

Obstetric bleeding

Yu.A.Lyzikova

Hemorrhagic complications

- Hemorrhage can arise at almost any point during pregnancy, labor or delivery, quickly turning an pregnancy into an emergent situation requiring prompt, aggressive treatment to ensure the health and well-being of mother and infant.

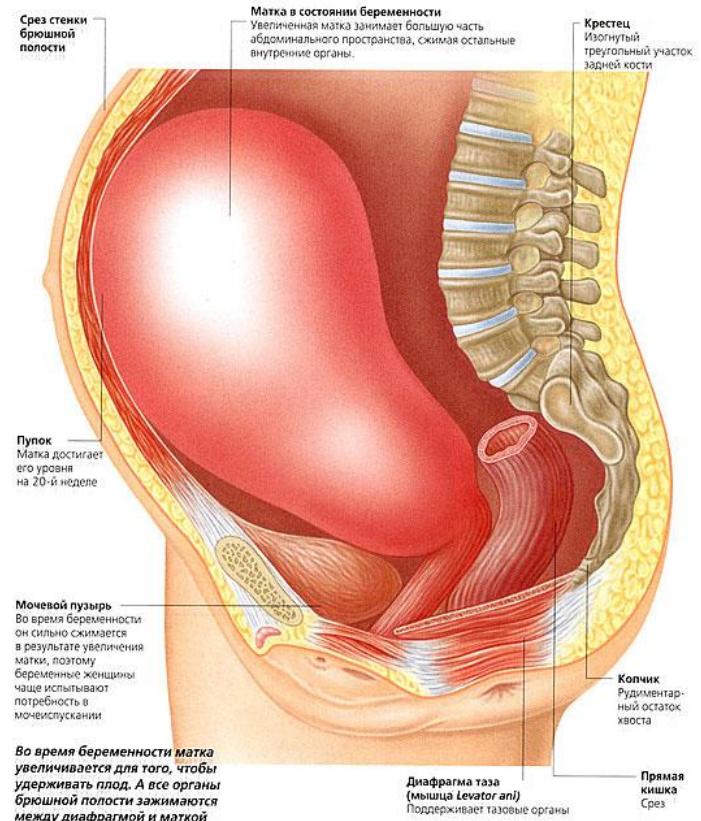


Hemorrhagic complications

- Hemorrhage remains one of the leading causes of maternal mortality.
- Understanding the causes of maternal hemorrhage and treating it effectively require an understanding of the normal anatomy of the uteroplacental unit and its physiologic adaption to the birth process.

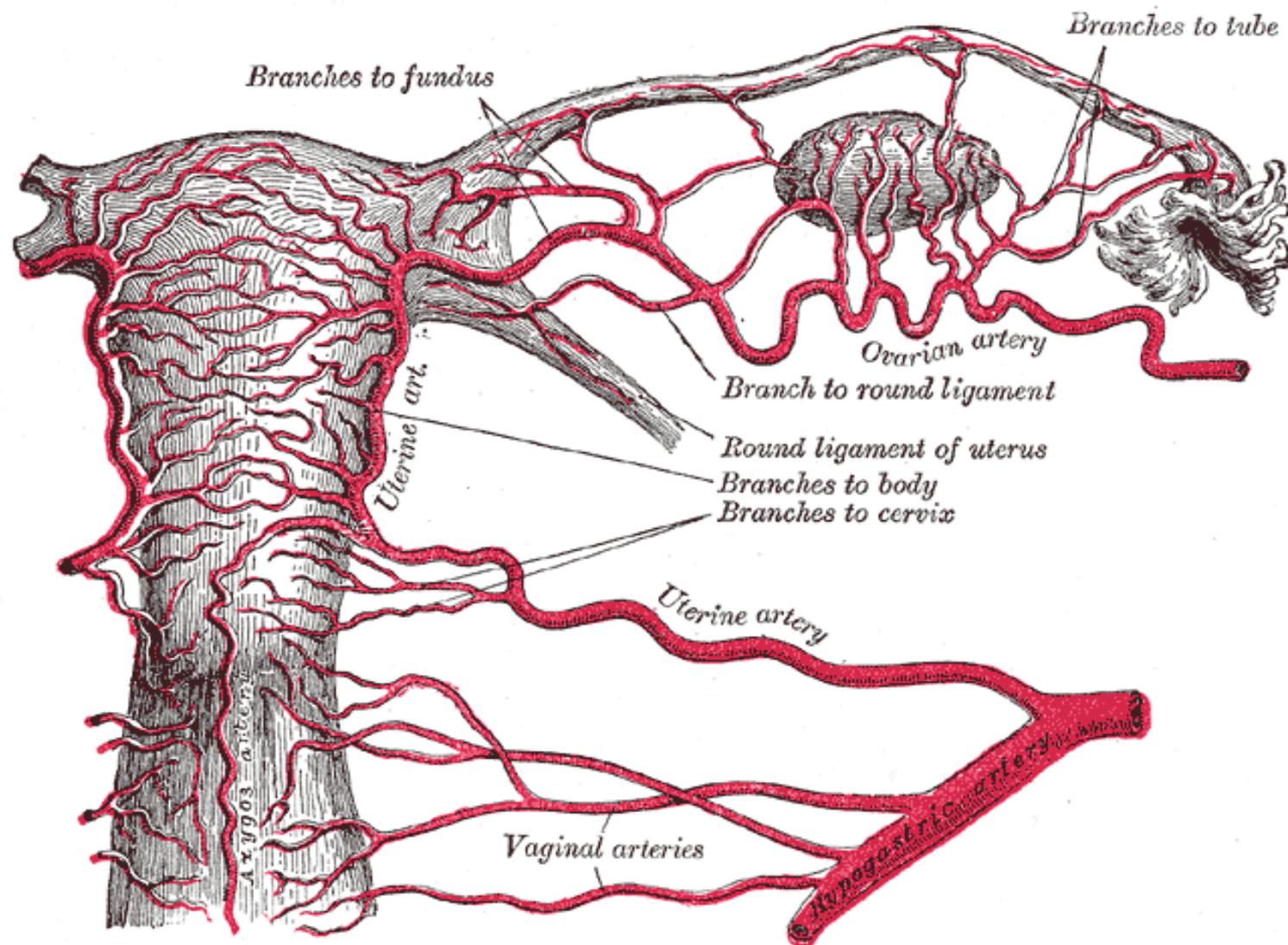
Anatomy

- The human uterus is an extremely plastic organ.
- A nonpregnant, uterus weighs only about 70 g.
- At term, the uterus weighs well over a kilogram.
- Along with this increase in size and weight, there is a corresponding increase in blood flow to the uterus and placenta.



Anatomy

- The primary maternal blood supply is from the **uterine arteries**, which arise as a branch of the anterior trunk of the **internal iliac arteries**.
- The ascending branch of the uterine artery -supplies the major portion of the body of the uterus and the placental bed.



- At delivery, the placenta separates from the placental bed.
- With separation, the myriad small endometrial arteries that supplied the placenta are torn: in the absence of a mechanism to halt blood loss, they would continue to spurt blood into the now empty uterine cavity.
- **Two mechanisms normally prevent blood loss:**
 - **the elasticity of the arterioles;**
 - **contraction of the myometrium physically compresses the disrupted vessels.**

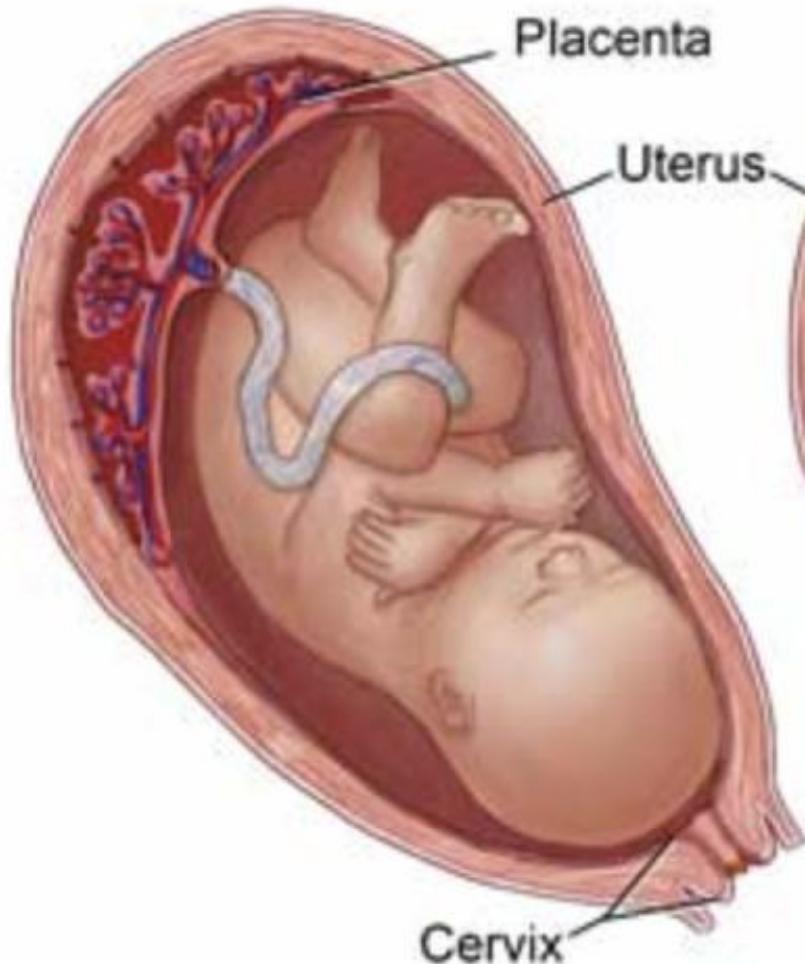
Antepartum Hemorrhage

- ***DEFINITION:*** bleeding from the genital tract after the 22th week of pregnancy but before the birth of the baby
- The incidence is about 3% hospital deliveries.
- **placenta previa**
- **abruptio placentae**

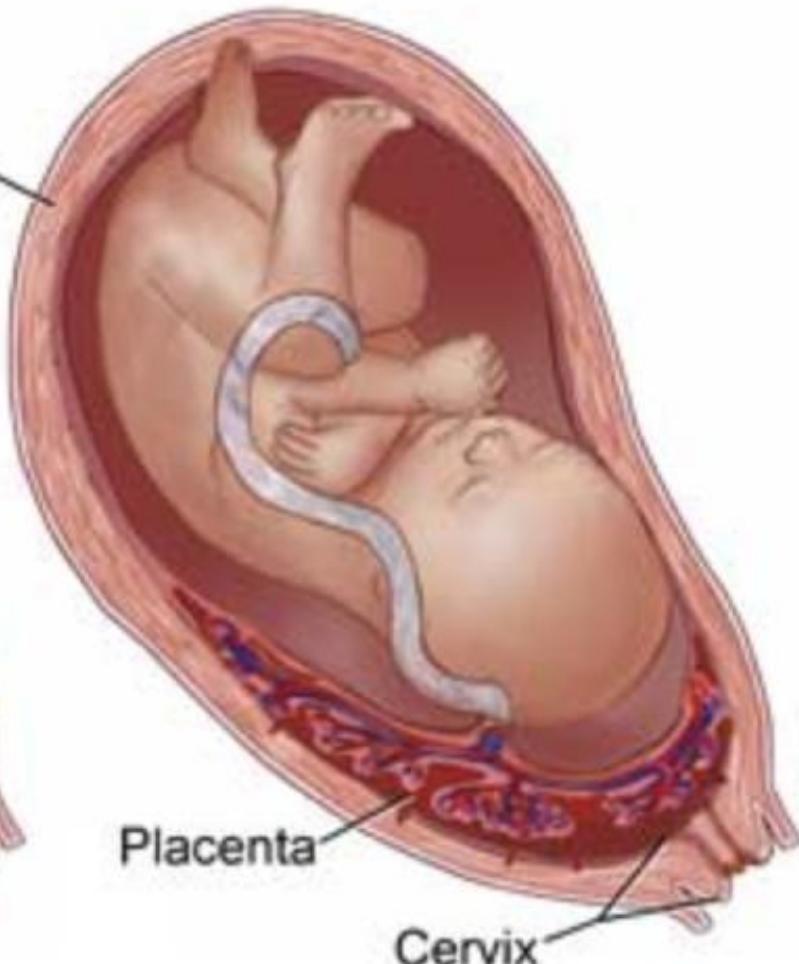
PLACENTA PREVIA

- **DEFINITION:** When the placenta is implanted partially or completely over the lower uterine segment it is called placenta previa.
- **INCIDENCE:** About one-third cases of antepartum hemorrhage belong to placenta previa.

Normal placenta



Placenta previa



Placenta Previa

- complete
- partial
- marginal

Placenta Previa

Placenta Previa



Total

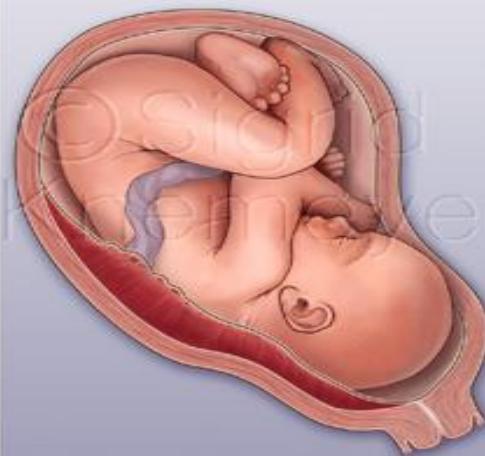
The placenta completely covers the cervix.

Placenta previa is a condition in which the placenta is attached close to or covering the cervix (opening of the uterus). Placenta previa occurs in about one in every 200 live births. There are three types of placenta previa:



Partial

The placenta is partially over the cervix.



Marginal

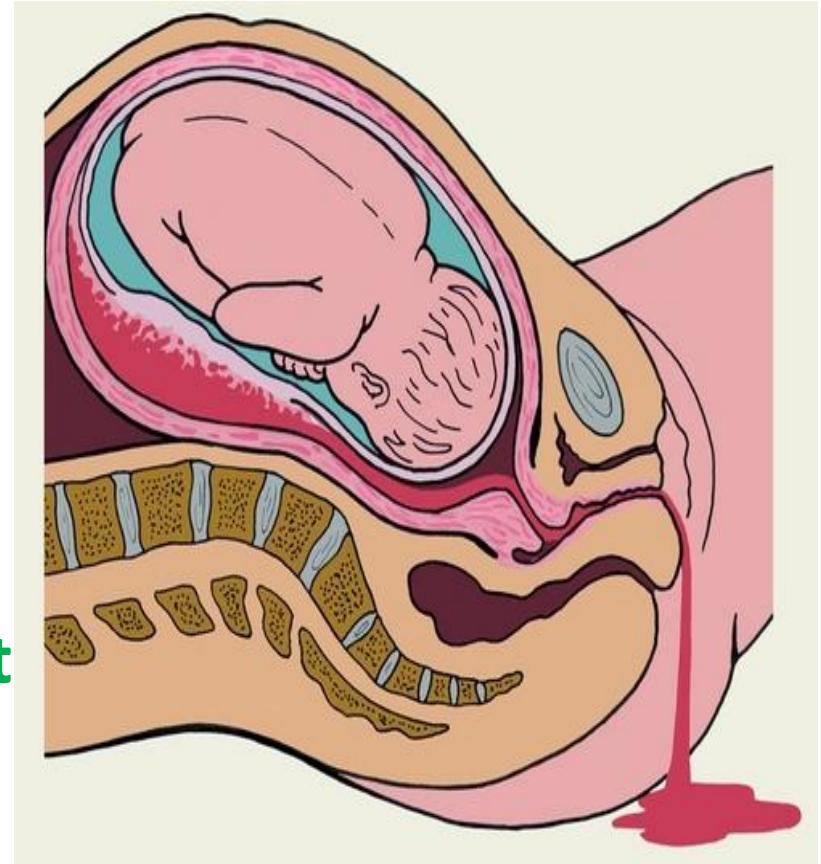
The placenta is near the edge of the cervix.

Placenta Previa

- **CAUSE OF BLEEDING:** As the placental growth slows down in later months and the lower segment progressively dilates, the inelastic placenta is sheared off the wall of the lower segment.
- This leads to opening up of uteroplacental vessels and leads to an episode of bleeding.
- The blood is **almost always maternal.**

SYMPTOMS

- The only symptom of placenta previa is **vaginal bleeding.**
- The classical features of bleeding in placenta previa are sudden onset, **painless.**
- **The bleeding is unrelated to activity and often occurs during sleep and the patient becomes frightened on awakening to find herself in a pool of blood.**

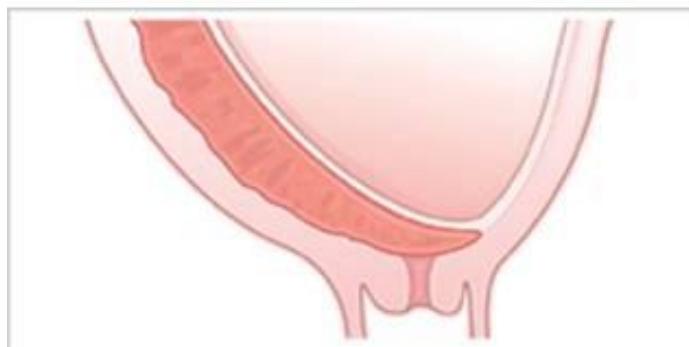


Placenta Previa

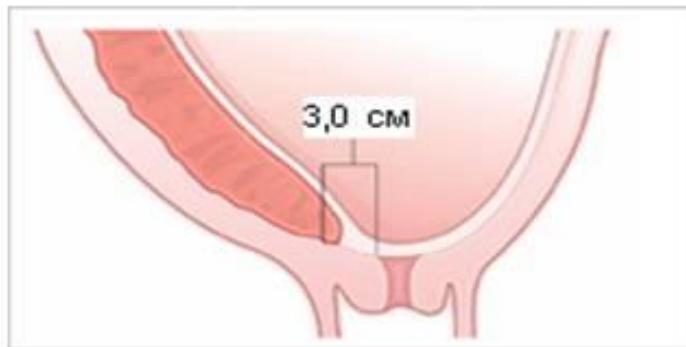
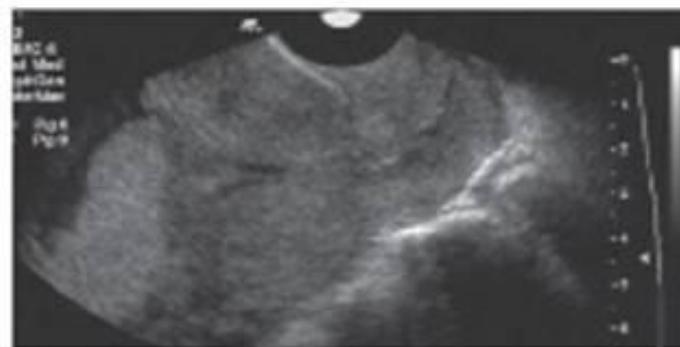
- **DIAGNOSIS:** Painless and recurrent vaginal bleeding in the second half of pregnancy should be taken as placenta previa unless proved otherwise.
- Ultrasonography is the initial procedure either to confirm or to rule out the diagnosis.
- Ultrasound is the easiest way to diagnose (95-98% accuracy)



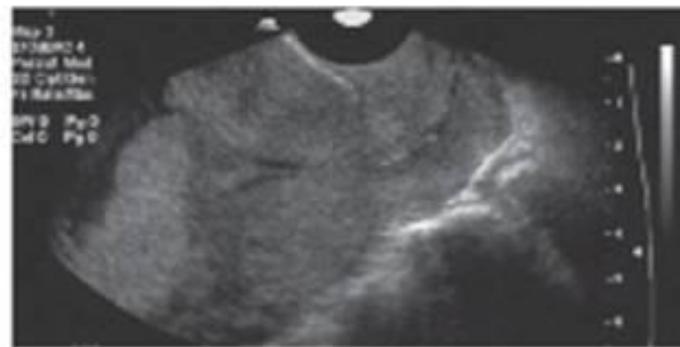
Вариант предлежания плаценты во время беременности определяют с помощью УЗИ



полное предлежание



неполное предлежание



IMMEDIATE ATTENTION

Overall assessment of the case is quickly made as regards

1. **Amount of the blood loss** — by noting the general condition, pulse rate and blood pressure;
2. **Blood samples** are taken for group, and estimation of hemoglobin;
3. **A large-bore IV cannula** is sited and an infusion of normal saline is started
4. **Inspection of the vulva** to note the presence of any active bleeding.
5. **Confirmation of diagnosis** is made from the history, physical examination and with sonographic examination

Management

- **Expectant management**
- **Active (Definite) management**

- **Expectant treatment:** The aim is to continue pregnancy for fetal maturity

Suitable cases for expectant management are:

- Mother is in good health status (hemoglobin, hematocrit);
- Duration of pregnancy is less than 37 weeks;
- Active vaginal bleeding is absent;
- Fetal well being is assured (USG).

Active Management (Delivery):

- Bleeding occurs at or after 37 weeks of pregnancy
- Patient is in labor
- Bleeding is continuing
- Baby is dead

Mode of delivery

- Cesarean delivery

ABRUPTIO PLACENTAE

- **DEFINITION:** It is one form of antepartum hemorrhage where the bleeding occurs due to premature separation of normally situated placenta.
- This may occur either **prepartum** or **intrapartum**.
- Common cause of intrauterine fetal demise

FACTORS ASSOCIATED WITH INCREASED RISK OF PLACENTAL ABRUPTION

- Pregnancy-induced hypertension
- Chronic hypertension
- Cigarette smoking
- Uterine leiomyoma
- Increased parity

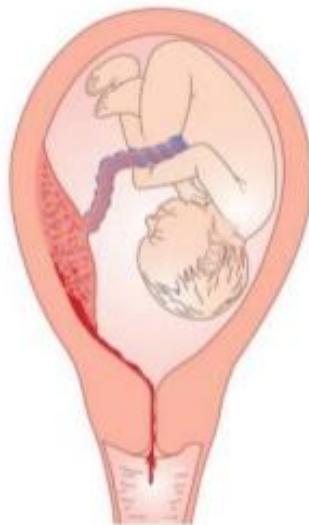
- Abruptio has both **maternal** and **fetal** implications.
- Uterine bleeding associated with delivery is usually limited by myometrial contraction, as discussed above.
- In abruptio, placental separation is not followed by myometrial contraction.
- The uterus does not empty; therefore, effective myometrial contraction cannot occur, and ongoing maternal blood loss usually results.
- For the fetus, the decrease in placental surface area may result in asphyxia.

VARIETIES

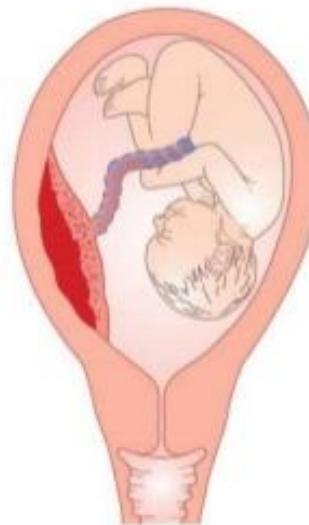
- **Revealed** : Following separation of the placenta, the blood insinuates downwards between the membranes and the decidua. Ultimately, the blood comes out of the cervical canal to be visible externally.
- **Concealed** : The blood collects behind the separated placenta or collected in between the membranes and decidua.
- **Mixed** : In this type, some part of the blood collects inside (concealed) and a part is expelled out (revealed).

Placental abruption: types

- Placental abruption can be broadly classified into two types:
 - Revealed
 - Concealed
 - Mixed



Revealed



Concealed



Concealed and revealed

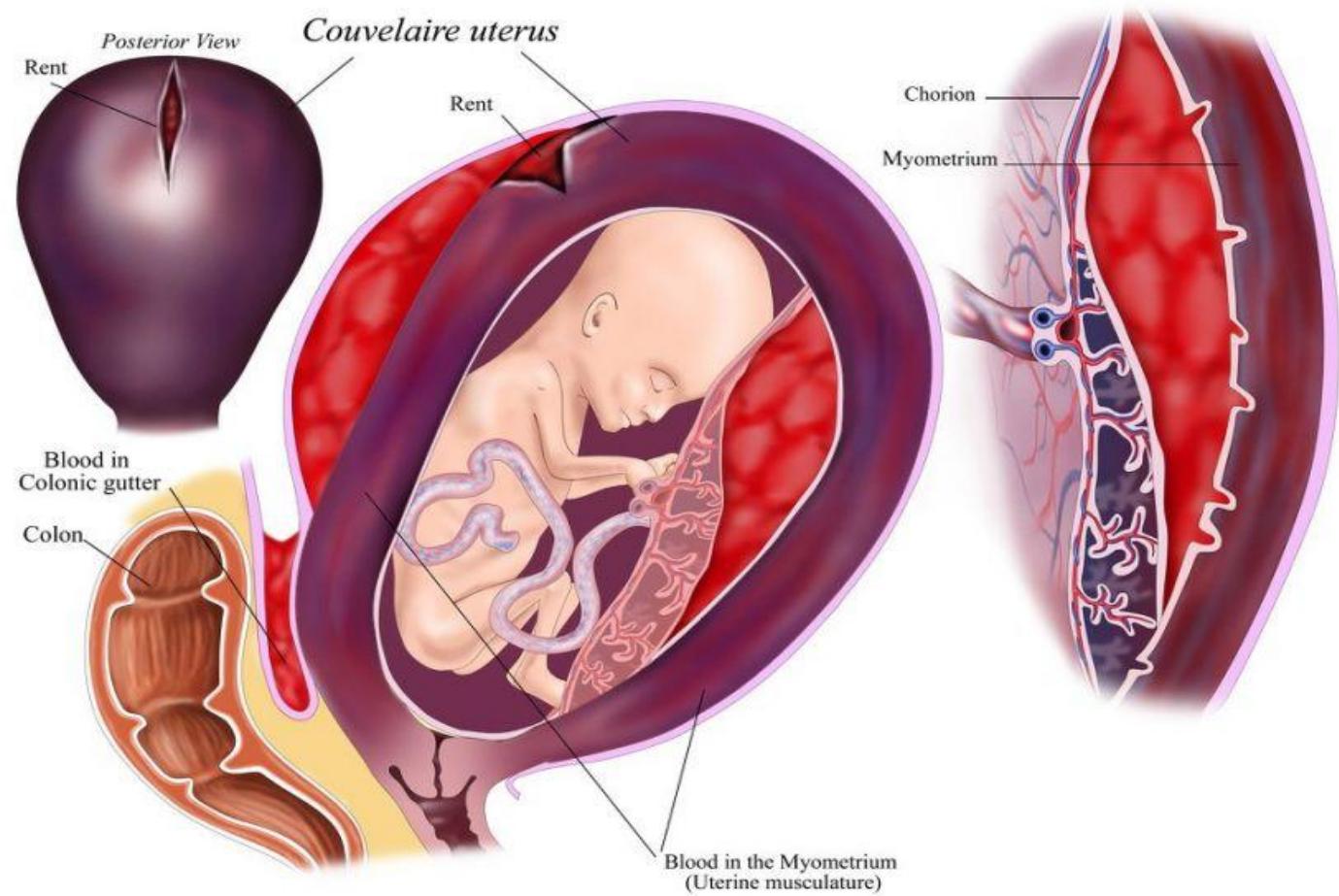
Clinical features

- The clinical features depend on degree of separation of placenta and amount of blood concealed inside the uterine cavity.
- Clinical features: **abdominal discomfort or pain followed by vaginal bleeding** (Revealed)
- Abdominal acute intense pain followed by slight vaginal bleeding (Mixed).

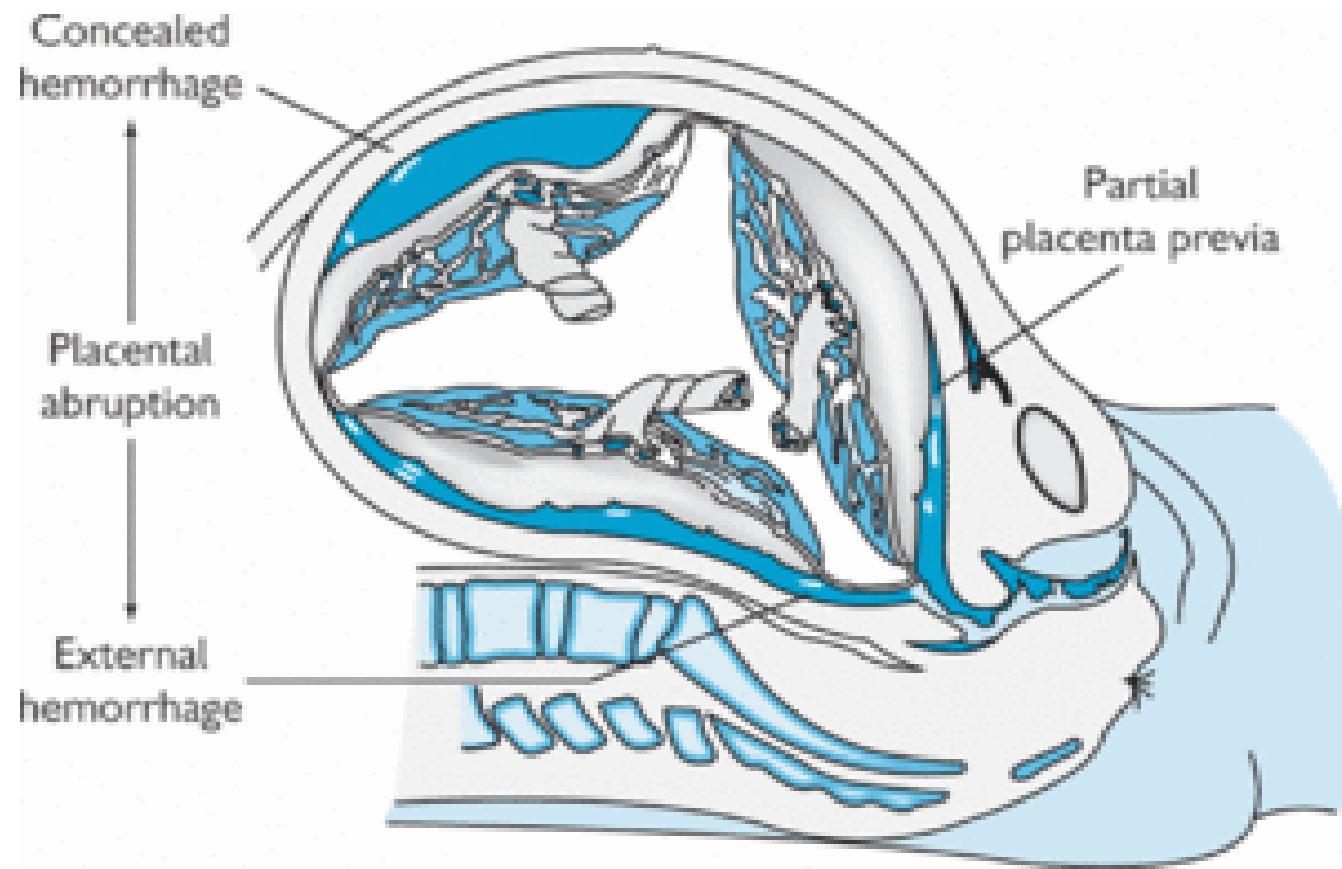
- It is important to note that the amount of visible vaginal blood loss usually markedly underestimates the actual maternal blood loss
- While some vaginal bleeding is usually apparent, **up to 3000 ml** of blood can be sequestered behind the placenta in a “concealed” hemorrhage without external bleeding
- This may occur when the placenta remains circumferentially adherent around a central area of abruption

COUVELAIRE UTERUS (uteroplacental apoplexy)

- It is a pathological entity first described by Couvelaire and is met with in association with severe form of concealed abruptio placentae.
- There is massive intravasation of blood into the uterine musculature upto the serous coat.
- The condition can only be diagnosed on laparotomy.



Hemorrhage from placental abruption and placenta previa.
External (vaginal) bleeding is usually apparent in both conditions,
although up to 3 liters of blood may be lost in a concealed
hemorrhage without evidence of external blood loss



Complications

- In severe cases, maternal coagulopathy can occur.
- Abruptio is the most common cause of **disseminated intravascular coagulation (DIC)** during pregnancy.
- Two possible mechanisms for the development of this coagulopathy have been proposed:
- **activation of circulating plasminogen**, or
- **placental thromboplastin may trigger activation of the extrinsic clotting pathway**.

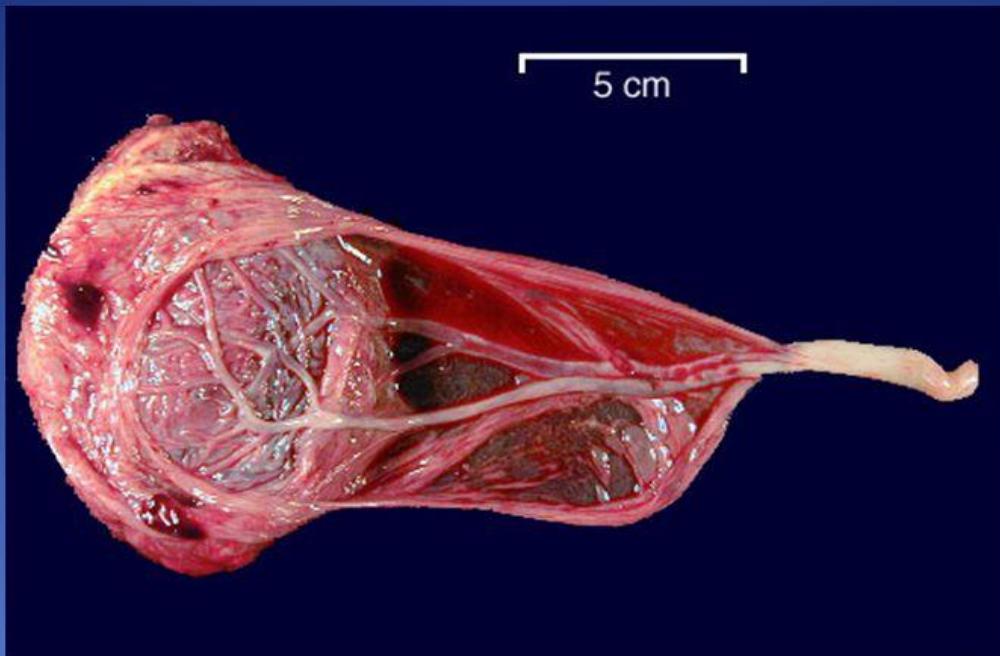
Treatment

- Emergency measures:
- **Blood** is sent for hemoglobin and hematocrit estimation, coagulation profile, ABO and Rh grouping
- **Ringer's solution drip** is started with a wide bore cannula and arrangement for blood transfusion is made.
- **Close monitoring** of maternal and fetal condition is done.
- **Management options** are: **Immediate delivery**, management of complications if there is any.

VASA PREVIA

- Associated with velamentous insertion of the umbilical cord (1% of deliveries)
- Bleeding occurs with rupture of the amniotic membranes (the umbilical vessels are only supported by amnion)
- Bleeding is **FETAL** (not maternal as with placenta previa)
- Fetal death may occur

VASA PREVIA



Postpartum Hemorrhage

- Traditional definition = > 500 ml blood loss
- **Normally seen blood losses:**
 - Vaginal delivery- 300 – 400 ml, 0,5% weight
 - – C/section- 1000ml

Postpartum Hemorrhage

- Pregnancy is normally a state of hypervolemia and increased RBC mass
- Blood volume normally increased by 30-60% (1-2 L)
- Pregnant patients are therefore able to tolerate some degree of blood loss
- **Estimated blood loss is usually about $\frac{1}{2}$ of actual loss!**

Postpartum Hemorrhage

- Early postpartum hemorrhage is within 1st 24 hours (also may be just called “postpartum hemorrhage”) – USA
- Late postpartum hemorrhage is less common

Postpartum haemorrhage

- Blood loss ≥ 500 mL
- **Primary**-within 24 hours of delivery
- **Secondary** - after 24 hours
- **Major** PPH Blood loss ≥ 1000 mL and/or unstable
- **Moderate** = 1000 – 2000 mL
- **Severe** ≥ 2000 mL
- **Life-threatening** ≥ 2500 mL

Postpartum Hemorrhage Causes

Postpartum hemorrhage is a sign, not a diagnosis

- 1. Genital tract laceration (T-trauma)**
- 2. Coagulopathy (T-Trombin)**
- 3. Uterine: Uterine atony, Uterine rupture (T-tone)**
- 4. Retained POC (T-tissue)**

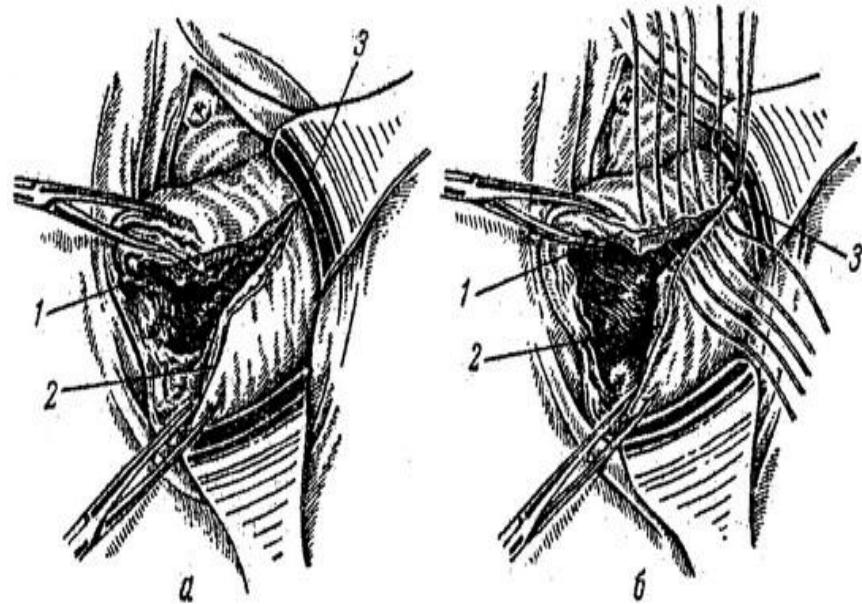
Postpartum Hemorrhage

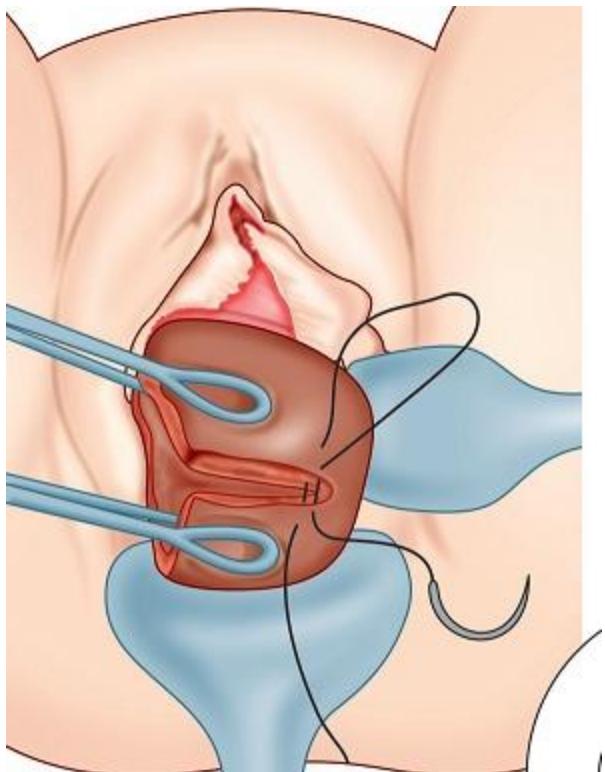
Genital Tract Laceration

- May be cervix, vaginal sidewall, rectal or episiotomy
- Genital tract needs thorough inspection after any delivery

Repairing Lacerations

- Be sure to suture **above** internal apex of laceration
- Cervical lacerations > 2.0 cm in length need to be repaired.
- The cervix is grasped with ringed forceps and retracted to allow repair

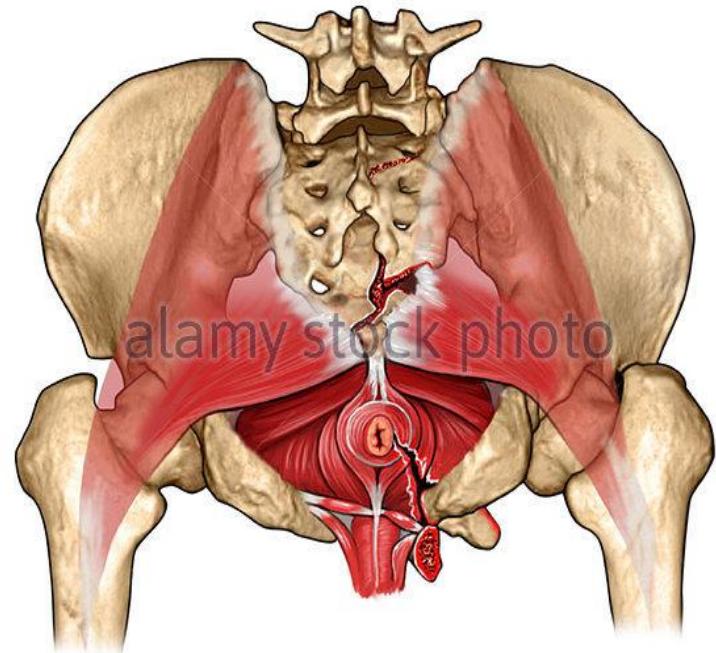


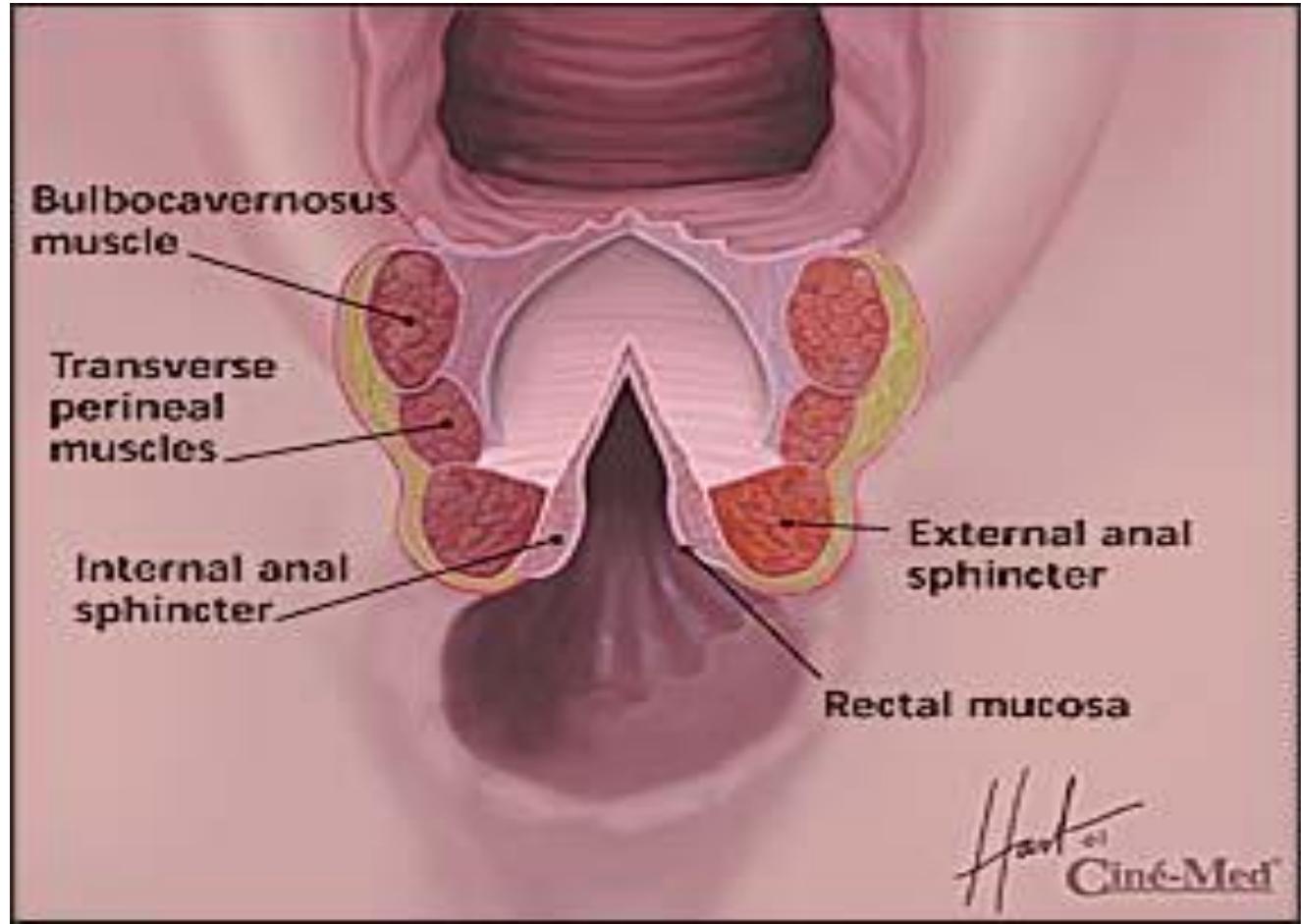


- Repair should be done under general anesthesia
- The apex is to be identified first and the first suture is placed just above the apex
- Vicryl No.'0', taking whole thickness of the cervix

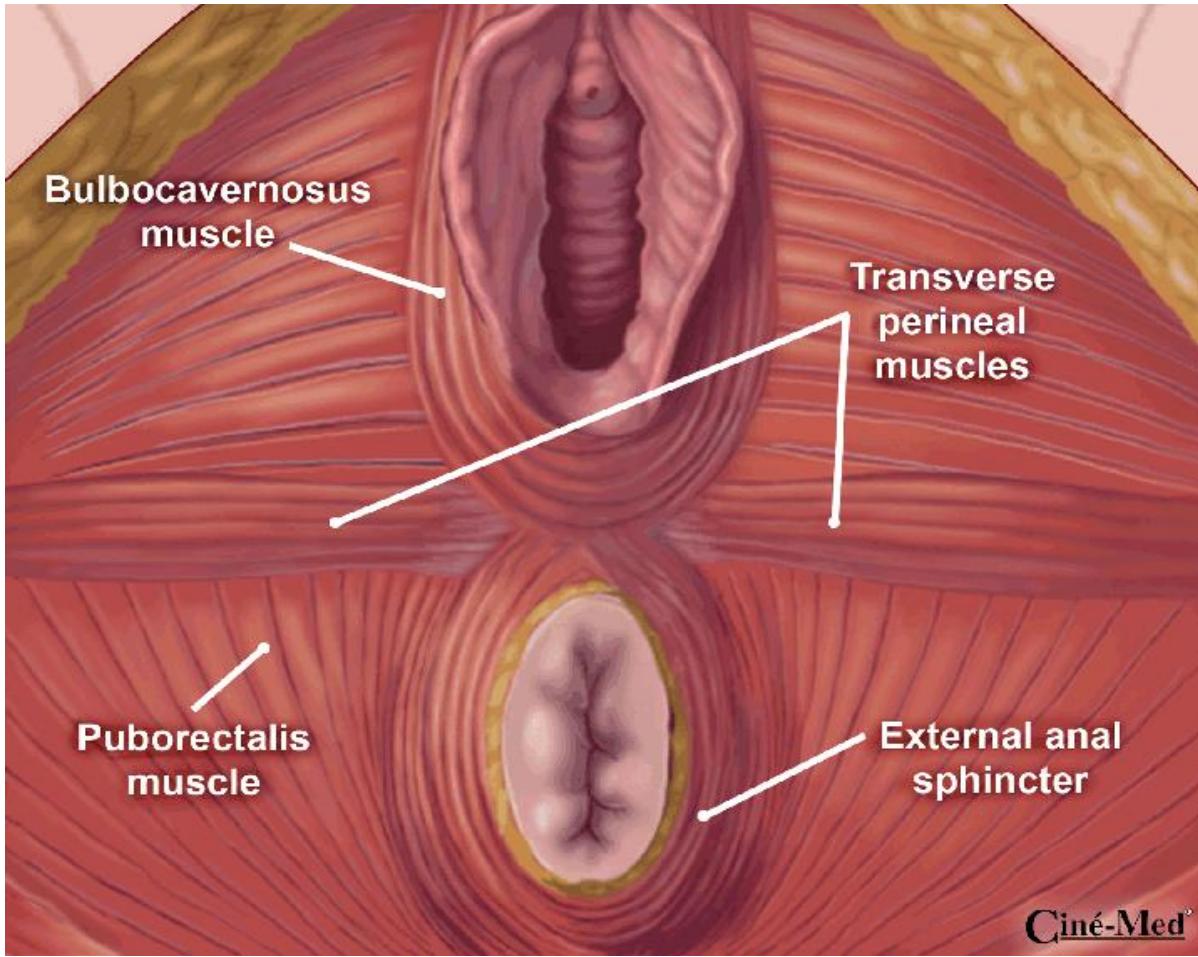
Maternal Lacerations- Perineal

- **1st degree**=vaginal mucosa and perineal skin
- **2nd degree** = above and muscles of the perineal body
- **3rd degree** = above and rectal sphincter is damaged or completely torn





© 2003 BROOKS HART

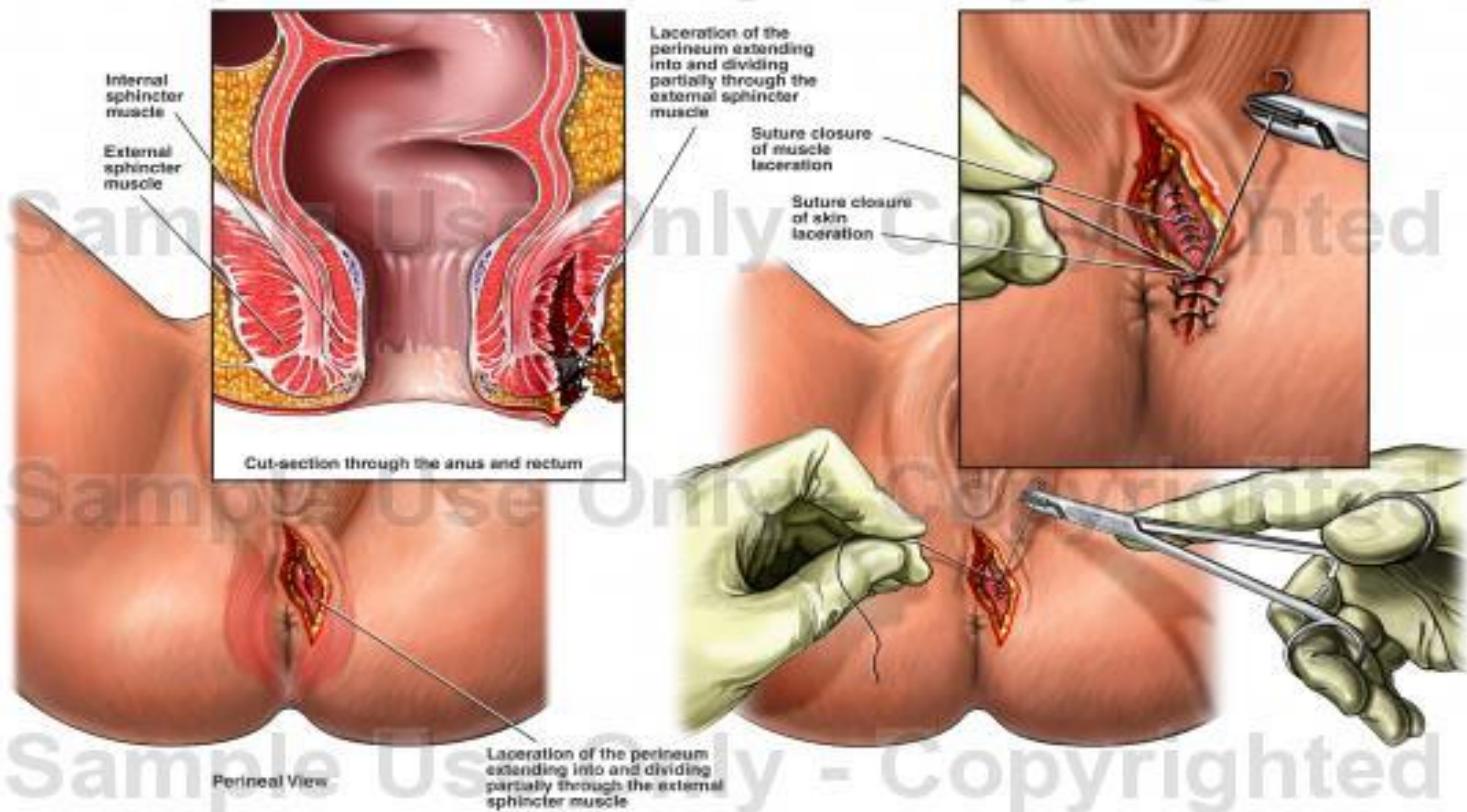


Ciné-Med®

Perineal Laceration Surgical Repair

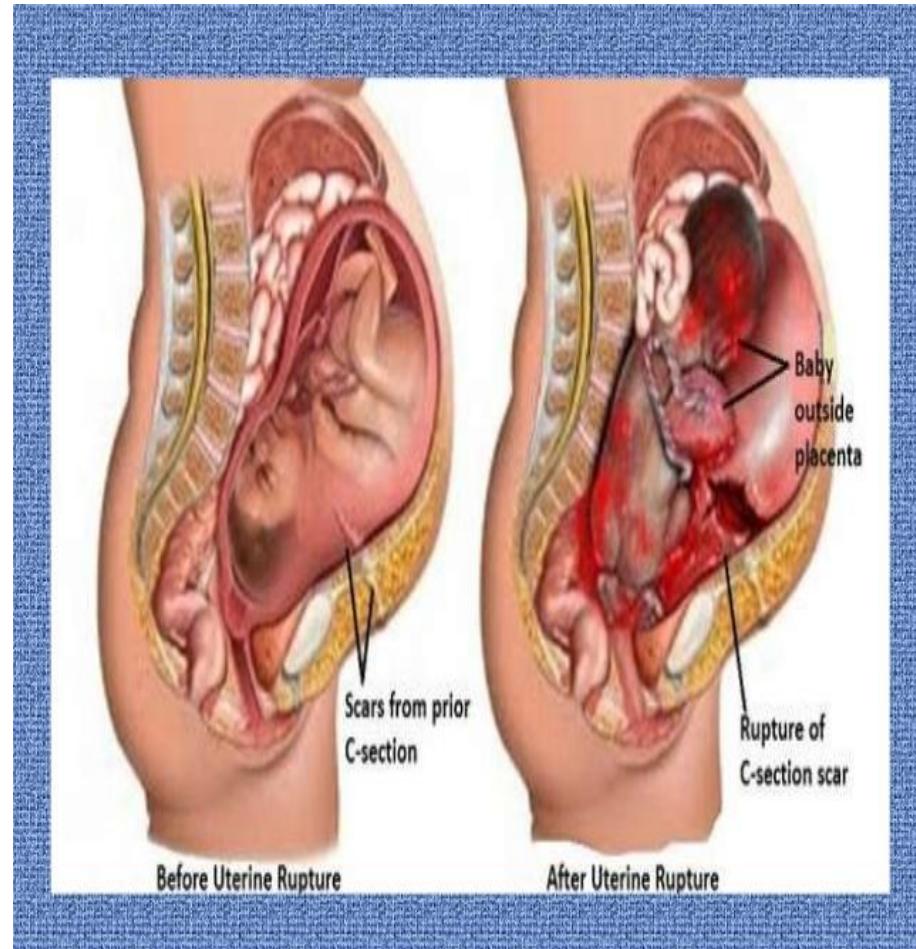
Post-Accident Appearance

Surgical Repair Of Lacerations



Uterine Rupture

- 1-2% of previous lower segment C/S
- Other causes include: curettage, macrosomia, prolonged labor.

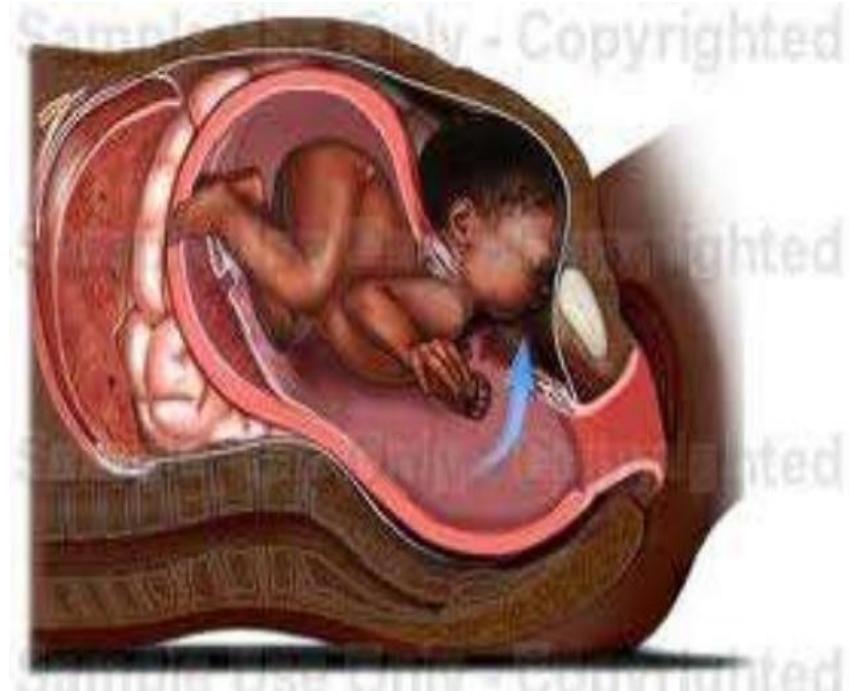


RUPTURE OF THE UTERUS

- Disruption in the continuity of the all uterine layers (endometrium, myometrium and serosa) any time beyond 22 weeks of pregnancy is called **rupture of the uterus**.
- Small rupture to the wall of the uterus in early months is called **perforation**.

RUPTURE OF THE UTERUS

- The causes of rupture of the uterus are broadly divided into:
- **SPONTANEOUS**
- **SCAR RUPTURE**
- **IATROGENIC**



SPONTANEOUS

- The causes are:
- **Previous damage** to the uterine walls following dilatation and curettage operation
- Due to **thin uterine** walls
- Spontaneous rupture during pregnancy is usually complete, involves the upper segment and usually occurs in later months of pregnancy.

SCAR RUPTURE

- Classical cesarean or hysterotomy scar is likely to give way during later months of pregnancy.
- The weakening of such scar is due to implantation of the placenta over the scar and increased vascularity.
- Lower segment scar rarely ruptures during pregnancy.

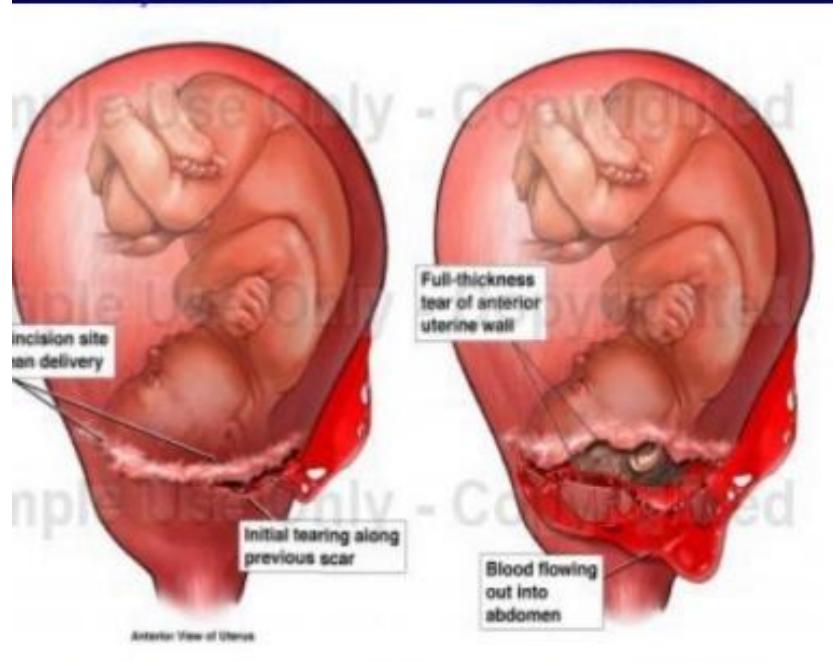
IATROGENIC OR TRAUMATIC

- Injudicious administration of oxytocin
- Use of prostaglandins for induction of abortion or labor

TYPES

- In **incomplete rupture**, the peritoneum remains intact.
- Incomplete rupture usually results from rupture of the lower segment scar.
- **Complete rupture** usually occurs following disruption of the scar in upper segment

■ A **uterine dehiscence** is a “window” covered by the visceral peritoneum (*incomplete*).



Clinical features

- The patient complains of a **abdominal pain** with slight **vaginal bleeding**.
- There is varying degrees of tenderness on uterine palpation.
- Sooner or later, the rupture becomes complete.

MANAGEMENT OF RUPTURE UTERUS

- **LAPAROTOMY**
- **Hysterectomy**

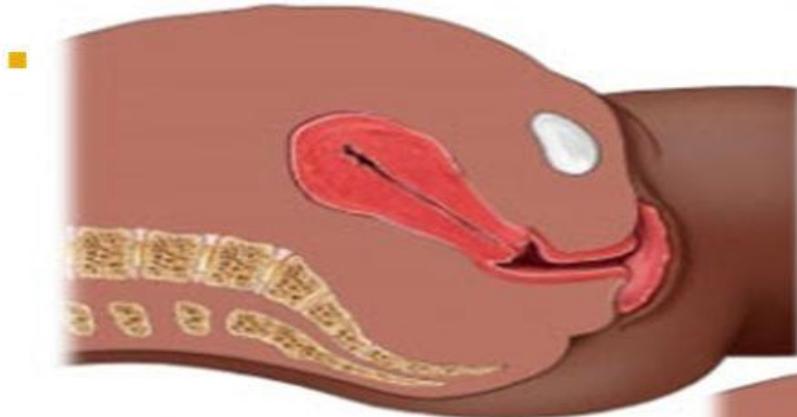
THROMBIN

- Coagulation disorders – is a rare cause of PPH
- Risk factors for disseminated intravascular coagulation include severe preeclampsia, amniotic fluid embolism, sepsis, placental abruption.

Uterine Atony

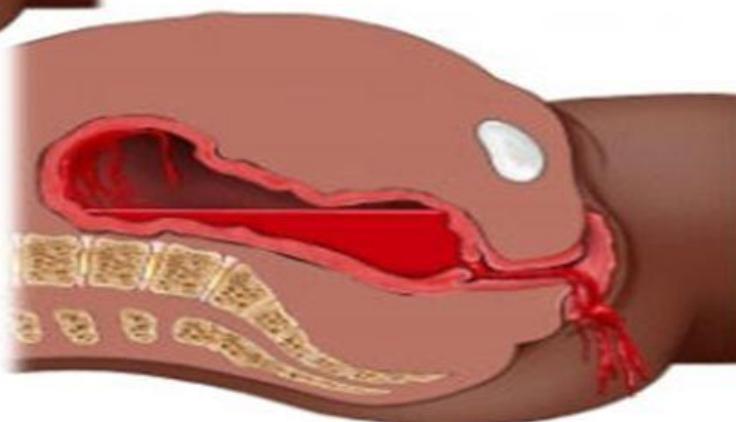
- Most common cause of postpartum hemorrhage – 80%
- With the separation of the placenta, the uterine sinuses which are torn, cannot be compressed effectively due to imperfect contraction and retraction of the uterine musculature and bleeding continues.
- Postpartum patients may not exhibit dramatic hemodynamic changes until blood loss is pronounced

Uterine atony



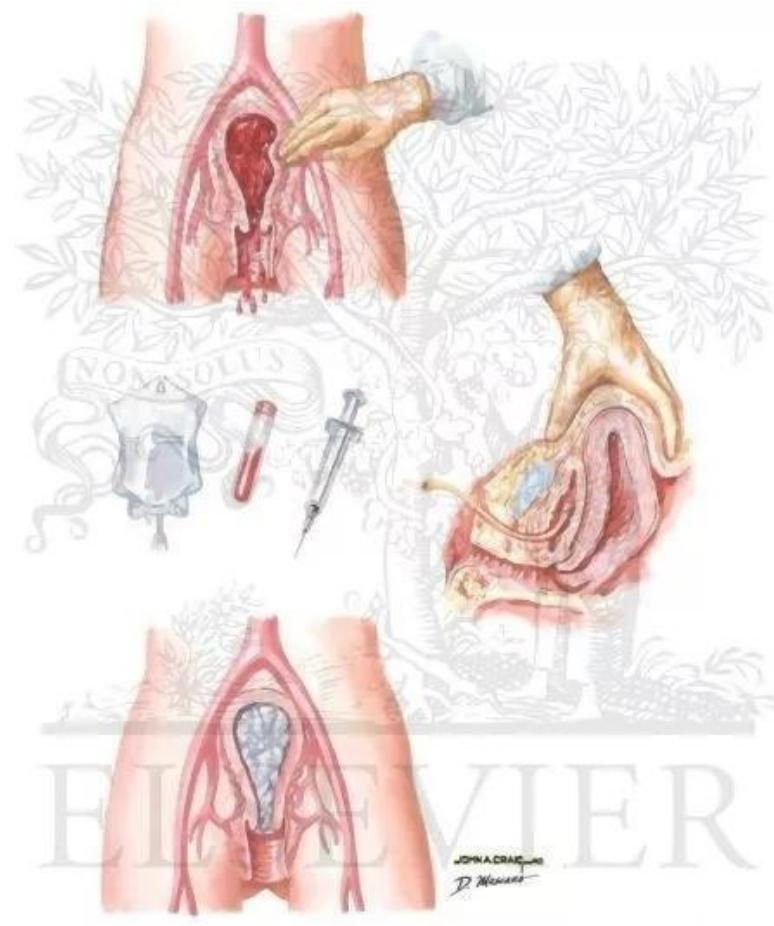
Normal postpartum condition with contracted uterus preventing hemorrhage.

Uterine atony allows hemorrhage to flow into the uterus.



Uterine Atony

- To palpate the fundus and massage the uterus to make it hard.
- The massage is to be done by placing four fingers behind the uterus and thumb in front.



© ELSEVIER, INC. – NETTERIMAGES.COM

Uterine Atony

- Insert urinary catheter and attach to hourly urine bag
- First –line drug therapy
- IV infusion oxytocin. If the oxytocin infusion fails to achieve uterine contraction, additional medical treatment should be instituted rather than increasing the dose or rate of oxytocin.
- Second line drug therapy
- Prostaglandin F (Ensaprost)
- Misoprostol
- Metilergometrine

OXYTOCIN, METHERGIN, MISOPROSTOL (PGE1) CARBOPROST (PGF2a), PROSTIN (PGE2)

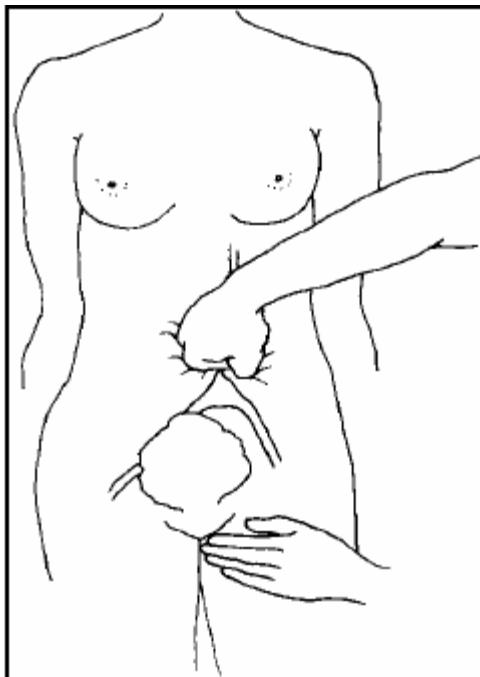


Uterine Atony



Clamping methods to temporarily stop the bleeding

1. Compression of the abdominal aorta:



2. Controlled intrauterine balloon tamponade (250-350 ml)



3. Uterine arteries embolization

- When uterotonic agents with or without tamponade measures fail to control bleeding in a patient who has given birth vaginally, exploratory **laparotomy** is indicated

POSTPARTUM HEMORRHAGE Surgical Therapy

- **Uterine artery ligation**
- **Stepwise uterine artery devascularization**
- **Compression sutures**
- **Hysterectomy**

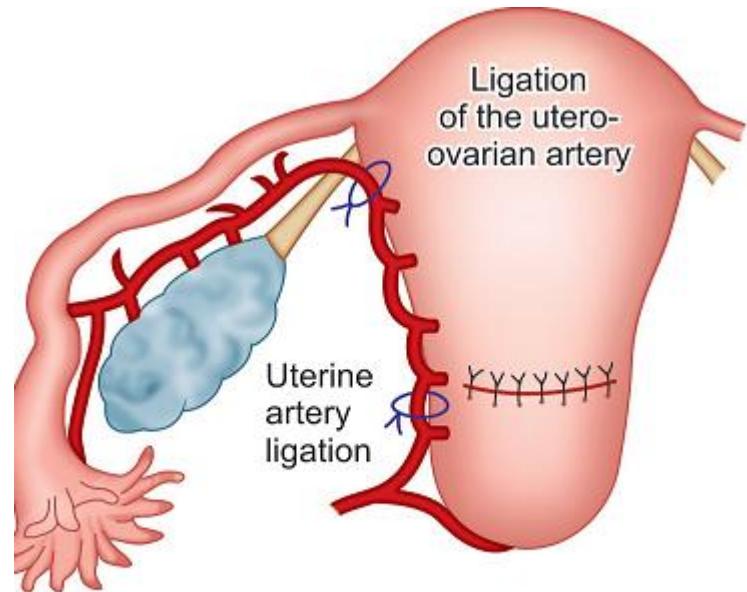
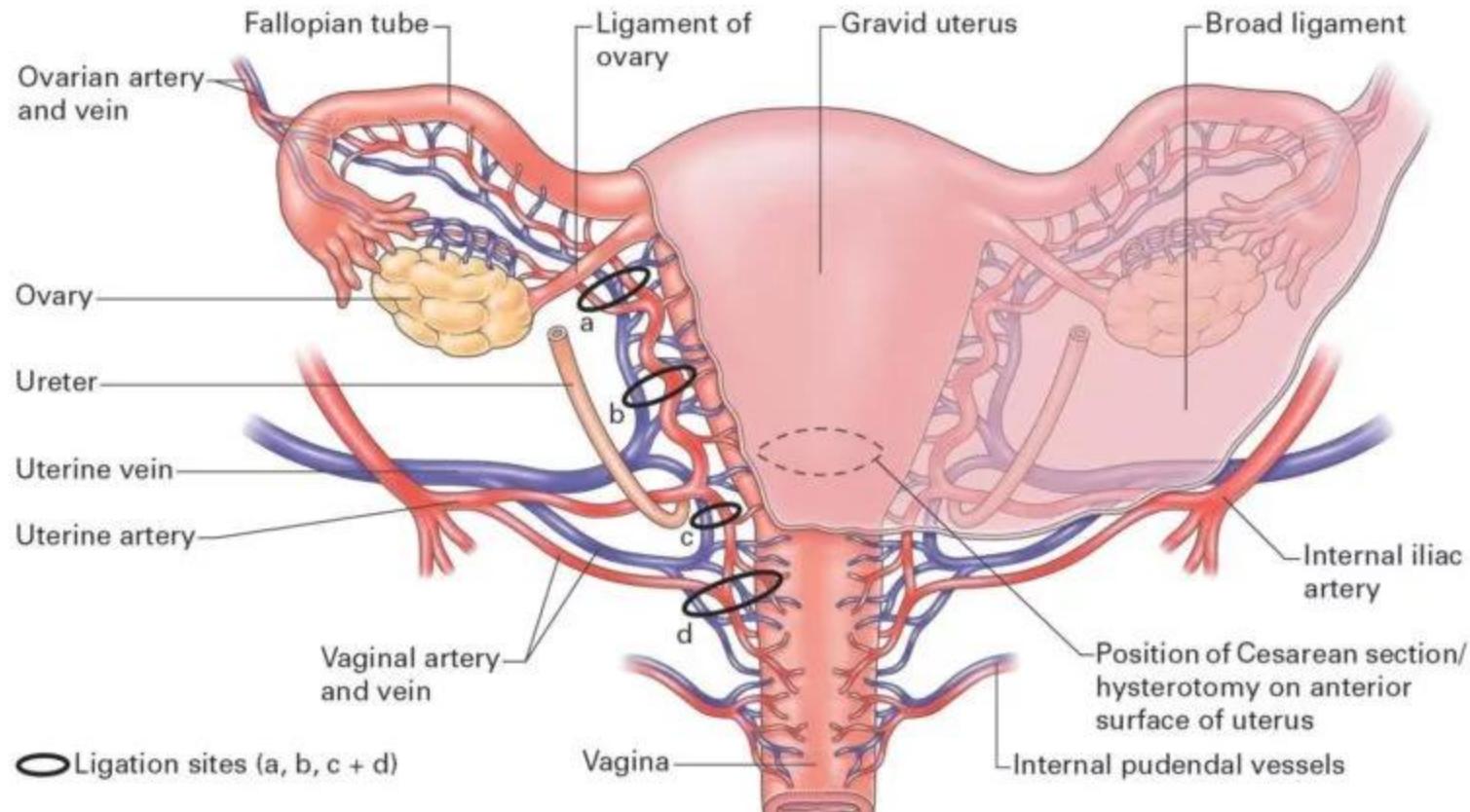


Fig. 27.4: Ligation of the utero-ovarian artery

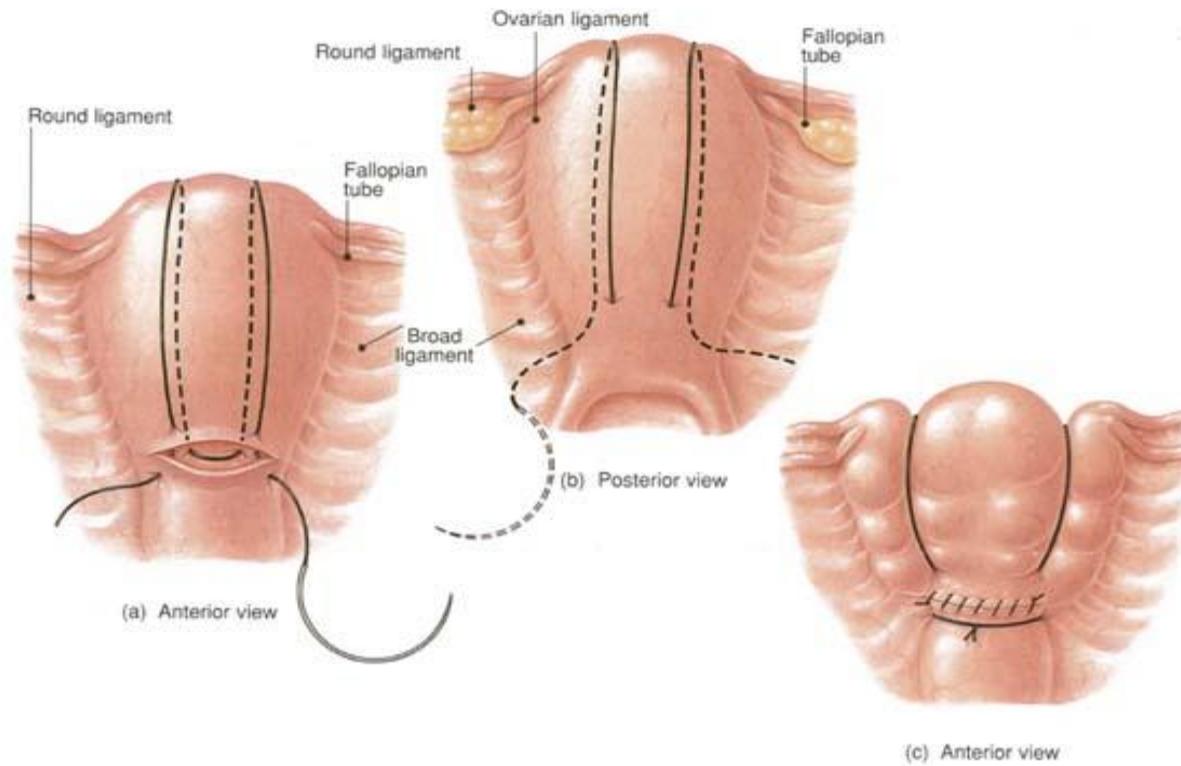
Stepwise uterine artery devascularization



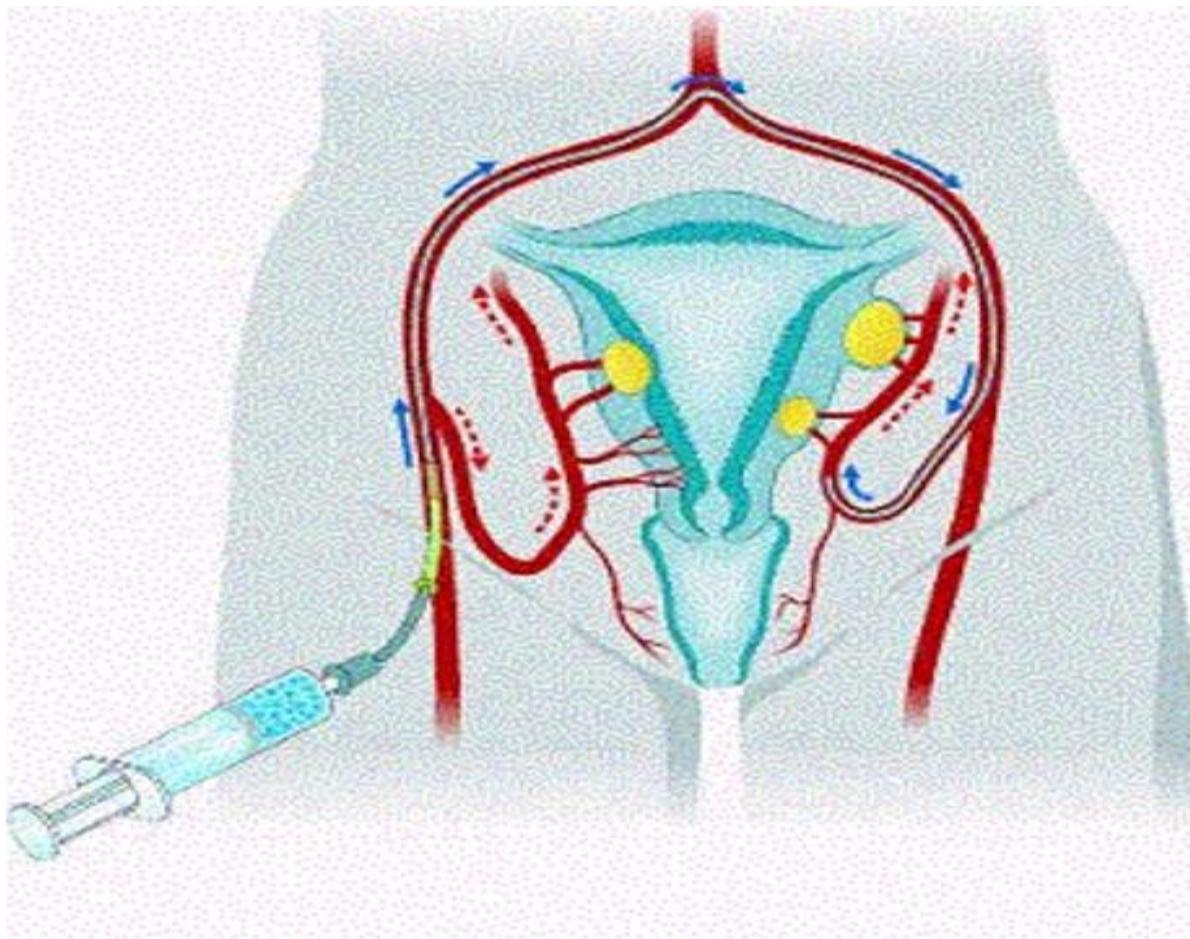
© Copyright B-Lynch '05

Posterior view

POSTPARTUM HEMORRHAGE B- Lynch Suture

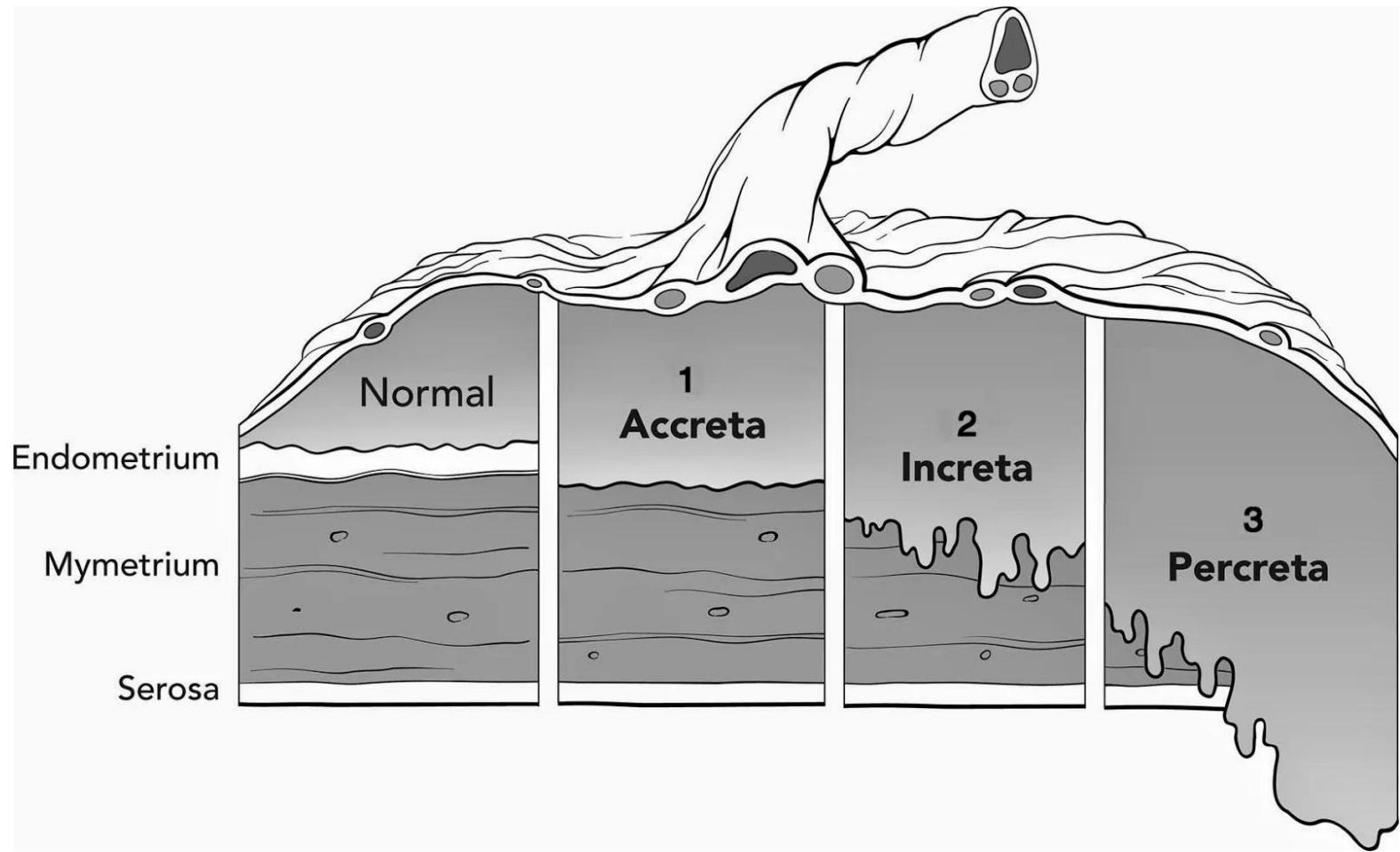


Selective Arterial Embolization



PLACENTA ACCRETA

- **Placenta accreta** is an extremely rare form in which the placenta is directly anchored to the myometrium partially or completely without any intervening decidua.
- The probable cause is due to absence of decidua basalis.

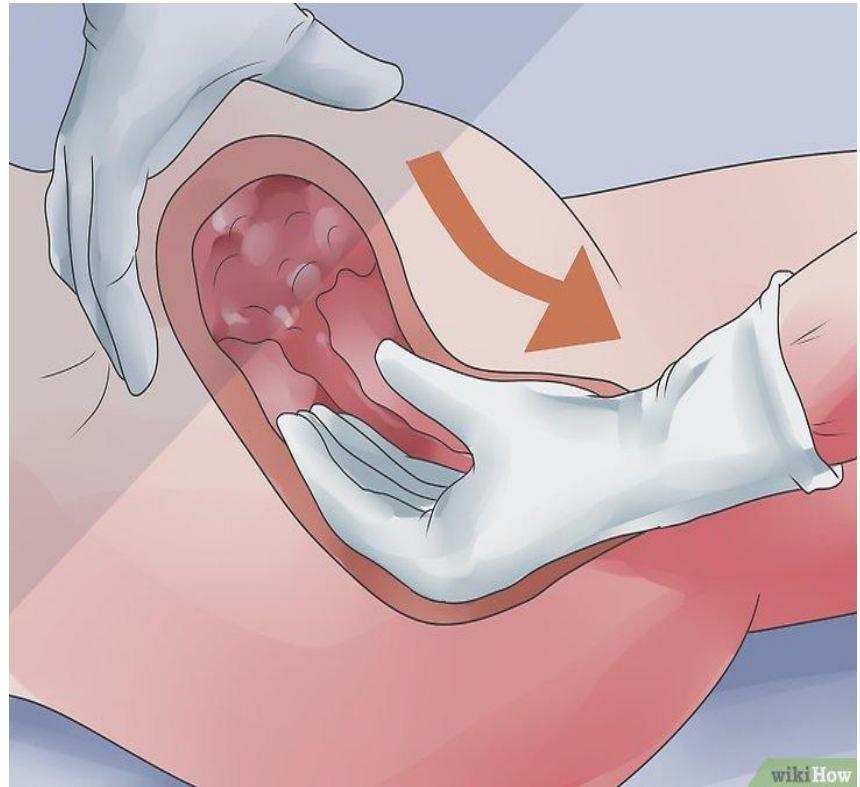


Risk factors for placenta accreta

- Prior uterine surgery (dilatation and curettage, manual removal of placenta, myomectomy)
- Increasing maternal age and parity.

PLACENTA ACCRETA

- The diagnosis is made only during attempted manual removal when the plane of cleavage between the placenta and the uterine wall cannot be made out.



MANAGEMENT

- **Placenta accreta → Remove the placental tissue as much as possible.**
- **In total placenta accreta, placenta percreta - hysterectomy is indicated.**

Tissue (self study)

- Retained products of conception (Tissue) 10%

