

# *The Perfect Storm: OB Emergencies*

*“An event where a rare combination of circumstances will aggravate a situation drastically.”*



*“To witness the birth of a child is our best opportunity to experience the meaning of the word miracle!” Paul Carvel*

# *Objectives*

- Describe the physiological and emotional changes that occur during pregnancy
- Identify the pathology of OB emergencies and affects on both mother and fetus
- Discuss modification requirements for management of prehospital deliveries involving specific OB emergencies
- Explore the assessment and management of emotional and psychological effects of OB emergencies on parents and EMS personnel

# *Case Scenario*

You are called for a female in labor. Upon arrival you find an 18 y/o fully clothed pregnant female lying on her back on her bed crying.

Her clothing is wet and she states she has been having pains for several hours.

She has been waiting for her boyfriend to come take her to the hospital but she now can't even walk because it hurts to bad.

# Maternal A & P

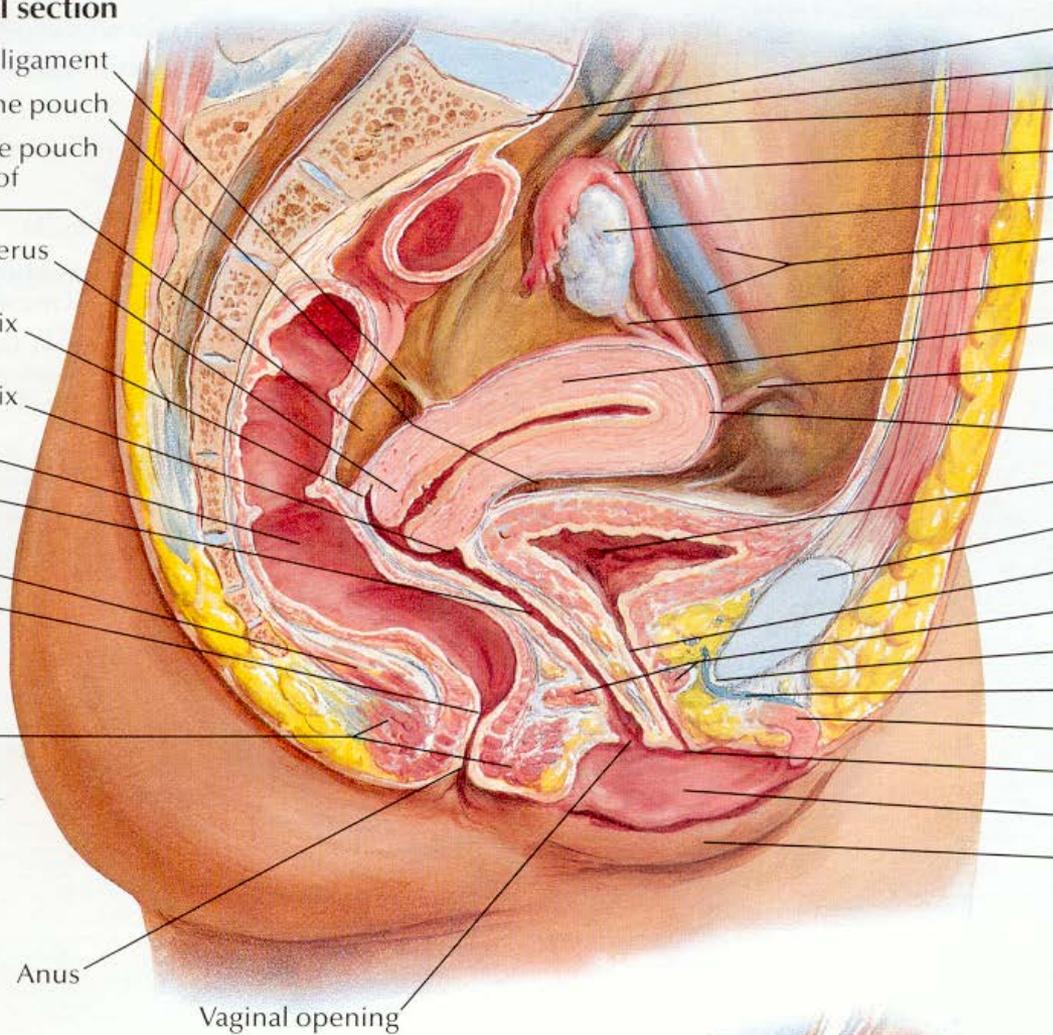
## Midsagittal section

Uterosacral ligament  
Vesicouterine pouch  
Rectouterine pouch  
(cul-de-sac of  
Douglas)  
Cervix of uterus  
Posterior  
vaginal fornix  
Anterior  
vaginal fornix  
Rectum  
Vagina  
Levator ani  
muscle  
Anal canal  
External  
anal  
sphincter  
muscle

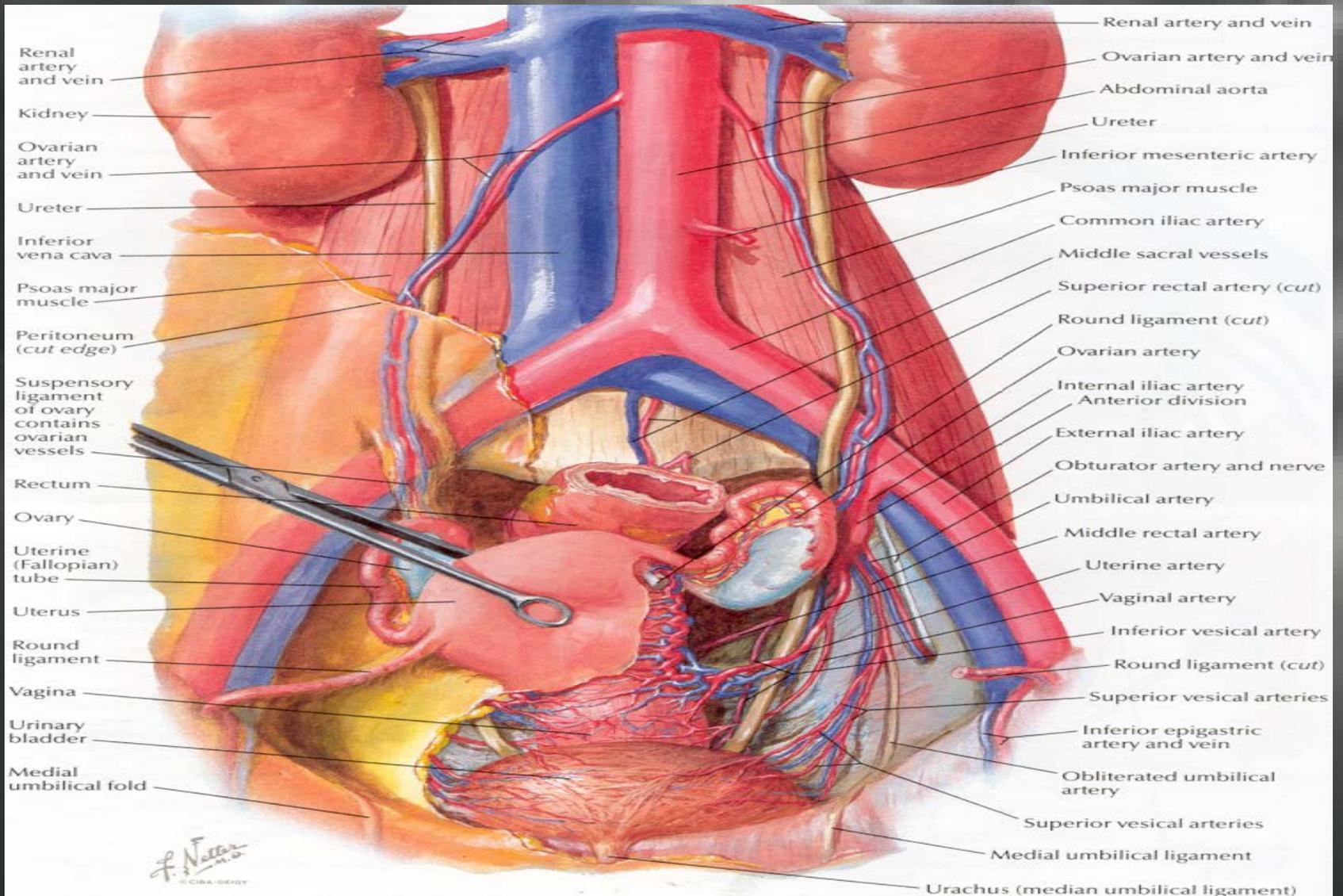
Anus

Vaginal opening

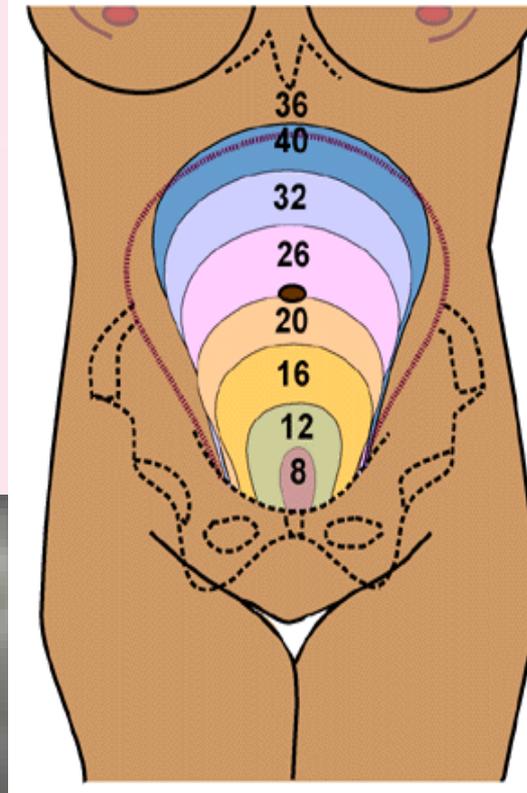
Sacral promontory  
Ureter  
Suspensory ligament of ovary  
Uterine (Fallopian) tube  
Ovary  
External iliac vessels  
Proper ovarian ligament  
Body (corpus) of uterus  
Round ligament  
(ligamentum teres)  
Fundus of uterus  
Urinary bladder  
Pubic symphysis  
Urethra  
Urogenital diaphragm  
Arcuate pubic ligament  
Deep dorsal vein of clitoris  
Crus of clitoris  
Urethral opening  
Labium minus  
Labium majus



# Maternal A & P



# Changes in Pregnancy



Weight gain by organ

Fetus: 6-9 lbs

Placenta and amniotic fluid: 3 lbs

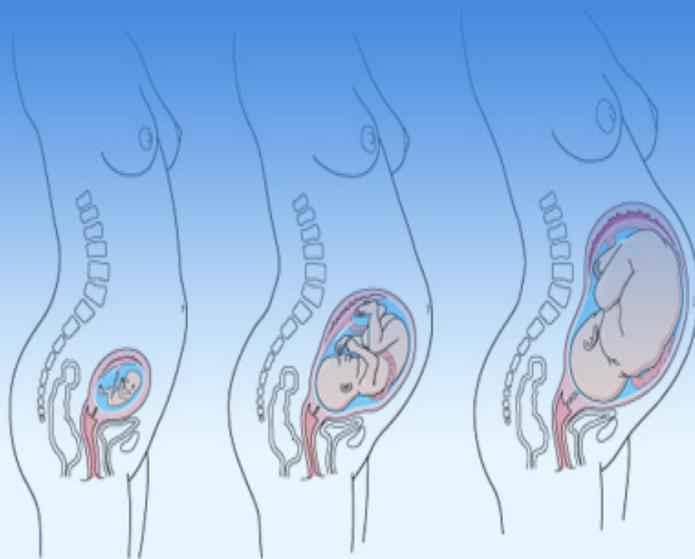
Blood volume: 4 lbs

Breasts: 2 lbs

Maternal fat: 4 lbs

Anticipated total: 20 pounds

# The Three Stages of Pregnancy (1st, 2nd, and 3rd Trimester)



First Trimester

Second Trimester

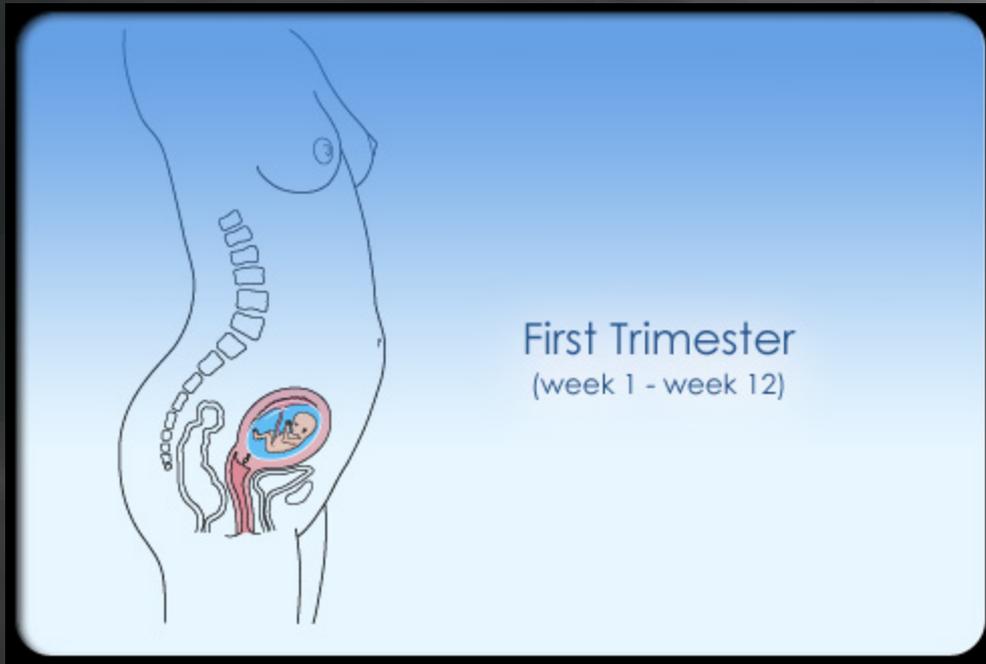
Third Trimester

First Trimester-0 to 12 weeks

Second Trimester-12-27 weeks

Third Trimester 28-Birth

# *First Trimester - Mom*



## Physical/Emotional changes:

- Hormones
- Period stops
- Extreme tiredness
- Tender-swollen breast
- Morning sickness
- Cravings/distastes
- Mood swings
- Constipation
- Polyuria
- Headache
- Heartburn
- Weight gain/loss

# *First Trimester—Baby—4 weeks*



Embryo==1/25 of inch

- Brain & Spinal cord
- Heart
- Arm and leg buds

# *First Trimester-Baby—8 weeks*

Nearly 1 inch long-1/8 ounce

- All Major Organs &
- External body structures
- Regular Heart Beat
- Arms & legs grow
- Fingers and toes develop
- Sex organs develop
- Eye have moved forward on face
- Eyelids
- Umbilical cord visible



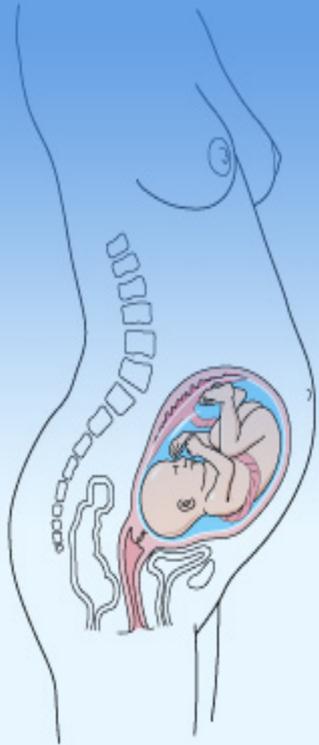
# *First Trimester-Baby 12 Weeks*

About 3 inches/almost an ounce

- Nerves and muscles begin working
- Together—Baby make a fist
- External sex organs visible
- Eyelids close – open again at 28<sup>th</sup> week
- Head growth slows



# Second Trimester--Mom



Second Trimester  
(week 13 - week 28)

Easier than 1<sup>st</sup> trimester

- Nausea and fatigue disappear
- Abdomen expands
- Fetal movement

# Second Trimester--Mom



- Darkening aureoles
- Carpal tunnel syndrome
- Body aches
- Stretch marks
- Line of skin running from belly
- Button to pubic hairline
- Darkened skin patches (mask of pregnancy)

Itching-abdomen, palms, soles of feet-with loss of appetite, vomiting jaundice or fatigue—serious liver problem

Swelling –ankles, fingers, face=extreme with weight gain-preeclampsia

# *Second Trimester—Baby –16 weeks*

- More complete skeleton
- Skin begins-translucent
- Meconium develops
- Sucking reflex
- Now approximately 4-5 inches in length
- Weighs almost 3 ounces



# *Second Trimester—Baby—20 weeks*

- Active movement-fluttering
- Lanugo-fine-downy hair cover
- Vernix-waxy protection
- Eyebrows, eyelashes, fingernails
- And toenails formed
- Hearing and swallowing
  
- Now 6 inches/9ounces

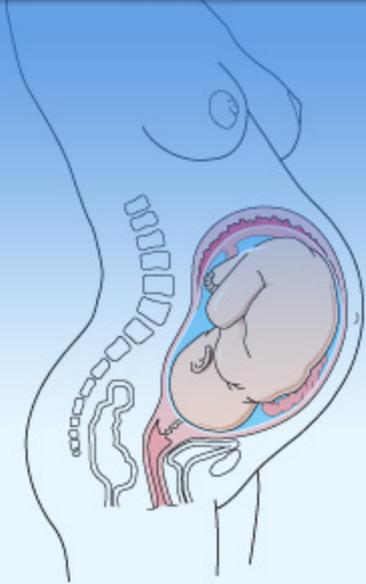


# *Second Trimester-Baby 24 weeks*

- Bone marrow makes blood cells
  - Taste buds
  - Footprints & fingerprints
  - Real hair
  - Lungs form-non-functional
  - Hand & startle reflex
  - Sleep and wake periods
  - Boys-testes begin to move
  - Girl-uterus and ovaries with eggs
  - Stores fat
- Now 12 inches/about 1 ½ pounds



# Third Trimester-Mom



Third Trimester  
(week 29 - week 40)

## The Home Stretch!!

- Breathing difficulty
- Increased urination

Growing baby puts increased pressure on organs and blood vessels



# *Third Trimester--Mom*



- Shortness of breath
- Heartburn
- Swelling of extremities and face
- Hemorrhoids
- Tender breasts-colostrum
- Belly button
- Trouble sleeping

- Baby drops
- Contractions
- Cervix effaces-thins and softens



# *Third Trimester—Baby—32 weeks*

- Bones fully formed-soft
- Kicks and jabs forcefully
- Eyes open and close
- Senses light changes
- Body stores vital minerals
- Lanugo begins to fall off
- Quick weight gain= ½ pound weekly
- Now 4 to 4 ½ pounds-15-17 inches
- Lungs not fully formed
- Practice breathing movements occur



# *Third Trimester-Baby—36 weeks*



- Vernix thickens
- Body fat increased
- Less space to move-movements less forceful—stretches and wiggles
- Baby now weighs 6 to 6 ½ pounds---16-19 inches long

# *Third Trimester-Baby 37-40 weeks*

Baby is full term!!!

- Organs begin functioning
- Baby turns-head-down
- Weighs 6lbs-2oz to 9lbs-2oz
- Length 19-21 inches



# *OB Emergencies*

- Mother: Placenta Previa, Abruptio Placenta, Pre-eclampsia, Eclampsia, Retained Placenta Hemorrhage, Uterine (rupture, atony, inversion) Laceration
- Fetus: Sepsis, Strep-B, shoulder dystocia, Umbilical cord (prolapse/compression), breech with head entrapment
- Mortality can be 200%

# *Common Emergencies*

- Hypertensive Disorders
- Hemorrhage
- Trauma
- Shoulder Dystocia
- Umbilical Cord Prolapse
- Acute Abdomen
- Ectopic Pregnancy/Spontaneous Abortion

# *Immediate Obstetric Hemorrhage*

## **Cause**

- Lacerations
- Atony
- Abruptio
- Retained placenta
- Previa Accreta
- Rupture
- Inversion

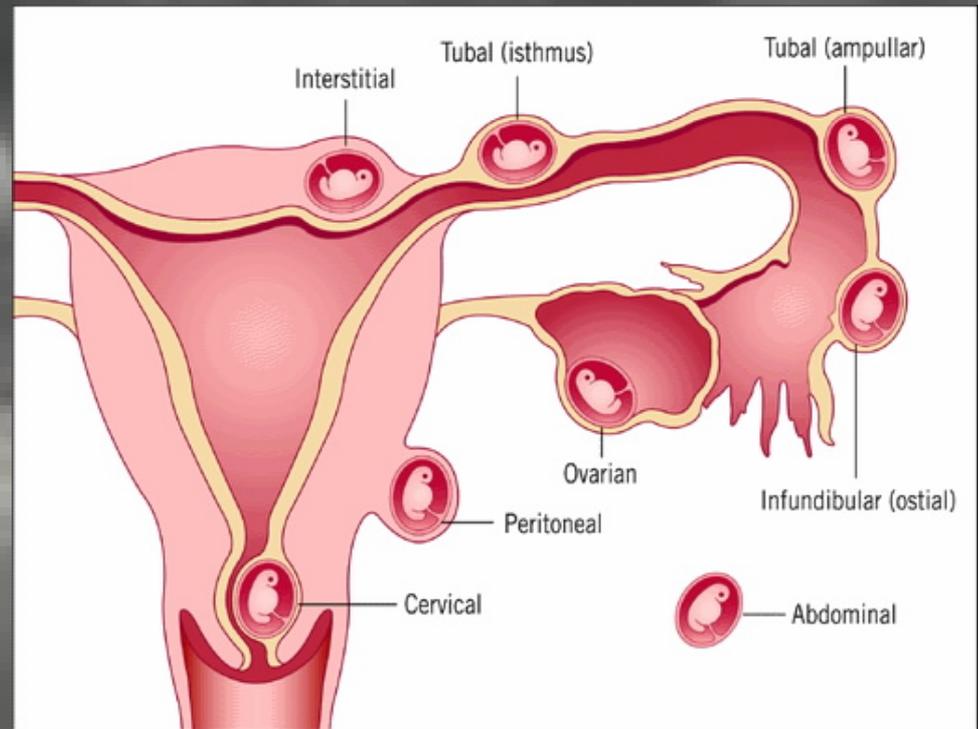
## **Incidence**

- 1:8
- 1:20-1:50
- 1:80-1:150
- 1:100-1:160
- 1:200
- 1:2000-1:2500
- 1:6400

# *OB Emergencies-Early Pregnancy*

## *Ectopic Pregnancy*

- 2% of all pregnancies
- Risk factors:
  - prior tubal surgery,
  - prior ectopic,
  - IUD use,
  - Hx of PID or DES exposure



# *Ectopic Pregnancy Emergency*

## • Clinical Presentation

- Pain w/ rupture usually lateralized, sudden and severe
  - May be referred
  - Other atypical pain patterns
- Bleeding occurs in ~80% of cases
  - Scant
  - Precedes pain
- Hypovolemia may be present
  - Bradycardia due to vagal stimulation

## • Management

- Pertinent hx
  - Missed menses
  - Sexually active
  - Previous EP, STD, surgery, etc.
- Lower quadrant pain/tenderness
  - Avoid aggressive palpation/repeated exam
- Vital signs
  - Orthostatic as appropriate
- High flow O<sub>2</sub>
- Treat for shock
  - Position
  - IV access
- Surgical intervention usually required

# Spontaneous Abortion

- Etiology

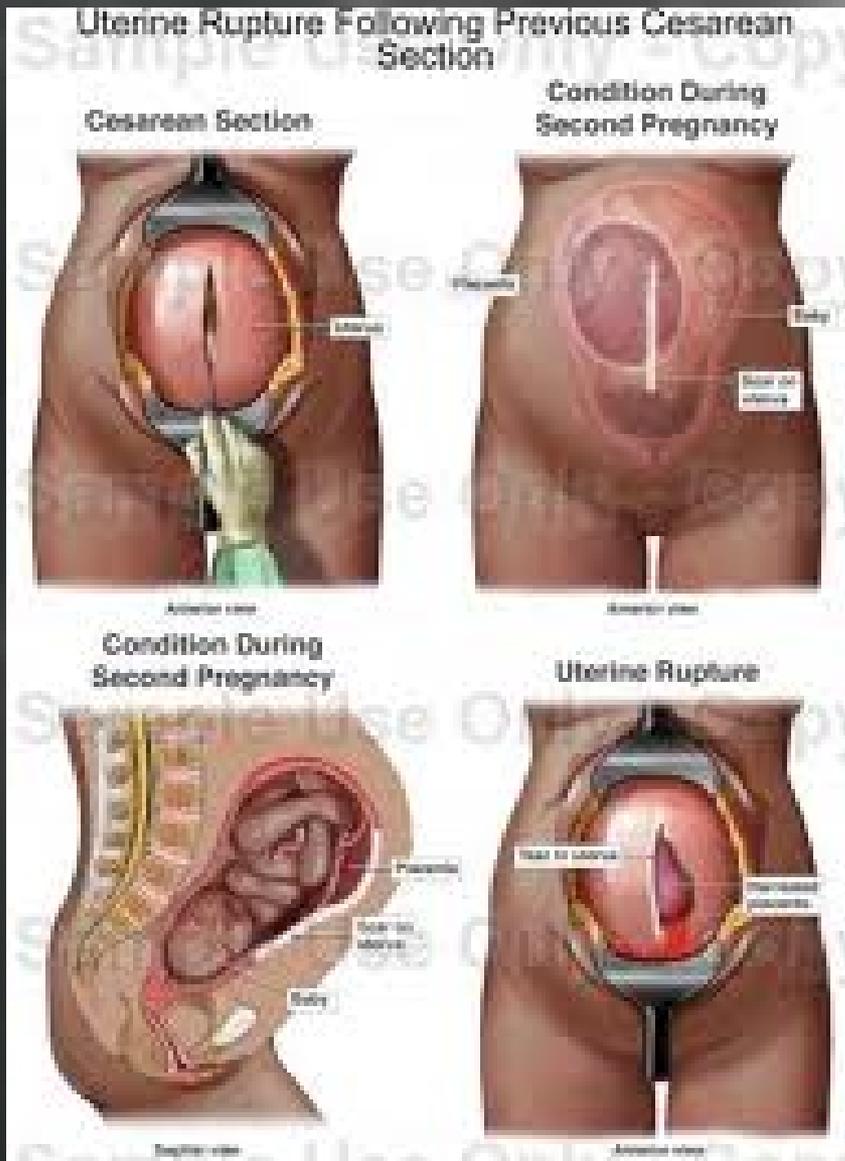
- Defined as loss of fetus <20 wks or <500gm
- 75% occur before 8 wks
- Most common cause is chromosomal abnormality
- Other causes:
  - Advanced age
  - Poor obstetric hx
  - Medical hx
  - Syphilis/HIV
  - Certain anesthetic agents
  - Tobacco use
  - Exposure to heavy metals

- Management

- Support
- Manage bleeding



# Uterine Rupture



## • Etiology

- Life-threatening Mom & baby
- Occurs during labor

## • Risk Factors

- Prior cesarean delivery especially classical cesarean scar (90%)
- Rupture of myomectomy scar
- Precipitous labor or prolonged labor
- Excessive oxytocin stimulation
- Abdominal trauma
- Grand multiparity
- Direct uterine trauma-forceps or curettage

# *Uterine Rupture*

- Clinical Aspects
  - Mild or severe third trimester bleeding
  - Intense abdominal pain
  - Complete cessation of pain after
  - Dystonic uterine contractions
  - Complete cessation of contractions
  - Rigid abdomen
    - Fetus may be felt outside uterine cavity
- Management
  - Surgery
    - Death of fetus without timely surgical intervention
    - Death of mom=severe hemorrhage/shock



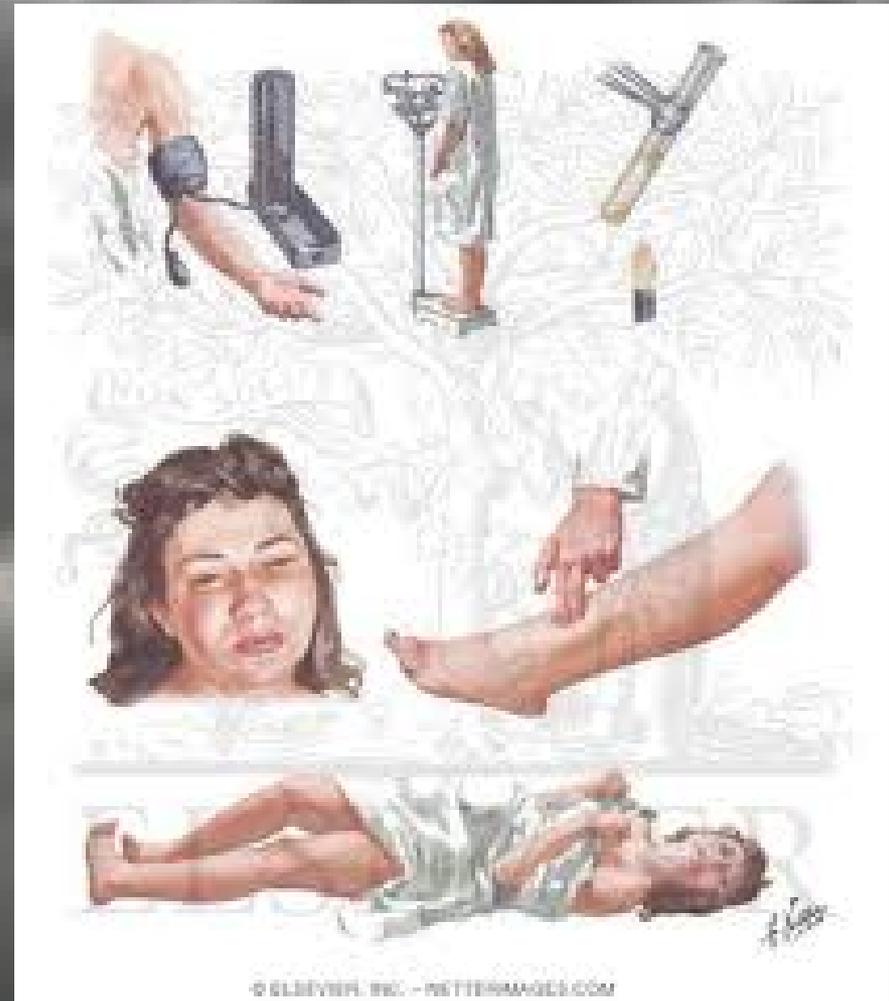
# Preeclampsia/Eclampsia

- Etiology
  - HTN, edema, proteinuria
  - Cause unknown
  - Eclampsia is above plus seizures
    - Occur from 20<sup>th</sup> week to 7 days post partum
    - Have been reported up to 26 days
    - Predisposed by chronic HTN
- Clinical Presentation
  - Preeclampsia
    - HA, Visual disturbances
    - Edema, weight gain
  - All gravid pt's w/ HTN should be evaluated



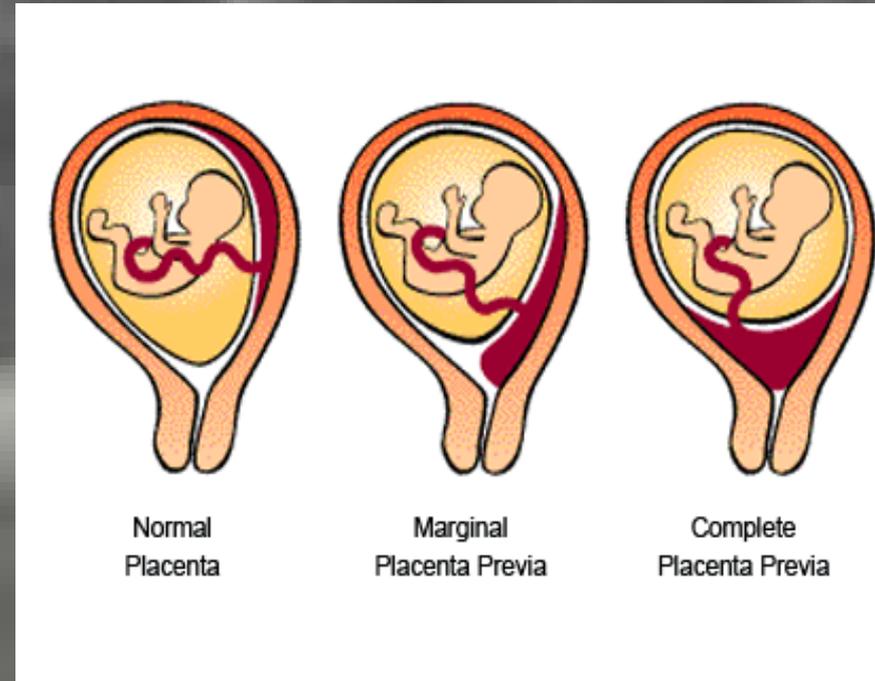
# Preeclampsia/Eclampsia

- Management
  - Supportive for preeclampsia
  - If Eclamptic
    - Versed 2.5-5 mg IV/IM
    - Magnesium 2 gm IV over 5-10 min
    - Rapid transport for delivery
- Complications of Preeclampsia/Eclampsia
  - Spontaneous hepatic/splenic hemorrhage
  - End-organ failure
  - Abruptio
  - IC bleed
  - Fetal compromise



# Placenta Previa

- Etiology
  - 1 in 200 (0.5%) of pregnancies
  - Abnormal implantation of the placenta
    - Partial or complete coverage of cervix and os
- Risk Factors
  - Previous C-section
    - 1% to 4%
  - Smoking
  - Multiple gestations/grand multiparity (>7)
  - Previous placenta previa



# Placenta Previa

- Clinical Aspects
  - Third Trimester Bleeding
  - Preterm labor
  - Premature rupture of membranes
  - Intrauterine growth restriction
  - Malpresentation
- Management
  - Bed rest
  - Support mom's vital functions
    - O<sub>2</sub>, IV, LR/NS to maternal/fetal perfusion

**Placenta  
previa**



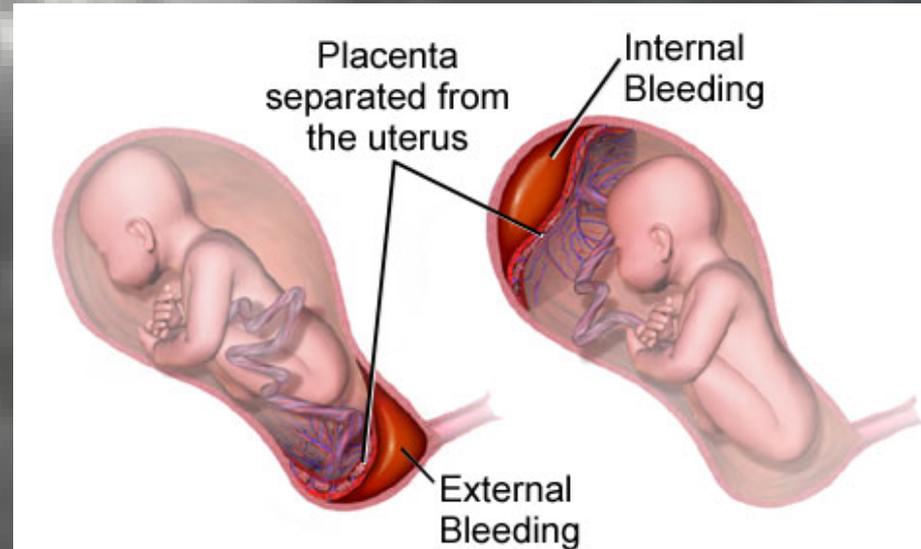
# *Abruptio Placentae*

- Etiology

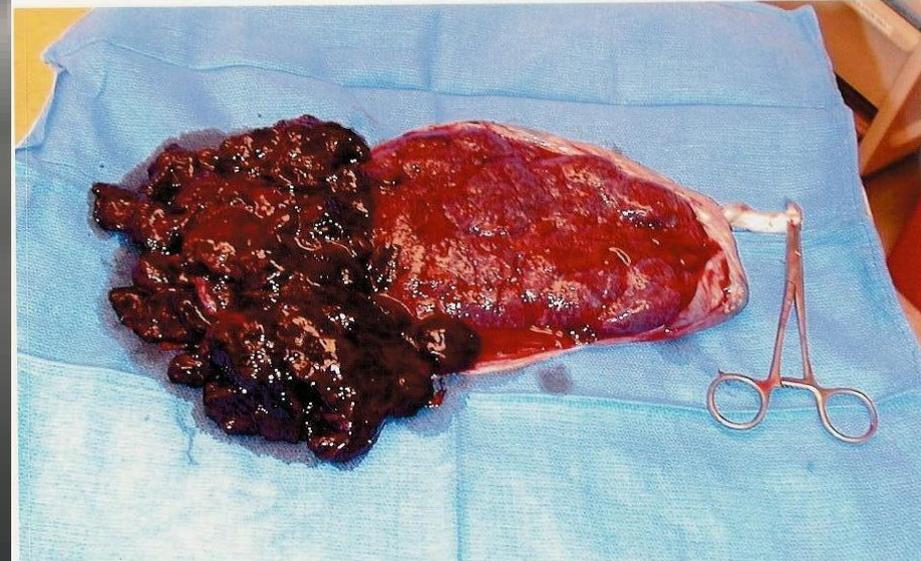
- 1% of all pregnancies
  - ~30% of bleeding in late pregnancy
  - 15% of fetal perinatal deaths
  - 50% fetal death due to maternal hypoxia
- Separation of placenta after week 20
  - Partial or complete
- Placenta positioned high in uterus

- Risk Factors

- Trauma
  - 1.5% to 9.4% of all cases
- Maternal hypertension
- Multiparity (>5)



**Abruptio Placenta (Placental Abruption)**



# *Abruptio Placentae*

- Risk Factors
  - Increased maternal age (>35)
  - Smoking
  - Premature rupture of amniotic sac (<34 weeks)
  - Vascular disease (diabetes)
  - Previous abruptio
  - Drug and alcohol use/abuse
  - Uterine abnormalities
- Clinical Aspects (Dependant on type and amount of separation)
  - Partial separation (margins intact)
    - Bleeding not present—Abdominal pain, uterine tenderness, S/S of hemorrhage and shock
  - Partial Separation (margins not intact)
    - Vaginal bleeding, abdominal pain, uterine tenderness
  - Complete Separation
    - Abdominal pain, uterine tenderness and rigidity, contractions
    - S/S of hypovolemia and shock without vaginal bleeding

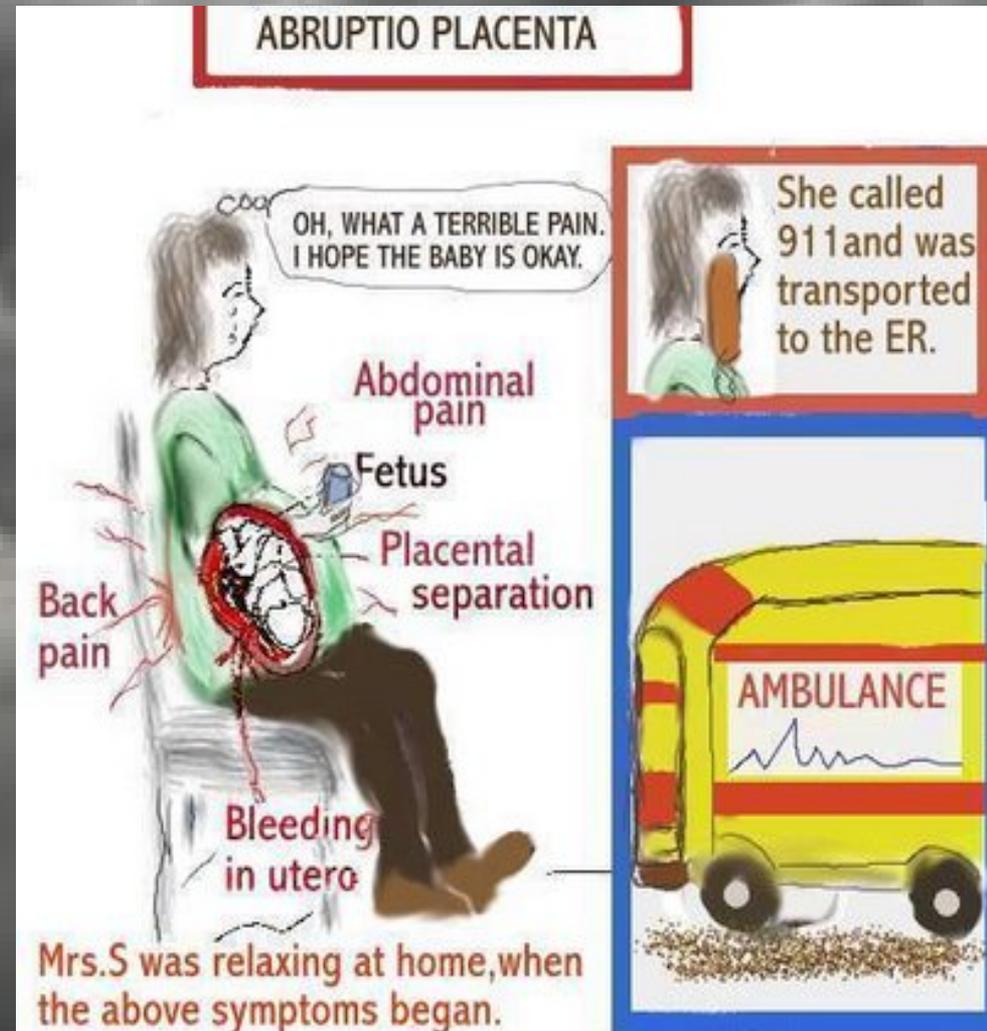
# Abruptio Placentae

## Clinical Aspects

- Typical presentation:
  - Abdominal pain or lower lumbar pain and uterine tenderness (70%)
  - Vaginal bleeding (80%)
  - Abnormal uterine contractions (35%)
  - Fetal distress (60%)

## Management

- Support mom's vital functions
- O<sub>2</sub>, IV (LR/NS) to maintain maternal and fetal perfusion
- Monitor Fetal heart tones
  - Fetal bradycardia
- Transport



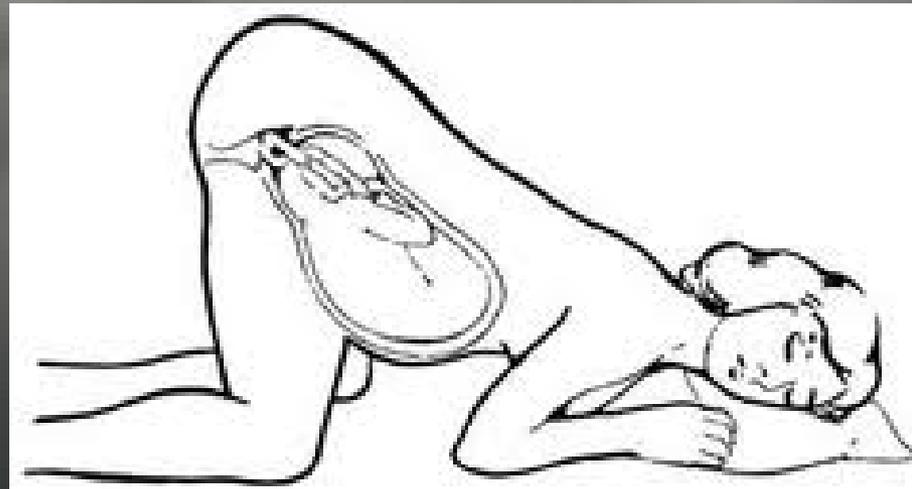
# *Complications during Delivery*

- Nuchal Cord
  - Etiology
    - Cord wrapped around neck (may be multiple times)
- Clinical
  - Cord compression: Will cause hypoxic injury if not removed
  - Be aware of twins!!!!
- Management
  - Unwrap cord
  - If unable, clamp and cut cord



# Prolapsed Cord

- Etiology
  - Presentation of cord at vaginal opening
  - Caused by abnormal birth, i.e. twins, breech, etc..
  - Complications occur if cord is compressed.
- Management
  - Pt. in knee/chest position or elevate buttocks
  - Relieve pressure on cord
  - Supportive



# Breech Presentation

- Etiology
  - Occur in 3-4% of term pregnancies
  - Result in 3-4 times greater morbidity
  - More frequent in prematurity
- Distress due to Head/Cord entrapment
- Clinical presentation
- Frank, complete, incomplete, footling
  - Frank (50-70%) Hips flexed, knees extended (Pike position)
  - Complete (5-10%) Hips flexed, knees flexed (cannonball position)
  - Footling or incomplete (10-30%) One or both hips extended, foot presenting



# *Breech Presentation*

## Head Entrapment:

- True obstetric emergency
- Small body through partially dilated cervix trapping head
- Vaginal breech delivery- Discouraged

## Management:

- Enlarge opening—cervix
- Keep quiet and calm



# Shoulder Dystocia

- Etiology
  - 0.2-3% of all live births
  - 25-50% have no defined risk factor!
  - 50% of cases occur in infants whose birth weight is <4000g
  - 84% of patients did not have prenatal dx. of macrosomia by US
  - 82% of infants with brachial plexus palsy did not have macrosomia
- Risk Factors
  - Gestational Diabetes/Maternal obesity/ Excessive weight gain
  - Previous large baby
  - Previous shoulder dystocia deliver
  - Post term pregnancy
  - Protracted/prolonged labor
  - Short stature/small pelvis
  - Forceps/Vacuum assisted vaginal delivery

# SHOULDER DYSTOCIA

## BRACHIAL PLEXUS

Intrauterine pressure is caused by maternal contractions

MATERNAL CONTRACTIONS

Anterior shoulder impacted on symphysis pubic

Symphysis pubic

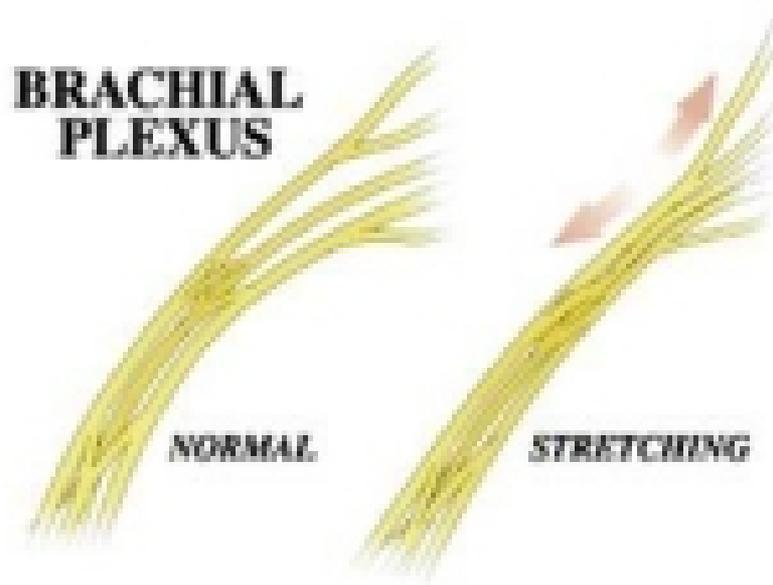
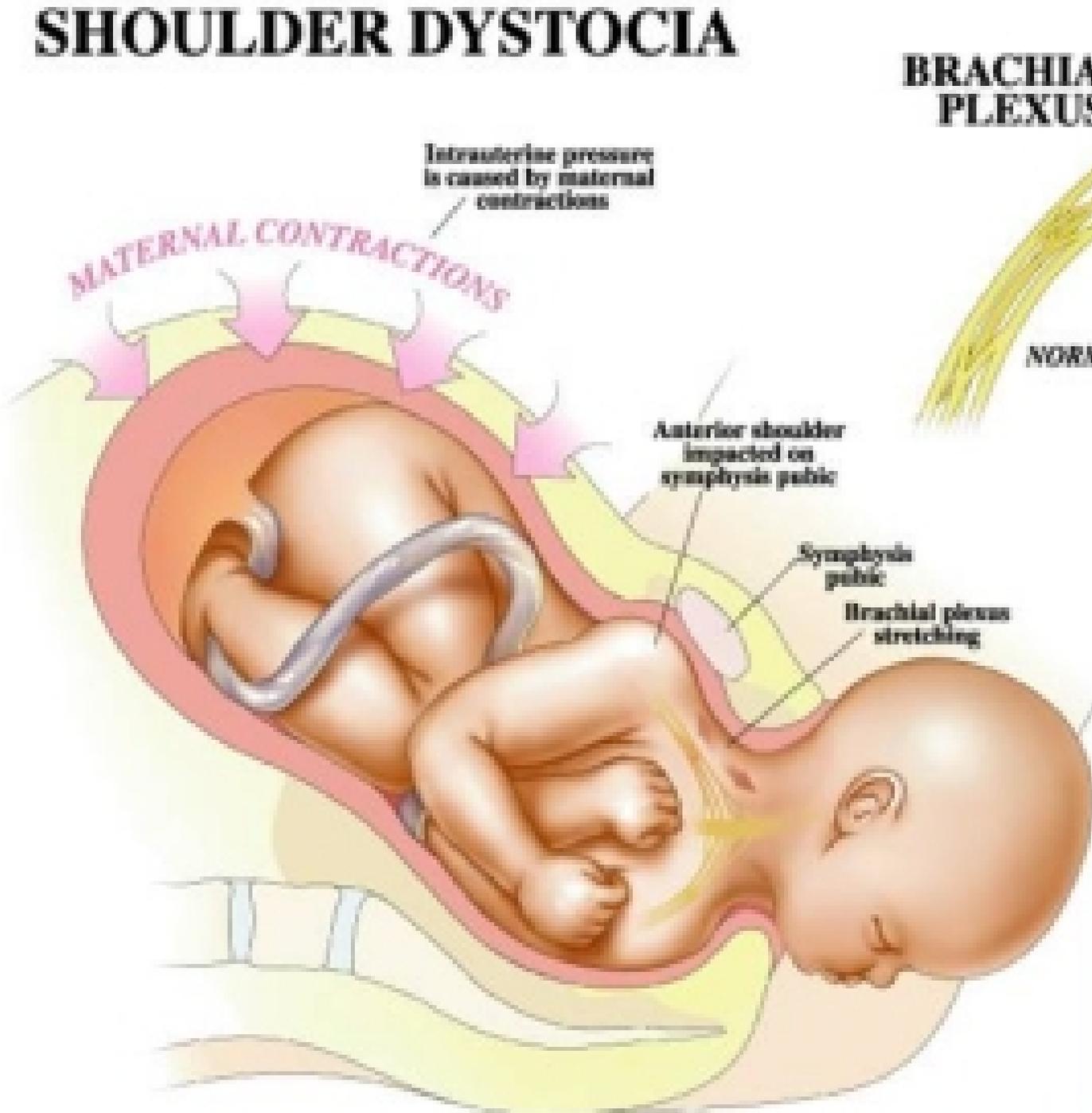
Brachial plexus stretching

NORMAL

STRETCHING

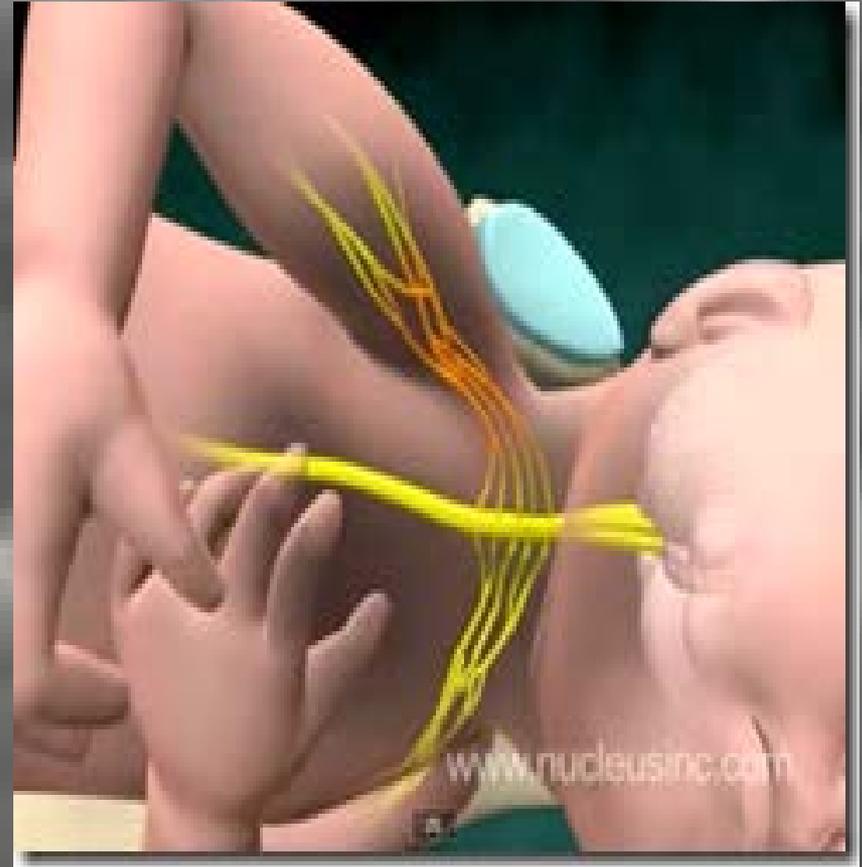
### DANGERS OF SHOULDER DYSTOCIA

- Umbilical cord entrapment
- Inability of child's chest to expand properly
- Severe brain damage or death due to hypoxia or acidosis if delay in delivery
- Brachial plexus damage



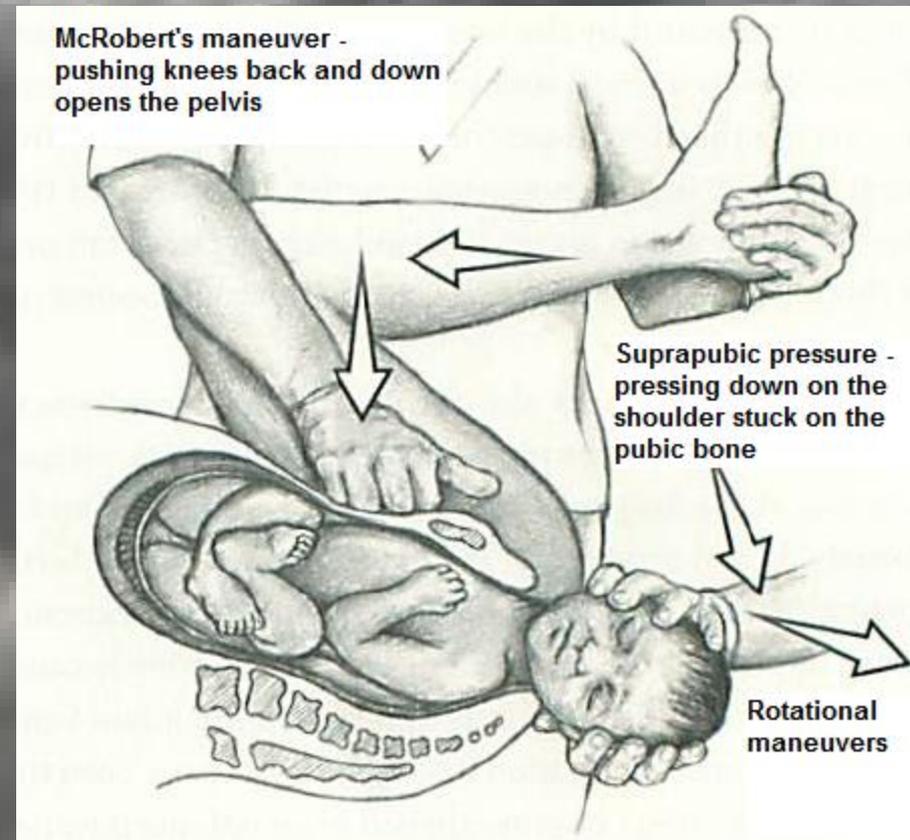
# Shoulder Dystocia

- Complications
  - **Maternal**
    - Hemorrhage
    - 4<sup>th</sup> degree laceration
  - **Fetal**
    - Fx of humerus or clavicle
    - Brachial plexus injury (Erb's/Klumpke's palsy)
    - Asphyxia/cord compression
- Management
  - Goal: Safe delivery before neonatal asphyxia and/or cortical injury
    - 7 -10 minutes!!!



# Shoulder Dystocia

- Management
  - Episiotomy
  - Suprapubic Pressure
  - McRoberts Maneuver
    - Hyperflex legs, widen pelvis through abduction of legs
  - Woods Maneuver
    - Anterior shoulder to baby chest, posterior to baby back
  - Zavenelli
    - Push back the delivered fetal head into birth canal and perform an emergent c/s—not recommended



# *Post Delivery Complications*

- Hemorrhage
  - Etiology
    - Cause of ~ 28% pregnancy related deaths
    - May be delayed days to weeks
    - Dx immediately after delivery:
      - Uterine atony/rupture
      - Laceration
      - Retained placental tissue
      - Uterine inversion
      - Coagulopathy
    - Dx delayed hemorrhage
      - Retained placental tissue
      - Uterine polyps
      - Coagulopathy (von Willebrands)

# *Post Delivery Hemorrhage*

- Atony
  - Etiology
    - 2-5% of deliveries
    - Uterine muscle tone loss—no contractions
    - Most common cause of significant blood loss and blood transfusion
  - Risk Factors
    - Multiparity
    - Polyhydramnios
    - Macrosomia
    - Precipitous labor/excessive oxytocin use
    - Prolonged labor
    - Retained placenta
- Management
  - Uterine massage
  - Fluids/oxygen to sustain VS

# Post Delivery Hemorrhage

- Etiology
  - Rare-1 in 3000 births
  - Maternal fatality rate ~85%
  - Placenta is fundally implanted
  - Placenta fails to separate
  - Uterus delivers “inside/out”
- Clinical Aspect
  - Severe life-threatening hemorrhage is unrecognized
- Management
  - Immediate reversal of uterus
  - Treat for shock



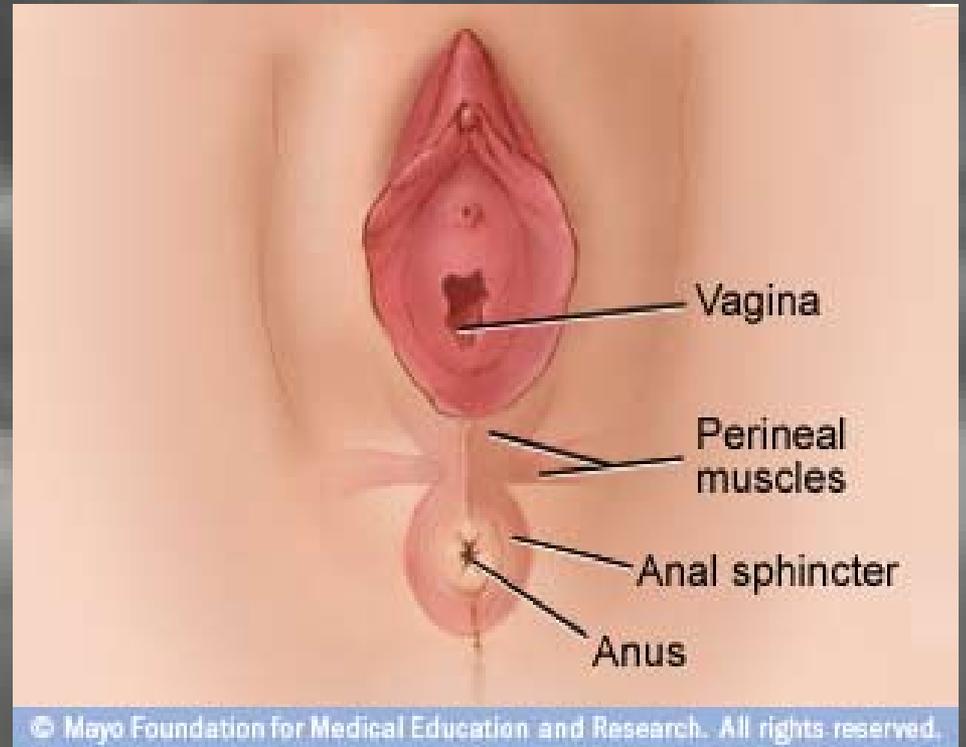
# *Lacerations*

- First thing to be ruled out in bleeding post partum woman with a firm uterus
- Careful examination of the entire genital tract
- Rarely results in massive blood loss
- May be life threatening if extends to the retro peritoneum

# *Lacerations—Vaginal Tears*

## Vaginal Area:

- Common
- Most superficial
- Discomfort
- Heals quickly



# *Lacerations-Vaginal Tears*

## First-degree

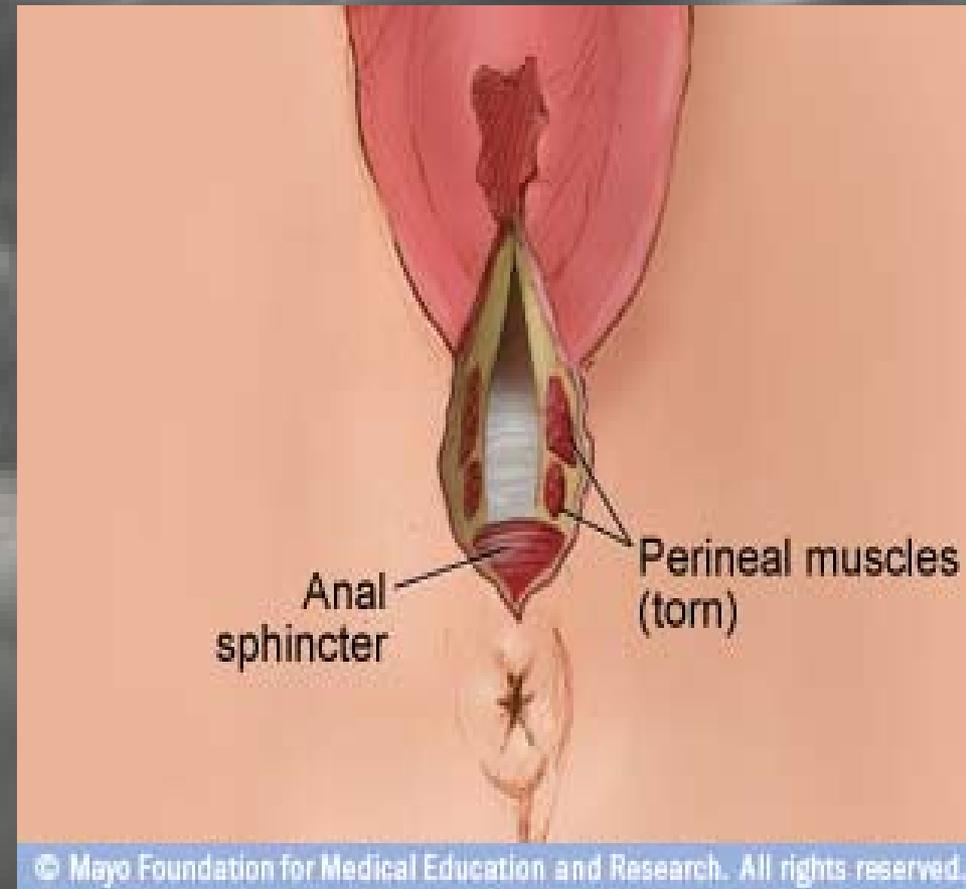
- Least severe
- Involves only external skin
- Mild burning
- Stinging with urination
- Heal within a few weeks
- Minimal bleeding



# *Lacerations-Vaginal Tears*

## Second-degree

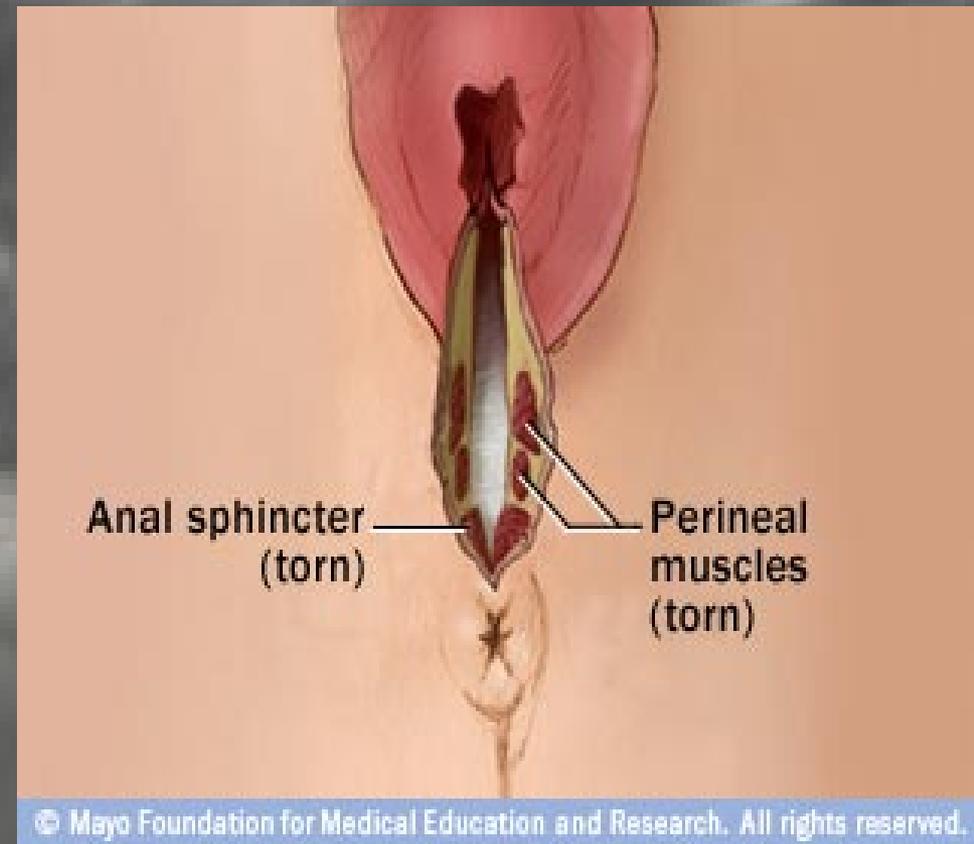
- Vaginal mucosa (tissue)
- Perineal muscles
- Requires stitches
- Heals within weeks
- Discomfort
- Minimum bleeding



# *Lacerations-Vaginal Tears*

## Third-degree

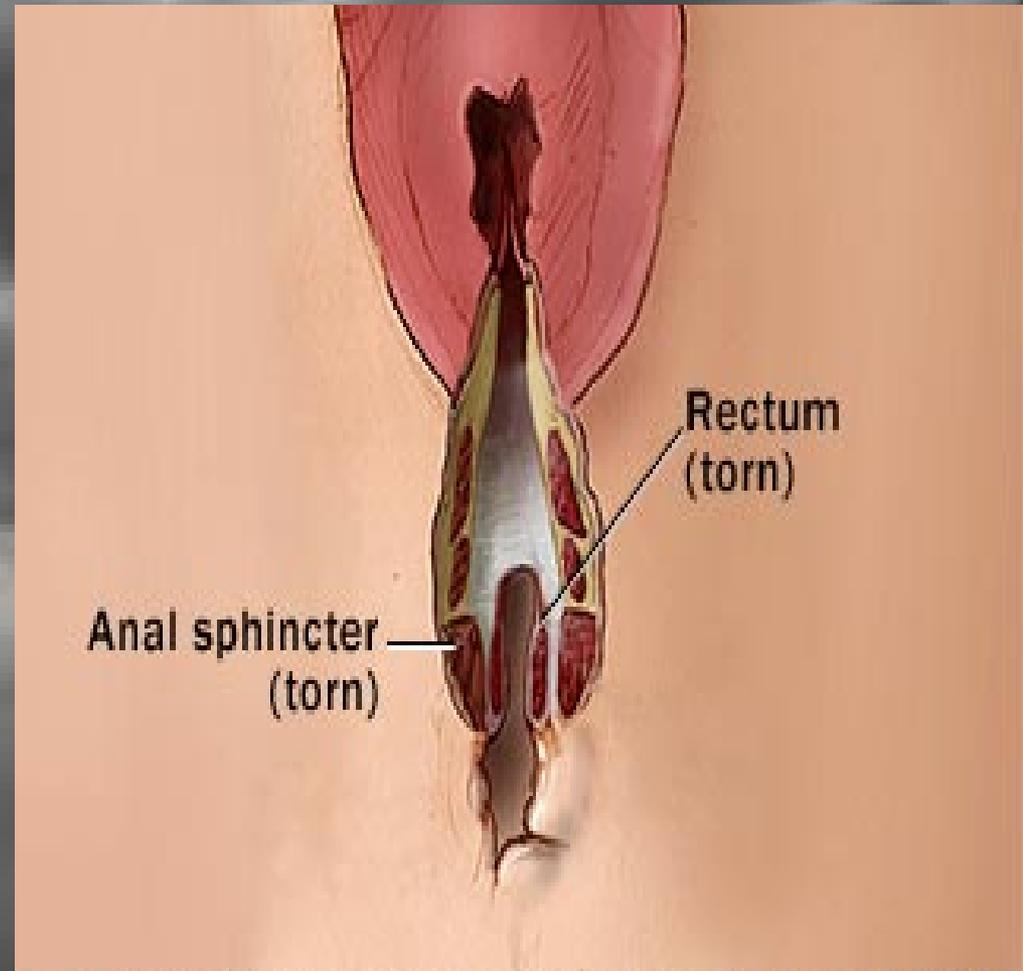
- Vaginal tissue
- Perineal muscles
- Anal sphincter
- Surgical repair possible
- 6 weeks to heal
- Moderate to heavy bleeding
- Discomfort
  - Pain with bowel movement



# *Lacerations-Vaginal Tears*

## Fourth-degree

- Most severe
- Perineal muscle
- Anal sphincter
- Rectal tissue
- Require surgical repair
- 6 week+ recovery
- Painful—heavy bleeding
- Complications:
  - Fecal incontinence
  - Painful intercourse



# *OB Emergencies-Emotional Rollercoaster*

- Joy and anticipation
- Hormonal changes
- Anxiety and Concern
  - Difficulty talking /explaining concerns
- Nonchalant-Risky behaviors
  - Anger
- Fear
  - Unknown

# *OB Emergencies-Emotional Rollercoaster*

- Disturbing for all
- Evoke range of emotions – significant consequences
- Reactions of each is based on:
  - Marital status of mom/relationship with partner
  - Social situation-culture, religious practice/beliefs, expectations
  - Personalities
  - Nature, gravity and prognosis of the problem
  - Availability and quality of health care services



# *Common Reactions-Emergencies/Death*

- Denial
- Guilt
- Anger
- Bargaining
- Depression-loss of self-esteem
- Isolation
- Disorientation
- Acceptance



# *OB Emergencies-Emotional Rollercoaster*

## Management:

- Encourage to speak openly
  - Events surrounding complications
- Listen
  - All who are distressed
  - Indicate understanding
  - Supportive non-verbal communication
  - Show empathy
- Answer questions calmly/honestly
  - Reassuring manner



# *OB Emergencies-Emotional Rollercoaster*

After the Event:

- Practical assistance, information and emotional support
- Respect traditional beliefs and customs
- Accommodate family needs as possible
- Provide for counseling/reflection on the event
- Explain problem to help reduce anxiety and guilt
- Listen-express understanding and acceptance of feelings
- Repeat information or give written information

# *OB Emergencies-Emotional Rollercoaster*

Health Care Providers:

- Anger, guilt, sorrow, pain
- Confusion
- Inadequacy
- Doubt
- Frustration
- Fear of facing family/mother
- Showing emotion is a weakness

# *OB Emergencies-Emotional Rollercoaster*

## Maternal Mortality

- Devastating to family
  - Surviving Children
- At time of event:
  - Provide psychological care for all including the woman
  - Inevitable death-emotional and spiritual comfort
  - Dignity and respectful treatment
- After the Event
  - Allow family and partner to be with her
  - Help family with notifications if needed
  - Explain and answer question to ability

# *OB Emergencies-Emotional Rollercoaster*

## Neonatal Mortality or Morbidity

- Intrauterine Death or Stillbirth
- Influencing factors to woman's reaction
  - Previous obstetric and life history
  - Extent of desire for baby
  - Events surrounding birth and cause of death
  - Previous experiences with death
- Time of event:
  - Allow parents to see efforts of resuscitation if appropriate
  - Prepare them for disturbing or unexpected appearance of baby
  - Avoid separating mom and baby too soon

# *OB Emergencies-Emotional Rollercoaster*

## Neonatal Mortality or Morbidity

### After the Event:

- Allow mom/family to spend time with the baby
- Offer small mementos
- Encourage mom/family to call baby by the chosen name
- Allow mom/family to prepare/clean baby if appropriate
  - Medical procedures such as autopsies preclude
- Encourage locally-accepted customs/practices
- Arrange for minister or other support system
- Encourage discussion of the event

# *OB Emergencies-Emotional Rollercoaster*

## Baby with Abnormality

- Malformation
  - Range of emotions
    - Unfairness, despair, depression, anxiety, anger, apprehension
  - Time of Event—give baby to parents at delivery
    - Wrap baby-do not force mom to examine abnormality
  - After Event—keep baby with mom if possible
    - More quick acceptance of baby
    - Ensure access to supportive care/groups

# *OB Emergencies-Emotional Rollercoaster*

## EMS

- Fear and Anxiety
- Joy and Happiness
- Feelings of accomplishment
- Sadness/Inadequacy
- Anger

## Management

- Talk to someone
- Rest and nutrition
- Exercise
- Case Review
- CISM
- Professional counseling

# *Perfect Storm-OB Emergencies*

## Summary

- EMS find OB calls stressful
  - Women have been having babies forever....
- OB emergencies/mortality vary
- Understand physiological changes-Mom/baby
- Prenatal care improves outcomes
  - Early Detection
  - Preparation
- Bleeding & Shock
- Emotional support

# *Perfect Storm-OB Emergencies*

Thank You  
VA EMS Symposium!

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