

## Placental and Umbilical Cord Complications

Instructor: Karen Harmon, MSN, CNS, RNC-OB, C-EFM

Lecture Developed & revised by:  
Karen Harmon, MSN, CNS, RNC-OB, C-EFM &  
Frann Teplick, MSN, RN-BC, CNS

---

---

---

---

---

---

---

---

## Objectives

1. Describe and differentiate the signs and symptoms of placenta previa versus abruptio placentae
2. Define placenta accreta and its variations including pregnancy history risk factors
3. Explain emergency procedures when a prolapsed cord has been determined
4. Define and differentiate between a velamentous cord insertion and a vasa previa
5. Describe the management for a retained placenta or retained placental tissue

---

---

---

---

---

---

---

---

## *The Amazing Placenta...*



---

---

---

---

---

---

---

---

## Placental & Umbilical Cord Complications: Outline

- Placenta Previa
- Abruption Placentae
- Placenta Accreta, Increta, Percreta
- Retained Placenta & Placental Tissue
- Velamentous Cord Insertion
- Vasa Previa
- Umbilical Cord Variations & Abnormalities

---

---

---

---

---

---

---

---

## Placenta Previa

- Definition  
Implantation in the lower uterine segment over or near the internal cervical os (or opening)
- Incidence 1 in 200 births; higher in grand multiparous women
- Types
  - Marginal or Low-lying
  - Partial
  - Total or Complete

---

---

---

---

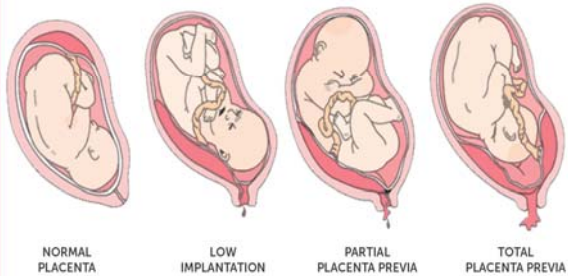
---

---

---

---

## Types of Placenta Previa



---

---

---

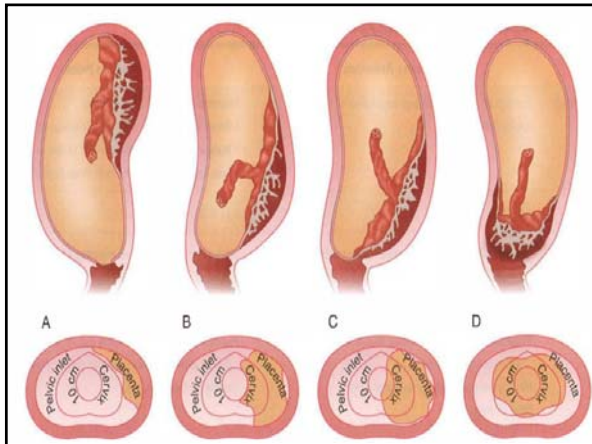
---

---

---

---

---




---

---

---

---

---

---

---

---

**Placenta Previa:**  
*Risk Factors*

- Previous previa
- Previous C/S (1.5 to 15x increased risk probably d/t uterine scarring)
- Previous abortions with curettage (D&C)
- Short interval between pregnancies & multiparity
- Large placenta r/t multiple gestation or diabetes
- Advanced maternal age > 40yrs.
- Minority race (Black & Asian women)
- Smoking (amount dependent)

---

---

---

---

---

---

---

---

**Placenta Previa:**  
*Clinical Findings*

**Painless Uterine Bleeding**

May be intermittent or continuous bright red bleeding

---

---

---

---

---

---

---

---



## Placenta Previa: *Management*

- Management will be dependent on gestational age and extent of bleeding
- Immediate assessment of maternal and fetal status is required, with
- goal to sustain pregnancy if possible; but preparedness for rapid response to ensure positive outcome

---

---

---

---

---

---

---

---



## Placenta Previa: *Management*

### Immediate Interventions

1. **AVOID vaginal exams!**
2. Monitor maternal vital signs
3. Establish IV access (large bore) & IVF bolus
4. Monitor urinary output
5. Labwork (Type & X-match, clotting studies, CBC, chem panel)
6. Administer oxygen
7. Estimate blood loss (weigh pads/chux) 1g=1mL
8. Possibly prepare for immediate C/S delivery

---

---

---

---

---

---

---

---



## Placenta Previa: *Management*

### Expectant Management: Initial hospitalization

1. Continuous monitoring for active bleeding
2. Continuous EFM initially & during bleeding episodes; BPP, or NST w/ AFI, then weekly modified BPP
3. Tocolysis
4. Monitor lab values
5. Activity restriction
6. Assess fetal lung maturity (if between 36-38 wks.)
7. Antenatal corticosteroids if between 24-34 wks.
8. Anticipate and plan for discharge education

---

---

---

---

---

---

---

---

## Abruptio Placentae

### ■ Definition

Premature separation of a normally implanted placenta from the uterine wall after 20 wks. gestation but before delivery of the fetus

### ■ Incidence 1 in 120 births

### ■ Classifications

- Complete
- Partial

---

---

---

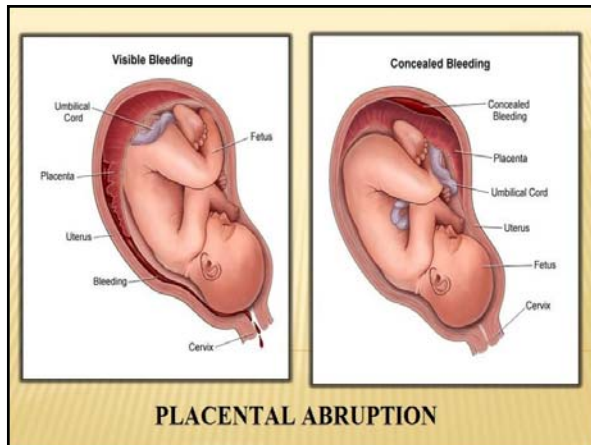
---

---

---

---

---



---

---

---

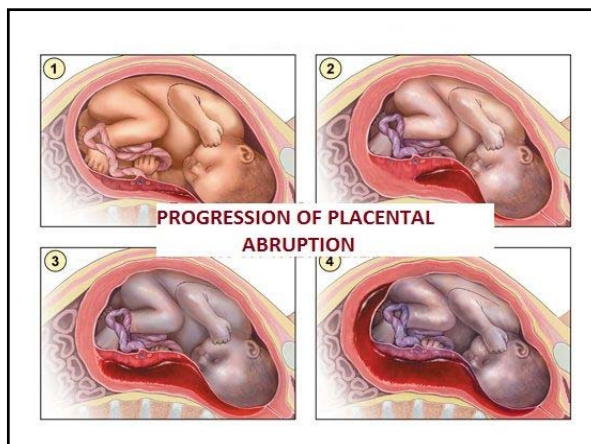
---

---

---

---

---



---

---

---

---

---

---

---

---

## Abruptio Placentae

\*Ultrasound for diagnosis can be unreliable with only 25% of cases confirmed

\*Diagnosis is primarily made by clinical presentation

---

---

---

---

---

---

---

---

## Abruptio Placentae: *Risk Factors*

- Hypertensive disorders
- Smoking (↑ risk by 90%)
- Multiparity
- Illicit drug use
- Short umbilical cord
- Abdominal trauma
- Decompressive amnio or sudden decompression with ROM with twins or polyhydramnios
- PROM
- Supine hypotension
- Unknown cause

---

---

---

---

---

---

---

---

## Abruptio Placentae: *Clinical Findings*

### **Pain with or without uterine bleeding**

- Small to moderate amt dark or bright red bleeding
- Acute pain
- Abdomen with uterine tenderness, rigidity, "board-like" abdomen, elevated tonus, uterine tachysystole &/or high frequency, low amplitude contractions (HFLA)
- May have back pain if there is posterior placentation
- Fetal intolerance/distress

---

---

---

---

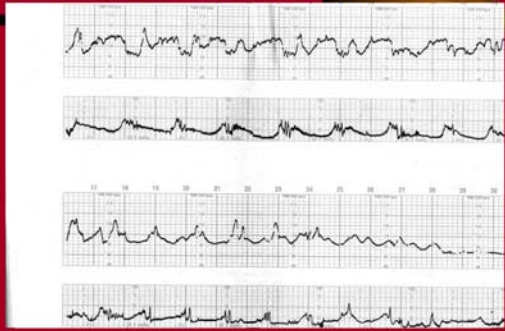
---

---

---

---

### Fetal/Uterine Monitor in an Abruption



---

---

---

---

---

---

---

---

### Abruptio Placentae: *Complications*

- Maternal Shock
- Renal failure
- Consumptive coagulopathy/DIC
- Couvelaire uterus (with concealed abruption; builds up enough pressure under placenta that it forces the blood into the myometrial muscle fibers)
- Fetal anoxia & demise
- Fetal exsanguination

---

---

---

---

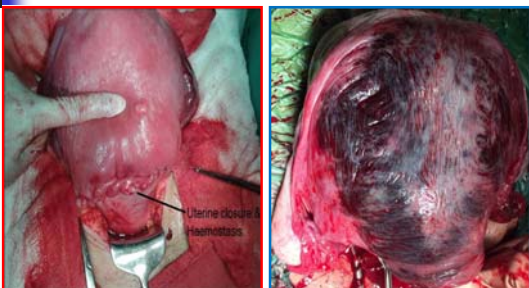
---

---

---

---

### Normal Uterus vs Couvelaire



---

---

---

---

---

---

---

---

## Abruptio Placentae: *Management*

- Monitor VS
- 1-2 large bore IV's with IVF bolus
- Measure & estimate blood loss
- Administer oxygen
- Type & X-match
- Continuous fetal monitoring
- Avoid vaginal exams until previa ruled out
- Prepare for emergency C/S

---

---

---

---

---

---

---

---

## Placenta Accreta, Increta, Percreta

- Definition  
Abnormal placental implantation where there is an abnormally firm adherence to the uterine wall
- Three types
  - Accreta
  - Increta
  - Percreta
- Thought to be the result of zygote implantation in an area of defective decidua basalis

---

---

---

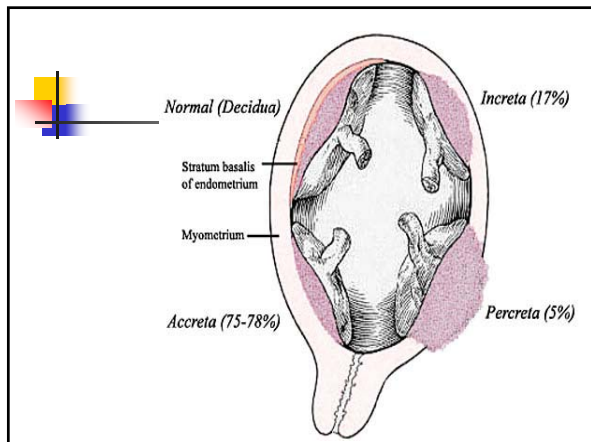
---

---

---

---

---



---

---

---

---

---

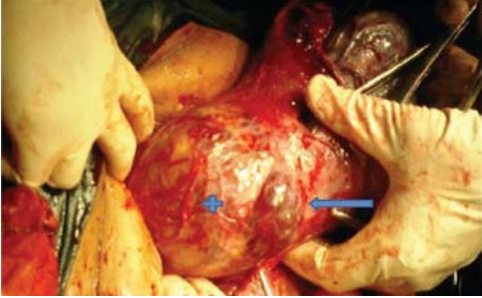
---

---

---



## Percreta



---

---

---

---

---

---

---

---

## Risk Factors

- **\*Previous C/S**
- **\*Placenta previa**
- Other:  
AMA, smoking, & short interconceptual period
- Risk of accreta increases to 67% for women with 4 or more C/S presenting w/ anterior or central placenta previa
- Pt's with 1 prior C/S who present with anterior or central placenta previa in subsequent pregnancy have 24% risk of accreta

---

---

---

---

---

---

---

---

## Management



- If diagnosed during pregnancy (with U/S &/or MRI) maternal morbidity is greatly decreased
- ACOG recommends counseling re: likelihood of hysterectomy with multiple blood transfusions and blood products
- Urology services at time of C/S available or present
- If not diagnosed prior to delivery, suspect if delayed placental separation. These women have much higher complication rate.

---

---

---

---

---

---

---

---

## Retained Placenta & Placental Tissue

- **Definition: Retained Placental Tissue**  
Inability of the uterus to involute normally due to tissue fragments
- **Definition: Retained Placenta**  
The most common definition is *retention of the placenta in utero for more than 30 minutes*
  - ensuring bladder is empty may speed delivery of placenta & aid in assessment and control of the uterus
  - manual removal may be required especially if significant bleeding occurs

---

---

---

---

---

---

---

---

## Management of Retained Placental Tissue

1. Placental examination
2. Fundal massage
3. Methergine &/or Hemabate
4. Manual removal
5. Prep for D&C
6. Prophylactic antibiotics

---

---

---

---

---

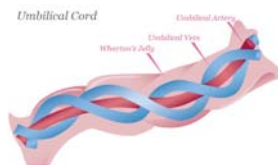
---

---

---

## Umbilical Cord Structure and Function

- Extends from fetal umbilicus to fetal surface of the placenta
- Covered by amnion
- 3 umbilical vessels w/ 1 large vein (oxygenated blood)
- 2 smaller arteries (de-oxygenated blood)
- Wharton's Jelly covers cord
- Vessels spiral in cord



---

---

---

---

---

---

---

---

## Cord Length

- Normal cord range 30-100 cm
- Average length 55 cm
- Can range from no cord to 300 cm
- Length influenced by volume of amniotic fluid & fetal mobility

---

---

---

---

---

---

---

---

## Nuchal Cord

- One loop in 21% of all deliveries.
- Impedes blood flow
- FHR changes (variable decels)
- May impede descent
- Uncommon cause of fetal death or morbidity
- Cord may also wrap around chest or limbs



---

---

---

---

---

---

---

---

## True Knot

- Approximately 1% of all deliveries
- Distinguish from *false* knot
- More common with long cords and monoamniotic twins
- Cord occlusion: 6% fetal death



---

---

---

---

---

---

---

---



## Two Vessel Cord

- Absence of one umbilical artery
- Occurrence in 1-2% of pregnancies
- Increased incidence with Twins
- Diabetes – Polyhydramnios/Hydramnios
- Smokers
- Associated with congenital anomalies approx. 30% of the time (heart, kidneys, or spinal)
- Associated with IUGR and preterm delivery

---

---

---

---

---

---

---

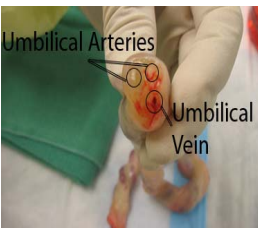
---



## Umbilical Cord

Normal 3 vessel cord

Two vessel cord




---

---

---

---

---

---

---

---



## Cord Prolapse

Umbilical Cord slips down past presenting part and becomes compressed, cutting off oxygen to the fetus

- Increased risk with multiples, preterm gestation, malpresentation, high presenting part, & polyhydramnios

---

---

---

---

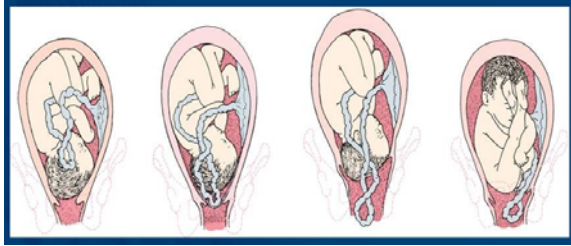
---

---

---

---

## Types of Cord Prolapses



Occult      Intact membranes cord presentation      Overt      Overt w/breech

---

---

---

---

---

---

---

---

## Management

- Reposition mother (elevate hips or place in knee-chest position, or Trendelenburg)
- Elevate the presenting part — not the cord (minimize cord handling; cool air & rough handling causes cord to spasm)
- Place oxygen via face mask
- Rapid transport to OR for emergency C/S

---

---

---

---

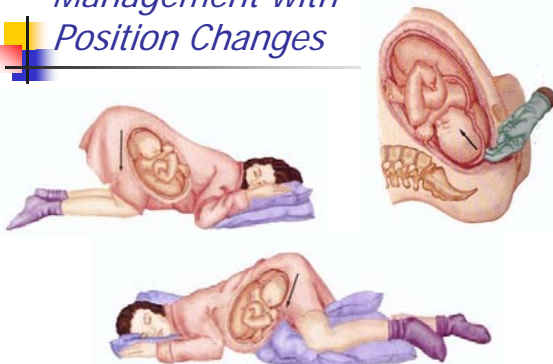
---

---

---

---

## Management with Position Changes



---

---

---

---

---

---

---

---

## Abnormalities of Cord Insertion

- Marginal Cord Insertion
- Velamentous Cord Insertion
- Vasa Previa

\*This is a normal central cord insertion which occurs in approx. 90% of all births



---

---

---

---

---

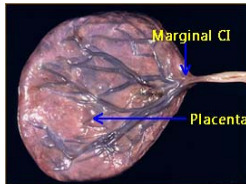
---

---

---

## Marginal Cord Insertion

- Also referred to as a "Battledore Cord Insertion" or "Battledore Placenta"
- Cord insertion is within 2cm of placental disc edge
- Risk of excessive bleeding during labor
- Can have decreased blood supply to fetus effecting growth & development
- See more in multiple gestations



---

---

---

---

---

---

---

---

## Velamentous Cord Insertion & Vasa Previa

### Velamentous Cord Insertion (VCI):

Fetal vessels separate in the membranes before reaching the placenta

### Vasa Previa:

Due to velamentous insertion, the vessels cross the region of the internal os and present ahead of the fetus

---

---

---


---

---


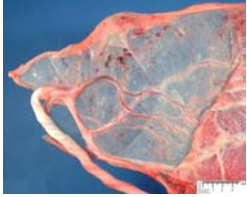

---

---

---



**Velamentous Cord Insertion**


---

---

---


---

---

---

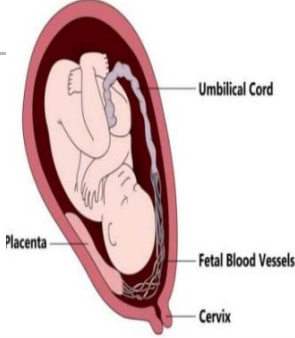
---

---



**Vasa Previa**

- You need to have a VCI in order to have a Vasa Previa
- With advances in ultrasonography this is now being diagnosed more prenatally, where is years past it was discovered many times with AROM!




---

---

---


---

---


---

---

---



**Danger Signs...**



Rupture of the unprotected fetal vessels could occur with ROM, artificial or spontaneous.

- Bright red blood
- Fetal tachycardia

>>> *Fetal exsanguination and death*

---

---

---

---

---

---

---

---



## References

- Kennedy, B. & Baird, S. (2018). Intrapartum Management Modules, 5<sup>th</sup> ed. Wolters Kluwer.
- Mattson, S. & Smith, J. (2016). AWHONN Core Curriculum for Maternal-Newborn Nursing, 5<sup>th</sup> ed.
- Simpson, K. & Creehan, P. (2014). AWHONN Perinatal Nursing, 4<sup>th</sup> ed.

---

---

---

---

---

---

---

---



## Placental Complications

Questions or  
Comments??

---

---

---

---

---

---

---

---