinicians would consider placement of an intrauterine pressure catheter to assess contraction pattern.

Most likely diagnosis: arrest of active phase
The cervix of a 19-year-old G1P0 at weeks’ gestation is noted to change from 2 to 3 cm over 4 hr. Which of the following is the most likely diagnosis?

- A normal labor
- B prolonged latent phase
- C protracted active phase
- D arrest of active phase
- E arrest of descent
A 25-year-old G2P1 woman at 41 week’s gestation is noted to change her cervix from 6 to 9 cm over 2 hr. Which of the following is the most likely diagnosis?

- A normal labor
- B prolonged latent phase
- C protracted active phase
- D arrest of active phase
- E arrest of descent
A 30-year-old G1P0 at 39 week’s gestation, who does not have an epidural catheter, is completely dilated, pushing for 2hr at 0 station. Which of the following is the most likely diagnosis?

- A normal labor
- B prolonged latent phase
- C protracted active phase
- D arrest of active phase
- E arrest of descent
A 38-year-old G3P2 woman at 38 week’s gestation has changed her cervix from 6 to 8cm over 3hr. Which of the following is the most likely diagnosis?

- A normal labor
- B prolonged latent phase
- C protracted active phase
- D arrest of active phase
- E arrest of descent
A 25-year-old G1P0 woman at 39 weeks’ gestation is in labor. The cervical examination reveals complete dilation and the fetal head at +1 station for 2hr despite maternal pushing. Which of the following is the most likely etiology for this labor disorder?

- A Fetal occiput posterior presentation
- B maternal pelvic inlet contraction
- C maternal diabetes mellitus with estimated fetal weight of 8lb
- D maternal pelvic outlet contraction
- E polyhydramnios
Clinical situation 1

- Basic case: A 32-year-old multigravida at 38 weeks’ gestation in the maternity unit is under observation. She is having UCs every 3-5 minutes and appears uncomfortable.
Her cervix is dilated 1-2cm, 50% effaced, -2 station. This has remained essentially unchanged for the past 6 hours.

Consider ambulation or sedation. Avoid CS and oxytocin.

This is normal latent phase (cervical dilation < 3cm), during which Ucs coordinate and cervical effacement progresses.
6 hours later: she is in active labor at 4cm dilation and has just received a paracervical block. The baseline FHR is now 90beat/min.

Use conservative management.

High local anesthetic concentrations immediately after the paracervical block rapidly dilute, reversing the effect on the FHR.
2 hours later: now she is 7 cm dilated, 80% effaced, -1 station. The EFM(electronic fetal monitoring) tracing is reassuring.

- Observe

- The normal active phase cervical dilation rate for a multipara is 1.5cm/hr and 1.2cm/hr for a primipara.
1 hour later: she has just received an epidural anesthesia. Five minutes later, the FHR drops to 85 beats/min.

- Administer a rapid IV bolus of isotonic fluids and IV ephedrine.

- Rapid sympathetic blockade can result in vasodilation, hypotension, and placental hypoperfusion.
2 hour later: she has now been 7cm dilated for the past 3 hours with no further change. The EFM tracing is reassuring.

- Assess quality of UCs.

- If active phase arrest is caused by inadequate contractions, treatment is IV oxytocin augmentation.
5 hours later: after administration of IV oxytocin, she quickly progresses to 10-cm dilation. She has now been pushing for 3 hours, but the fetal head is still at +3 station.

- Consider forceps, vacuum extractor, or CS.

- With second-stage arrest, an operative vaginal delivery or an emergency CS may be indicated.
She has just undergone a forceps-assisted vaginal delivery of a 3100-g male neonate with depressed respirations. She received IV meperidine 30 minutes ago.

Give the infant naloxone.

Neonatal respiratory depression is common if birth occurs shortly after maternal narcotics. Naloxone reverses the effect of narcotics.
After delivery, she complains of an intense throbbing headache whenever she raises her head. It disappears if she lowers her head.

Give oral and IV hydration, caffeine, blood patch.

Spinal headache results from inadvertent dural puncture with the epidural. Sealing off the CSF(cerebrospinal fluid) fluid leakage stops the headache.
Basic case: A 25-year-old multigravida in stage 2 of labor is exhausted after pushing for 3 hours. The woman is 5’6”(1.8m) tall and weighs 175 lb. The presentation is cephalic with an estimated fetal weight of 3500g.
- The fetal head position is occiput anterior with station at +3 on the pelvic floor. Pelvic capacity appears adequate.

- Use outlet forceps or vacuum extractor.

- Outlet forceps delivery: the fetal head is on the pelvic floor and rotation is ≤45 °. Fetal and maternal risk is minimal.
The fetal head position is left occiput transverse with station at +1.

Use trial of mid-forceps of CS if forceps fail.

mid-forceps delivery: the fetal head is engaged (below 0 station) but not down to the pelvic floor. Fetal and maternal risk is greater.
The fetal head position is right occiput posterior with station at -2.

Perform emergency CS(no trial of forceps!)

High forceps delivery: the fetal head is unengaged(above 0 station). Fetal and maternal risk is so great that high forceps have no place in modern obstetrics.
Basic case: A 29-year-old multigravida comes to the office for a routine prenatal visit. Fetal heart tones are within normal limits, and fundal height is appropriate for gestational age. She has no uterine contractions, and on pelvic exam, her cervix is closed.
Gestational age is 27 weeks. Fetal presentation is complete breech.

Use conservative management.

A breech fetus is a normal event at this gestational age. Spontaneous version will probably occur.
Gestational age is 37 weeks. Fetal presentation is complete breech.

Consider external version. Discuss CS.

Spontaneous version from breech is common before 37 weeks. Amniotic fluid decreases after 37 weeks.
Gestation age is 37 weeks. Fetal presentation is frank breech.

Consider vaginal delivery, external version, or discuss CS.

For safe vagina breech delivery, ensure pelvic adequacy by CT pelvimetry. Also, the fetal head must not be extended.
Basic case: A 28-year-old multigravida at 37 weeks’ gestation comes to the maternity unit with regular uterine contractions. Her cervix is 3cm dilated.
Fetal presentation is frank breech. Both thighs are flexed, but the legs are extended.

Perform emergency CS or vaginal delivery.

A frank breech is the only breech presentation that may be safe for vaginal delivery. A CS is also a reasonable choice.
• Fetal presentation is complete breech. Both thighs are flexed and the knees are bent.

• Perform emergency CS (unsafe for vaginal delivery).

• Complete breech is unstable, because extension of the fetal knees leads to a footling breech.
- Fetal presentation is footling breech. Both thighs and knees are extended.

- Perform emergency CS (unsafe for vaginal delivery)

- Footling breech is dangerous because although the feet and body deliver without problems, the afer-coming head could become trapped.
Clinical situation 5

- Basic case: A 34-year-old multigravida who delivered her previous baby by CS now comes to the maternity unit at 38 weeks’ gestation with regular UCs. Her cervix is 3 cm dilated.
The previous cs involved a classical uterine incision.

Perform emergency repeat Cs

Classical uterine incisions have a significant chance of catastrophic rupture. Labor and vaginal delivery are unsafe.
The previous CS involved a low vertical uterine incision.

Perform emergency repeat CS or VBAC

Repeat CS and VBAC are both safe options if vertical incision did not extend into the fundus.
The previous CS involved a low transverse uterine incision.

- Perform emergency repeat CS or VBAC

- With a low transverse uterine incision, repeat CS and vaginal delivery are both safe options. The choice is up to the patient.
CLASSIC AND LOWER SEGMENT C-SECTION