Management of 3rd stage of labor

Assistant professor of Obstetric & Gynecology Doctor Ahlam Al Kharabsheh

Mutah University. MS6.Nour tarawneh

Topics:

1. Physiology of 3rd stage of labor.
2. Complications of 3rd stage of labor.(the importance of Management of 3rd stage)

3. Expectant Management of 3rd stage of labor.
4. Active Management of 3rd stage of labor.

5. Studies supporting the recommendations and WHO guidelines about the management of 3rd stage of labor , the possibility of the complications and how crucial following a specific time frame in managing 3rd stage of labor is.

6. Obstetric characteristics for a prolonged third stage of labor.

7. Placental examination and its clinical importance.

8. A study explaining the reason behind preferring Active Mx. more than Expectant Mx. In 3rd stage of labor.
9. A study demonstrating the ‘’Evaluation of complications during third stage of labor among women delivering at tertiary care center’’

Sources:

Williams Obstetrics 26th edition.
Holland and Brews manual of obstetrics 3rd edition (page no.52-54).
Obstetrics by Ten Teachers 20th edition, Louise C. Kenny & Jenny E. Myers.
JOSEPH F. YETTER et al, Examination of the placenta.

https://pubmed.ncbi.nlm.nih.gov/30754073/
https://fn.bmj.com/content/109/4/362
https://www.ijrcog.org/index.php/ijrcog/article/view/4871
https://pubmed.ncbi.nlm.nih.gov/2030858/
https://pubmed.ncbi.nlm.nih.gov/18073485/
https://www.ijrcog.org/index.php/ijrcog/article/view/4871
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1) what duration of the third stage of labor is abnormal?

2) what duration is associated with complications?

3) what conditions are associated with prolonged third stage?

3rd Stage of Labor

The 3rd stage of labor is an interval between the delivery of the baby and the expulsion of the placenta and membranes .this normally takes between 5 and 10 minutes , and is **considered prolonged after 30 minutes**, unless a physiological approach is preferred.

Separation of the placenta occurs due to the reduction of volume of the uterus due to uterine contractions and the retractions of the lattice-like arrangement of the myometrial muscle fibers. A cleavage plane develops between the decidua basalis and the separated placenta lies freely in the lower segment of the uterine cavity. after the baby has been delivered.

Blood loss in the third stage of labor

Depends on how quickly the placenta separates from the uterine wall and how effectively uterine muscle contracts around the placental bed.

the average amount of blood loss in the third stage is difficult to ascertain because different management strategies and different ways of assessing blood loss lead to markedly different amounts.

But generally speaking normally bleeding occurs after placental separation but not excessive bleeding , the acceptable amount should be less than 500cc in vaginal delivery and and less than 1000cc in caesarean section **OR a blood loss that does not affect maternal condition (as in anemic patients).**

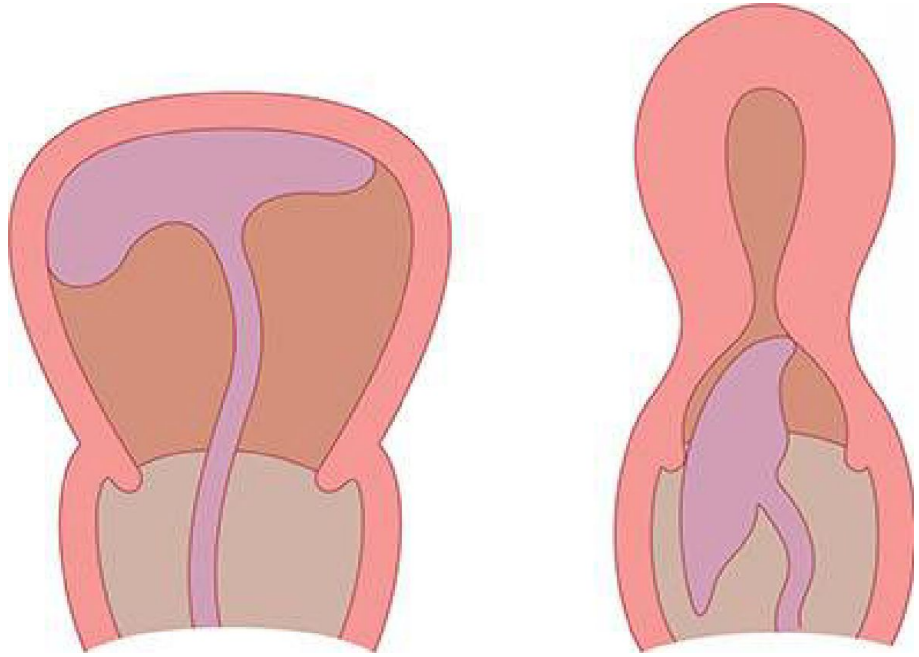
Methods of Separation of the Placenta

• **BRANDT & ANDREW's Method**: Controlled Cord Traction. Here, gentle traction on the cord with one hand (right hand) is done while the other (left hand) is on the uterus for counter-traction.

• **CREDES Method:** this method is Obsolete now. Here, the uterus is Squeezed, and the cord is pulled out. This method is not performed these days as it may cause Causes RETAINED PLACENTA.

Signs of placental separtation:

1. Apparent lengthening of the cord
2. A small gush of blood from the placental bed.
3. Rising of the uterine fundus to above the umbilicus.
4. Uterine contractions resulting in a firm globular feel on palpation.



After separation, the uterine upper segment rises up and feels more rounded

Randomized Controlled Trial > Gynecol Obstet Invest. 2008;65(3):201-5. doi: 10.1159/000112227. Epub 2007 Dec 10.

Obstetric characteristics for a prolonged third stage of labor and risk for postpartum hemorrhage

Everett F Magann [1], Dorota A Doherty, Christian M Briery, Amy Niederhauser, Suneet P Chauhan, John C Morrison

Affiliations + expand

PMID: 18073485 DOI: 10.1159/000112227

Abstract

Aim: To determine the obstetric characteristics associated with a prolonged third stage of labor and risk factors for a postpartum hemorrhage (PPH) in women undergoing vaginal delivery.

Method: Secondary analysis of a prospective randomized investigation comparing placental removal at 20 versus 30 min to prevent PPH.

Results: Between 1 March 2004 and 1 March 2005, 1,607 women were recruited. Eighty-nine percent of the placentas had delivered by 10 min (n = 1,430) and 10.5% (n = 168) had delivered between 10 and 20 min, leaving 8 retained placentas (0.5%) >20 min. Simultaneous factors predictive of longer duration of third stage of labor included maternal age > or =35 years (hazard ratio HR = 0.990, 95% CI 0.981-0.999, p = 0.030) and duration of second stage of labor >2 h (HR = 0.745, 95% CI 0.628-0.883, p = 0.001) relative to second stage of labor <1 h. Significant risk factors for PPH included chorioamnionitis (odds ratio OR = 6.45, 95% CI 2.37-17.64, p < 0.001), nulliparity (OR = 2.38, 95% CI 1.19-4.77, p = 0.014), overdistended uterus (OR = 2.81, 95% CI 1.02-7.76, p = 0.047) and third stage of labor >10 min (OR = 6.45 95%, CI 2.73-22.84, p < 0.001 compared with third stage < or =5 min).

Conclusions: Prolonged third stage of labor is correlated with an older maternal age and a prolonged second stage of labor. Significant risk factors for PPH include chorioamnionitis, an overdistended uterus and a third stage of labor >10 min.

https://pubmed.ncbi.nlm.nih.gov/18073485/

Why Management of 3 rd stage of labor is IMPORTANT ?

1. PPH 75% ,Hypovolemic Shock thus Increased transfusion rates.\DIC.

2. Retained placental remnants or membranes 20%.
3. Morbid adherent placenta <5%
4. perineal tears (lacerations)

5. uterine inversion (extremely rare if in vaginal delivery) , Neurogenic shock.

6. Amniotic fluid embolism.

Postpartum Hemorrhage (PPH)

One of the **most severe delivery complications** during labor that can be life-threatening if not promptly addressed , particularly in the third stage.

PPH is an **excessive blood loss of more than 500 mL following a vaginal delivery or over 1000 mL after a caesarean section.**

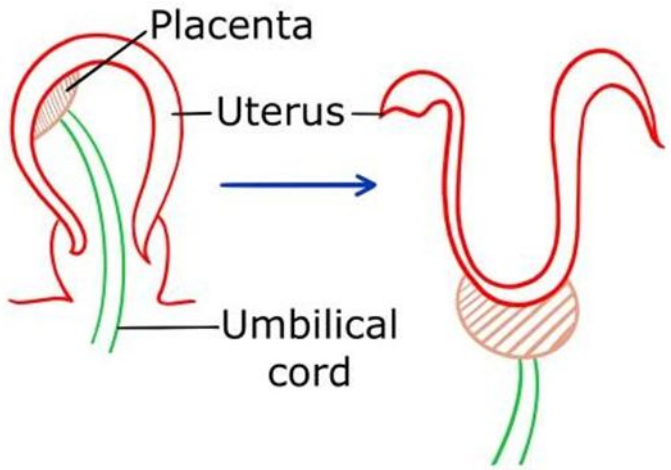
The main causes of PPH include an atonic uterus, retained placental tissue, and lacerations in the birth canal.

Retained Placenta

It occurs when the placenta fails to be expelled within 30 minutes after the baby's birth. This condition can lead to PPH.
but waiting at least 30 minutes before intervening is generally advised unless there is active bleeding. Thus proper management of the retained placenta is crucial to prevent further complications during labor.

Uterine Inversion

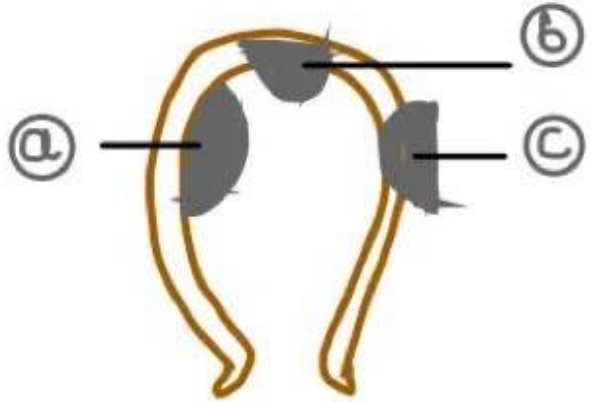
where the uterus turns inside out, protruding through the cervix and vagi



INVERSION OF UTERUS

Placental Complications (eg. Morbidly Adherent Placenta)

Placental complications can arise during the third stage of labor, posing significant risks to the mother's heal



Postpartum Haemorrhage (PPH)

A severe complication often caused by retained placenta, uterine atony, or lacerations.

Retained Placenta

Can lead to PPH; treatment involves manual removal and uterotonics.

Uterine Inversion

Rare but dangerous, causing haemorrhage and shock; requires immediate repositioning.

Atonic Uterus

Lack of uterine contraction can cause PPH; treated with drugs like oxytocin.

Lacerations

Tears in cervix or vagina may lead to heavy bleeding; need prompt repair.

Active Management

Uterotonic agents and uterine massage help prevent PPH."

Case Reports > BMJ Case Rep. 2025 Mar 5;18(3):e262153. doi: 10.1136/bcr-2024-262153.

Chronic puerperal complete uterine inversion due to mismanaged third stage of labour

Sudwita Sinha [1], Simran Simran [2], Smita Singh [2], Upasna Sinha [2]

Affiliations + expand

PMID: 40044480 DOI: 10.1136/bcr-2024-262153

Abstract

A primipara from a rural area presented with complaints of difficulty in having coitus, continuous bleeding per vaginum and watery vaginal discharge following a history of full-term vaginal delivery 7 months back of an asphyxiated baby resulting in term neonatal death. There was a history of prolonged third stage of labour and severe postpartum haemorrhage. On per speculum examination, a congested and hyperaemic red globular mass of 5 cm × 6 cm was seen in the vagina up to the level of introitus which bled on touch. A diagnosis of chronic complete uterine inversion was made which was managed by Haultain's operation. This reflects the suboptimal management of the third stage in the era of active management of the third stage of labour, which should not be acceptable in modern obstetrics at all. It is necessary to identify the root causes behind such complications and to take appropriate measures to avoid such outcomes in future.

Keywords: General practice / family medicine; Materno-fetal medicine; Obstetrics, gynaecology and fertility; Pregnancy; Reproductive medicine.

https://pubmed.ncbi.nlm.nih.gov/40044480/

PubMed.gov

Randomized Controlled Trial > BMC Pregnancy Childbirth. 2025 Feb 11;25(1):143.

doi: 10.1186/s12884-025-07229-4.

Duration of the second and third stages of labor and risk of postpartum hemorrhage: a cohort study stratified by parity

Sandrine Voillequin [1 2], T Quibel [3 4], P Rozenberg [3 5], A Rousseau [3 4]

Affiliations + expand

PMID: 39934771 PMCID: PMC11817052 DOI: 10.1186/s12884-025-07229-4

Abstract

Background: Postpartum hemorrhage (PPH) remains a leading cause of maternal morbidity and mortality worldwide. It is therefore important to improve our understanding of the risk factors for PPH according to parity, in particular, those linked to modifiable obstetric practices. The aim of this study was to assess the risk of PPH by the duration of the second and third stages of labor, stratified by parity.

Methods: This study was based on secondary analysis of data from participants in a randomized controlled trial. A sample of women from three university hospitals in France aged at least 18 years, with a singleton pregnancy, in the first stage of labor, at 36-42 weeks of gestation, with epidural anesthesia and a vaginal delivery were included. The main outcome was PPH rates, defined by blood loss > 500 mL within 2 h after delivery. Characteristics of mothers, newborns, labor, and delivery, and their relation to PPH were explored with multivariable regression models.

Results: Of 1598 women included, 864 were nulliparous and 680 parous; their respective PPH rates were 9.1% (79/864) and 7.4% (54/680) (P = 0.2), and the overall rate 8.3% (133/1598). The multivariable analysis found that PPH was associated with the durations of both oxytocin exposure (aOR 1.10, 95%CI 1.01-1.20) and the third stage of labour (aOR 1.80, 95%CI 1.37-2.38) among nulliparous women, and the PPH risk increased with both duration of the third stage (aOR 2.10, 95%CI 1.56-2.83) and history of PPH (aOR 3.02, 95%CI 1.38-6.59) among parous women.

Conclusions: The duration of oxytocin exposure was found to be a risk factor for PPH among nulliparous women as was a history of PPH among parous women. Future studies should focus on duration of third stage of labor, especially when active management of the third stage of labor (AMTSL) is routinely used.

Management of the 3rd stage of labor

Expectant (Physiological) management

- Is waiting for signs of placental separation where the placenta is delivered by maternal effort (spontaneously) or aiding by gravity or nipple stimulation and no uterotonic drugs are given to assist this process.

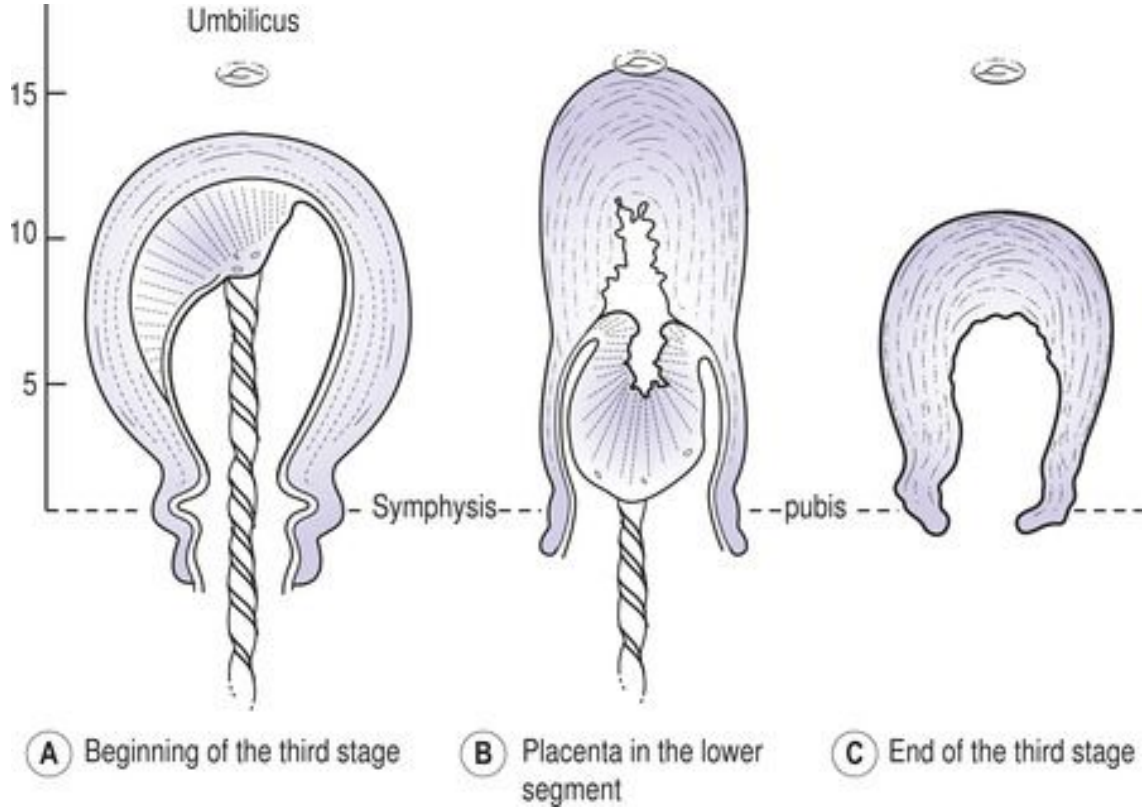
- It is associated with heavier bleeding, but women who are not at unduer risk of PPH should be supported if they choose this option.

- In the event of haemorrhage (estimated blood loss >500 ml) or if the placenta remains undelivered after 60 minutes of physiological management, active management should be recommended.

Active management

When the signs of placental separation are recognized, controlled cord traction is used to expedite delivery of the placenta.

When a contraction is felt, the left hand should be moved supra-pubically and the fundus elevated with the palm facing towards the mother. At the same time, the right hand should grasp the cord and exert steady traction so that the placenta separates and is delivered gently, care being taken to peel off all the membranes, usually with a twisting motion.



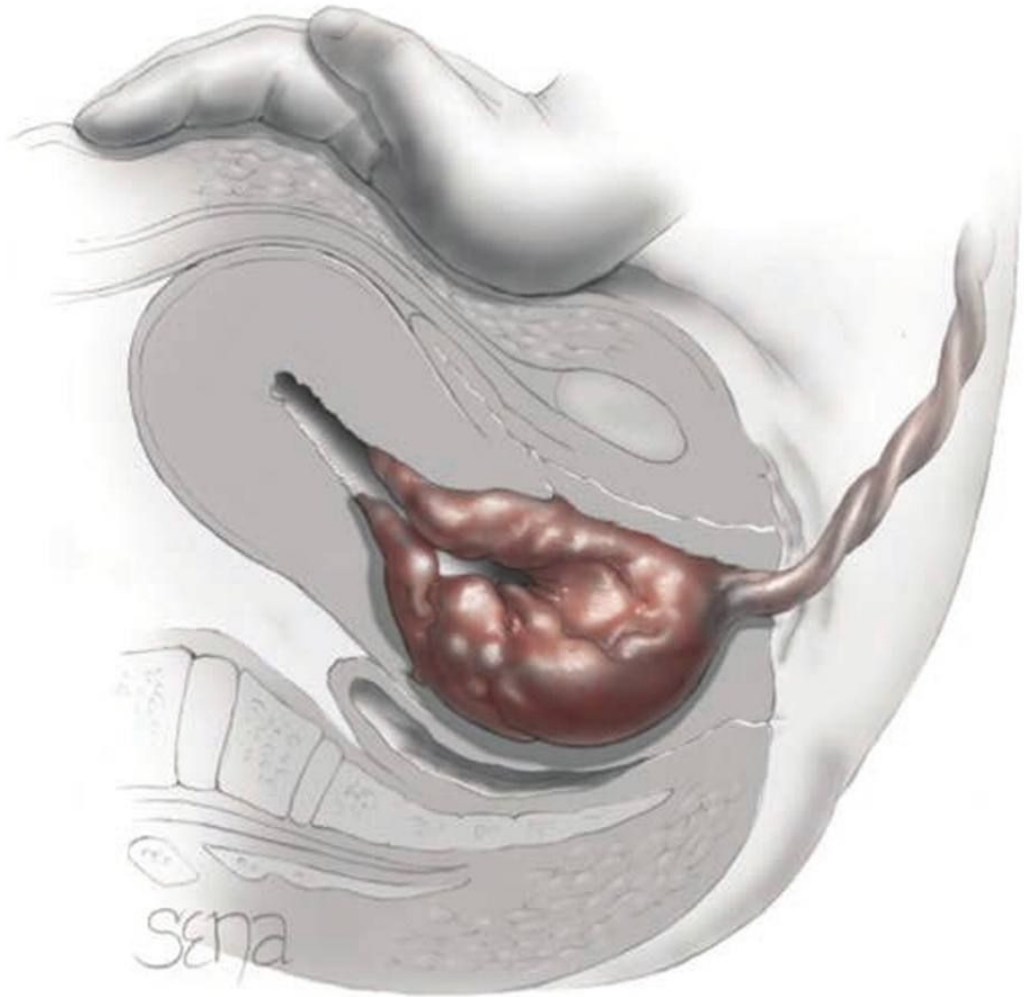


FIGURE 27-6 Expression of the detached placenta. Note that the hand is *not* trying to push the fundus through the birth canal! As the placenta leaves the uterus and enters the vagina, the uterus is pushed cephalad by the heel of the hand on the abdomen while the cord is held in position. The mother can aid in the delivery of the placenta by bearing down. As the placenta reaches the perineum, the cord is lifted, which in turn lifts the placenta out of the vagina.

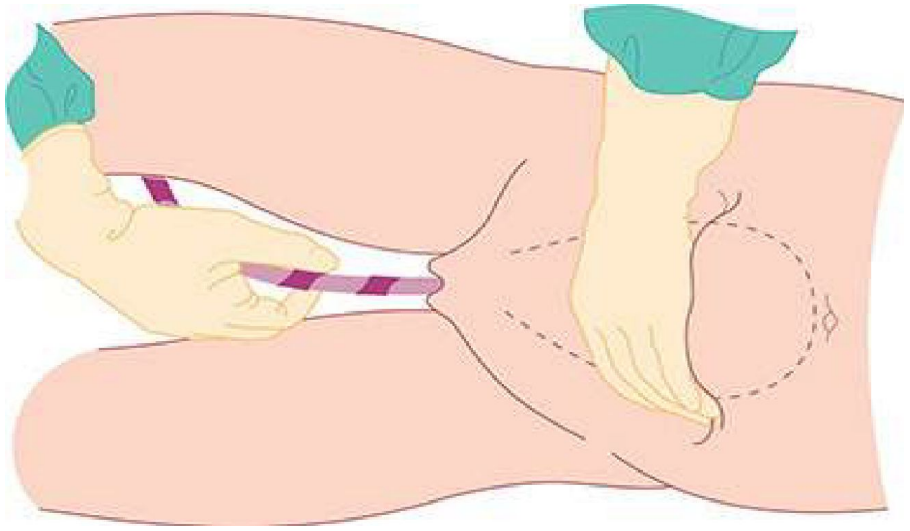
Active management

- If no bleeding occurs, a further attempt at controlled cord traction should be made after 10 minutes. If this fails, the placenta is ‘retained’ and will require manual removal under general or regional anaesthesia in the operating theatre.

- If significant bleeding occurs or manual extraction is unsuccessful, surgical intervention like dilation and curettage (D&C) may be necessary.

Active management of the third stage

- Intramuscular injection of 10 IU oxytocin, given as the anterior shoulder of the baby is delivered, or immediately after delivery of the baby.
- Early clamping and cutting of the umbilical cord.
- Controlled cord traction (**Figure 12.21**).



controlled cord traction

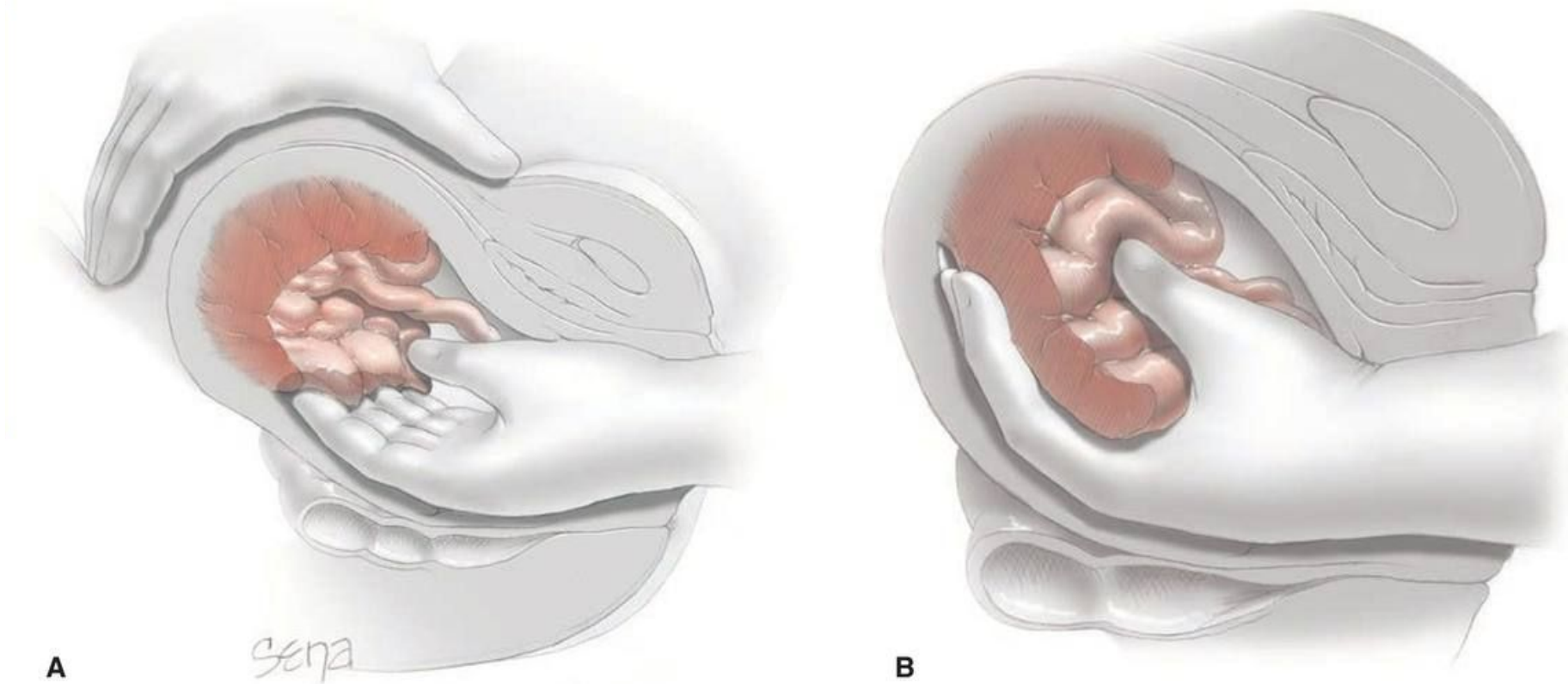


FIGURE 27-8 Manual removal of placenta. **A.** One hand grasps the fundus and the other hand is inserted into the uterine cavity and the fingers are swept from side to side as they are advanced. **B.** When the placenta detaches, it is grasped and removed.

- Active management should be recommended to all women.
- In approximately 2% of cases, the placenta will not be expelled by this method.

- **The drugs most commonly employed to facilitate the third stage are :**

1. Syntocinon (5 or 10 units) or..
2. Syntometrine (a combination of 5 units Syntocinon and 0.5 mg ergometrine) administered intramuscularly.

Review > Acta Obstet Gynecol Scand. 2014 Jul;93(7):626-33. doi: 10.1111/aogs.12424. Epub 2014 Jun 9.

Active management of the third stage of labor with and without controlled cord traction: a systematic review and meta-analysis of randomized controlled trials

Yongming Du [1], Man Ye, Feiyun Zheng

Affiliations + expand

PMID: 24828584 DOI: 10.1111/aogs.12424

Free article

Abstract

Objective: To determine the specific effect of controlled cord traction in the third stage of labor in the prevention of postpartum hemorrhage.

Data sources: We searched PubMed, Scopus and Web of Science (inception to 30 October 2013).

Study selection: Randomized controlled trials comparing controlled cord traction with hands-off management in the third stage of labor were included.

Results: Five randomized controlled trials involving a total of 30 532 participants were eligible. No significant difference was found between controlled cord traction and hands-off management groups with respect to the incidence of severe postpartum hemorrhage (relative risk 0.91, 95% confidence interval 0.77-1.08), need for blood transfusion (relative risk 0.96, 95% confidence interval 0.69-1.33) or therapeutic uterotonics (relative risk 0.94, 95% confidence interval 0.88-1.01). However, controlled cord traction reduced the incidence of postpartum hemorrhage in general (relative risk 0.93, 95% confidence interval 0.87-0.99; number-needed-to-treat 111, 95% confidence interval 61-666), as well manual removal of the placenta (relative risk 0.70, 95% confidence interval 0.58-0.84) and duration of the third stage of labor (mean difference -3.20, 95% confidence interval -3.21 to -3.19).

Review > Am J Obstet Gynecol. 2024 Mar;230(3S):S1046-S1060.e1.
doi: 10.1016/j.ajog.2022.11.1298. Epub 2023 Aug 21.

Third stage of labor: evidence-based practice for prevention of adverse maternal and neonatal outcomes

Alyssa R Hersh [1], Guillermo Carroli [2], G Justus Hofmeyr [3], Bharti Garg [4], Metin Gülmezoglu [5], Pisake Lumbiganon [6], Bremen De Mucio [7], Sarah Saleem [8], Mario Philip R Festin [9], Suneeta Mittal [10], Jorge Andres Rubio-Romero [11], Tsungai Chipato [12], Catalina Valencia [13], Jorge E Tolosa [14]

Affiliations + expand

PMID: 38462248 DOI: 10.1016/j.ajog.2022.11.1298

Abstract

The third stage of labor is defined as the time period between delivery of the fetus through delivery of the placenta. During a normal third stage, uterine contractions lead to separation and expulsion of the placenta from the uterus. Postpartum hemorrhage is a relatively common complication of the third stage of labor. Strategies have been studied to mitigate the risk of postpartum hemorrhage, leading to the widespread implementation of active management of the third stage of labor. Initially, active management of the third stage of labor consisted of a bundle of interventions including administration of a uterotonic agent, early cord clamping, controlled cord traction, and external uterine massage. However, the effectiveness of these interventions as a bundle has been questioned,

Meta-Analysis > Cochrane Database Syst Rev. 2019 Feb 13;2(2):CD007412.
doi: 10.1002/14651858.CD007412.pub5.

Active versus expectant management for women in the third stage of labour

Cecily M Begley [1], Gillian Ml Gyte, Declan Devane, William McGuire, Andrew Weeks, Linda M Biesty

Affiliations + expand

PMID: 30754073 PMCID: PMC6372362 DOI: 10.1002/14651858.CD007412.pub5

Authors' conclusions: Although the data appeared to show that active management reduced the risk of severe primary PPH greater than 1000 mL at the time of birth, we are uncertain of this finding because of the very low-quality evidence. Active management may reduce the incidence of maternal anaemia (Hb less than 9 g/dL) following birth, but harms such as postnatal hypertension, pain and return to hospital due to bleeding were identified.In women at low risk of excessive bleeding, it is uncertain whether there was a difference between active and expectant management for severe PPH or maternal Hb less than 9 g/dL (at 24 to 72 hours). Women could be given information on the benefits and harms of both methods to support informed choice. Given the concerns about early cord

https://pubmed.ncbi.nlm.nih.gov/30754073/

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Review > BMC Pregnancy Childbirth. 2018 Feb 6;18(1):47. doi: 10.1186/s12884-018-1677-5.

Task shifting in active management of the third stage of labor: a systematic review

Tessa M Raams [1], Joyce L Browne [2], Verena J M M Festen-Schrier [2], Kerstin Klipstein-Grobusch [2 3], Marcus J Rijken [2 4]

Affiliations + expand

PMID: 29409456 PMCID: PMC5801808 DOI: 10.1186/s12884-018-1677-5

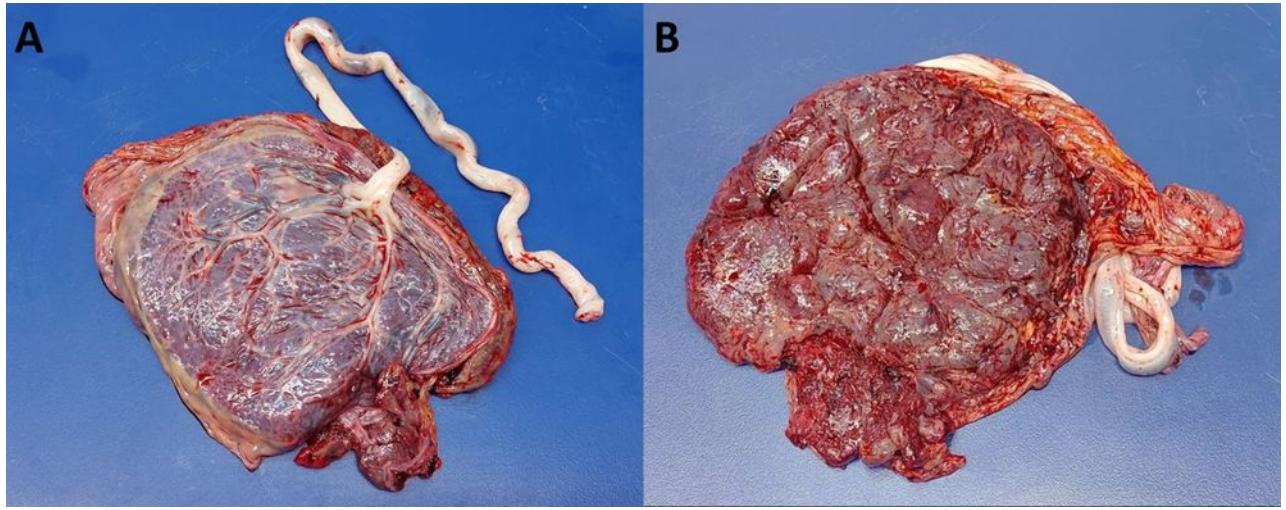
Conclusion: Task shifting of AMTSL has thus far been evaluated for administration of uterotonics (misoprostol tablets and oxytocin injected by CHWs and auxiliary midwives) and resulted in reduction of PPH, high rates of appropriate use and satisfaction among users. In order to increase AMTSL

After completion of the Management of the 3rd stage

what should you do? What is the clinical value of it?

‘’Placental Examination”

Aims to facilitate communication between obstetricians, neonatologists, and pathologists involved in this diagnostic process.



✔ The derivation of the word placenta comes from Latin for cake (placenta), from Greek for flat, slab-like (plakóenta/plakoúnta).

Review > Swiss Med Wkly. 2024 Oct 14:154:3929. doi: 10.57187/s.3929.

Pathologic findings of the placenta and clinical implications – recommendations for placental examination

Thomas Menter [1], Elisabeth Bruder [1], Irene Hösli [2], Olav Lapaire [2], Luigi Raio [3], Henning Schneider [3], Sylvia Höller [4], Roland Hentschel [5], Simone Brandt [6 7], Peter Bode [7 8], Sven Schultzke [9], Gero Drack [10];
Academy of Fetomaternal Medicine of the Swiss Society of Gynecology and Obstetrics SSGO; Swiss Society of Pathology/Swiss Paediatric Pathology Group; Swiss Society of Neonatology

Affiliations + expand

PMID: 39465447 DOI: 10.57187/s.3929

Free article

Abstract

The placenta is a unique and complex organ that combines the circulatory systems of two or more individuals within a single dynamic organ with a set, short lifespan. A diverse spectrum of disorders, including infections as well as metabolic, genetic, circulatory, and maturation defects, may affect its function. Pathology investigation of the placenta is key for identifying several pathogenic processes in both the mother and the foetus. Aberrant placentation, maternal and foetal vascular compromise, infection, inflammatory immunologic conditions, and disorders of maturation are elements of newly proposed classification schemes. The clinical impact of placental examination consists of diagnosing maternal and foetal disease, identifying the potential for recurrence, correlating clinical pathological findings with distinct morphologic features, and identifying the aetiology responsible for growth restriction or foetal death. Gestational trophoblastic disease occurs more frequently in the first trimester; however, in very rare cases, it can affect the term or third-trimester placenta. The application of reproducible nomenclature is expected to facilitate progress in the diagnosis and treatment of obstetric and foetal disorders with placental manifestation. Therefore, this review aims to facilitate communication between obstetricians, neonatologists, and pathologists involved in this diagnostic process.

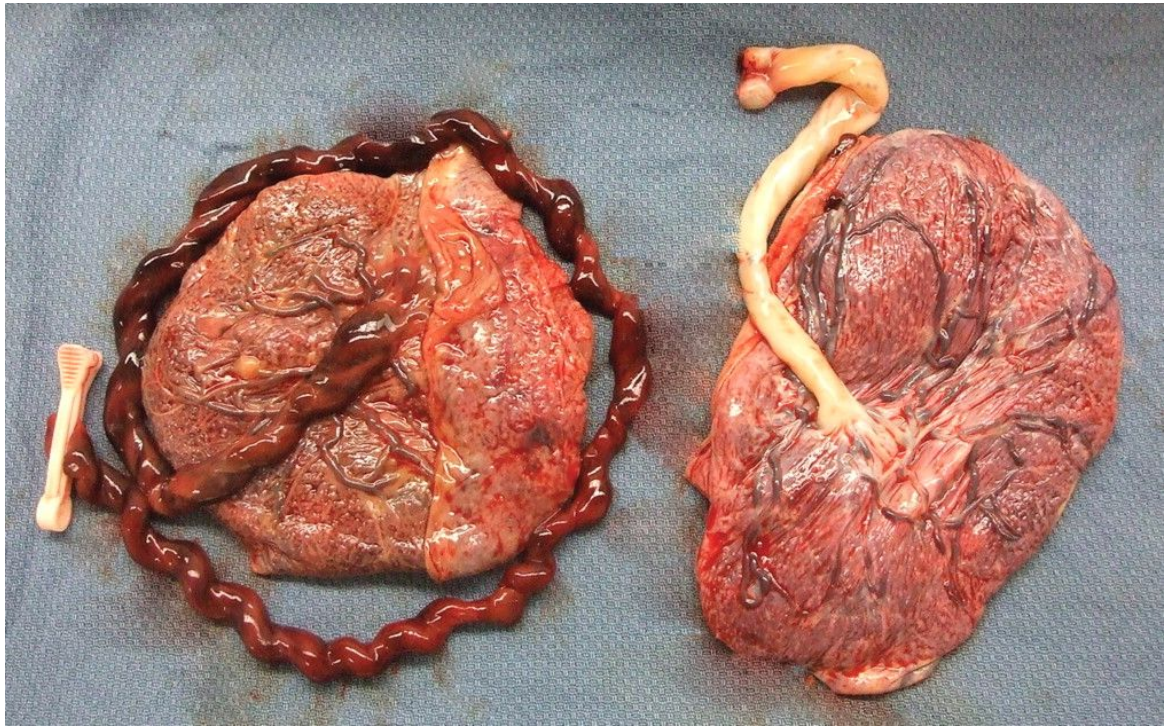
https://pubmed.ncbi.nlm.nih.gov/39465447/

‘’Placental Examination”

This can be accomplished **within one minute**. During the examination you should determine

1. The size, shape, consistency and completeness of the placenta.
2. The presence of accessory lobes, placental infarcts, hemorrhage, and nodules should be noted.
3. The umbilical cord should be assessed for length, insertion, number of vessels, thromboses, knots .
4. The fetal membranes should be evaluated, and should be examined for the color, luster & odor.

- Succenturiate Lobe, tissue may be retained because of abnormal lobation of the placenta.



The Umbilical cord

At term, the typical umbilical cord is 55 to 60 cm in length, with a diameter of 2.0 to 2.5 cm. The cord vessels are suspended in Wharton's jelly. The normal cord contains two arteries and one vein.

CORD KNOTS

A true cord knot occurs when the fetus passes through a loop of umbilical cord, usually early in pregnancy. In most cases, a knot does not cause fetal compromise. However, if sufficient tension is placed on the cord before or during labor and delivery, blood flow may be cut off, and signs of fetal asphyxia may occur.

CORD VESSELS

The umbilical cord typically contains two arteries and a single vein. If only one artery and one vein are grossly visible, the fetal anomaly rate is nearly 50 percent. These anomalies may affect the cardiovascular, genitourinary or gastrointestinal system, and other systems as well.

THROMBOSES

Thrombosis of cord vessels is often overlooked by both delivering physicians and pathologists. This is an important cause of fetal injury.

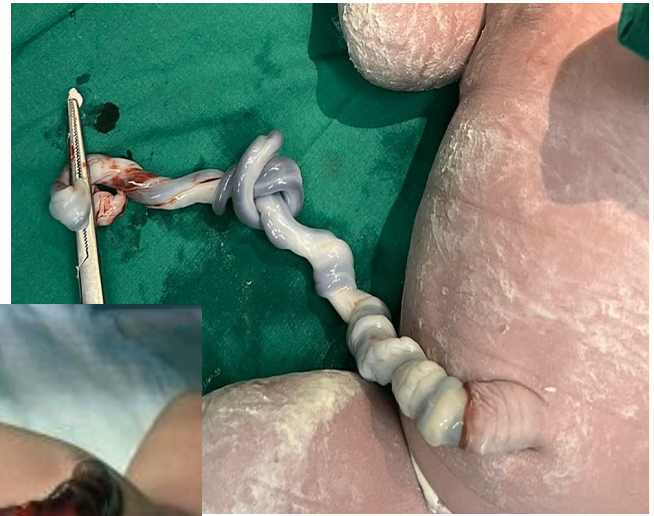
FETAL MEMBRANES

Fetal membranes should be thin, grey and glistening. Thick, dull, discolored or foul-smelling membranes indicate the possibility of infection. The nature of the odor may provide a clue to the infecting organism: a fecal odor may indicate Fusobacterium or Bacteroides, while a sweet odor may indicate Clostridium or Listeria.

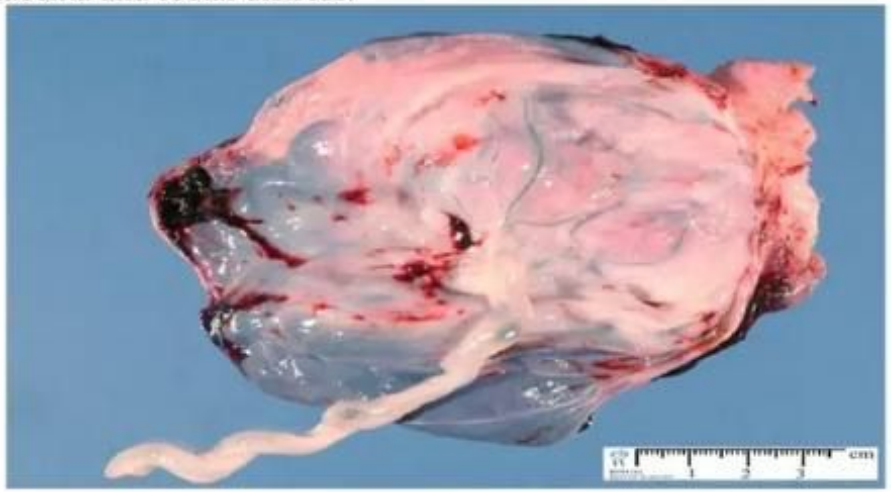
Green-colored fetal membranes are frequently the result of meconium staining. However, a green color may be imparted by changing blood pigments from an earlier bleeding event or by the myeloperoxidase in leukocytes in the case of infection.

The Membrane

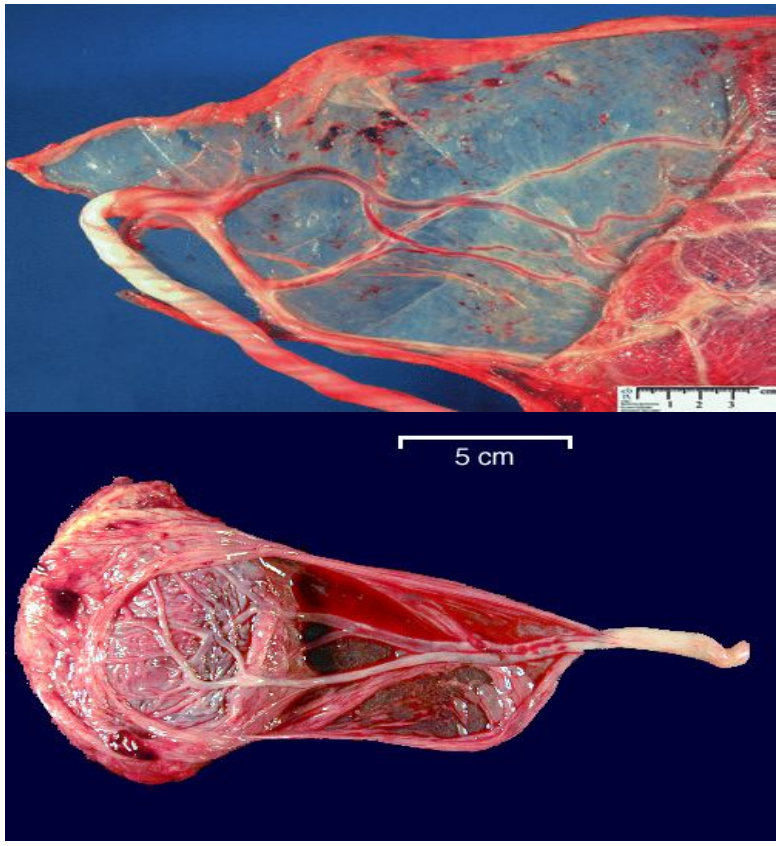
The membranes consist of two layers; the amnion and the chorion.

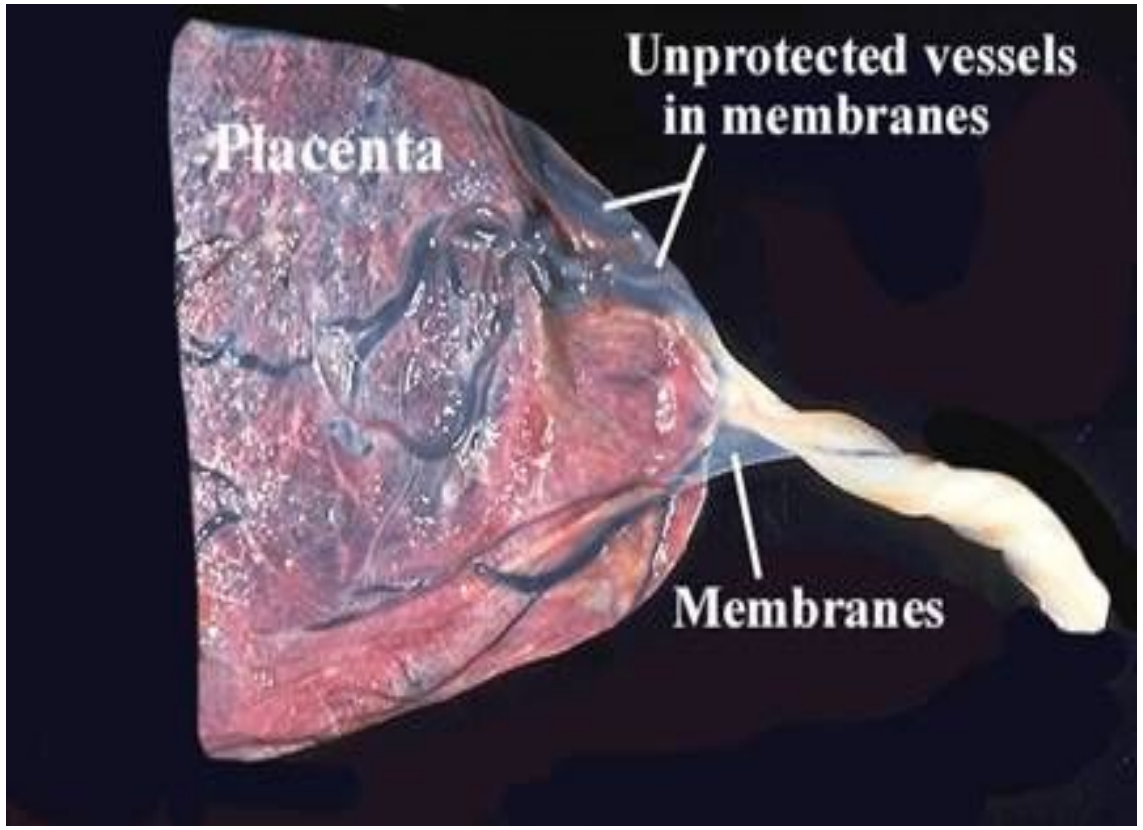


- **Short cord:** Length less than 40 cm. May lead to dystocia, premature separation of placenta and foetal distress.

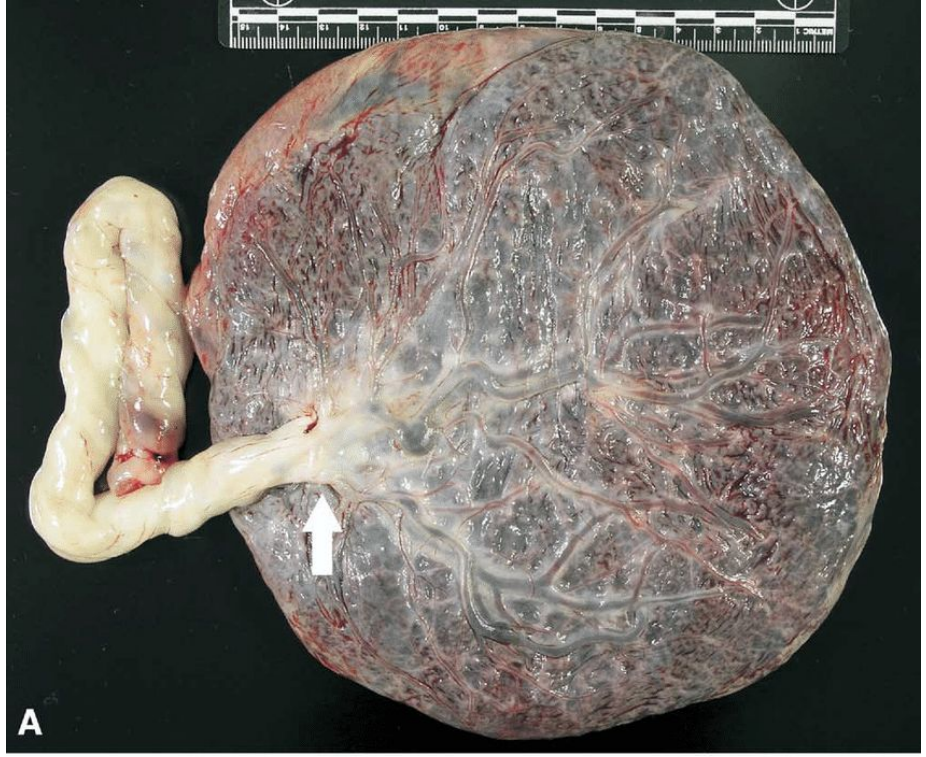


- **Long cord:** Excessive long cord may lead to cord prolapsed, cord loops around the neck, looped or knotted cord.

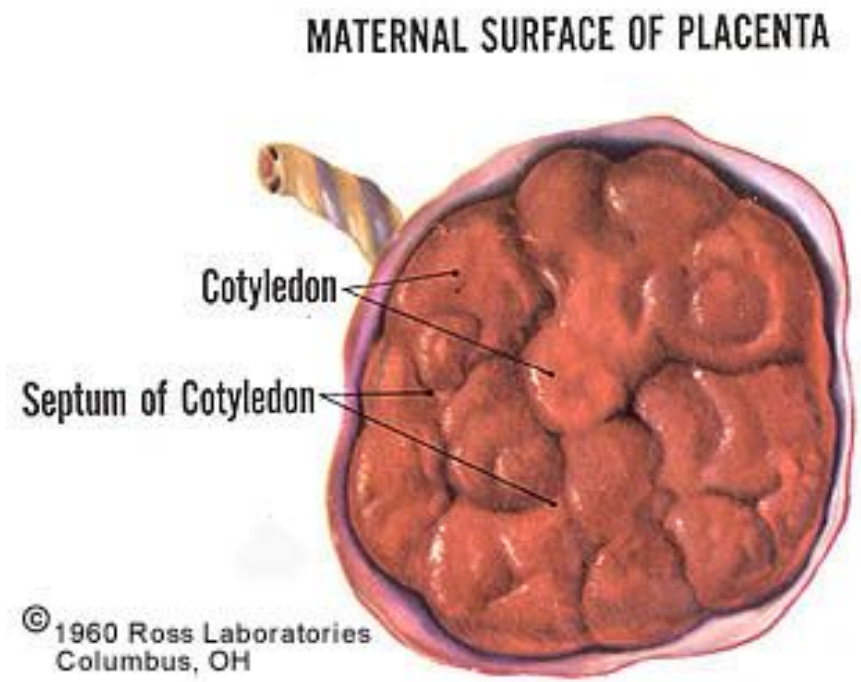




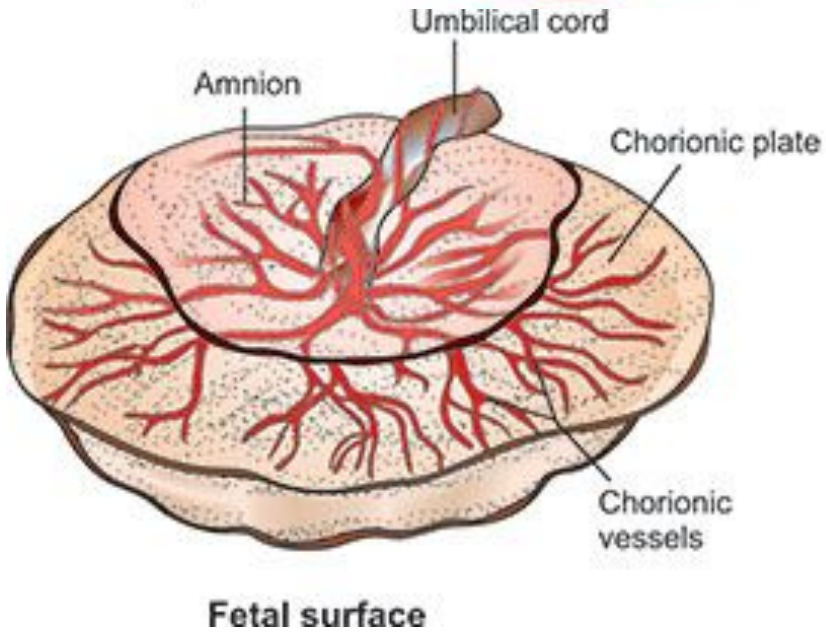
Seen above are examples of "velamentous" insertion of the umbilical cord

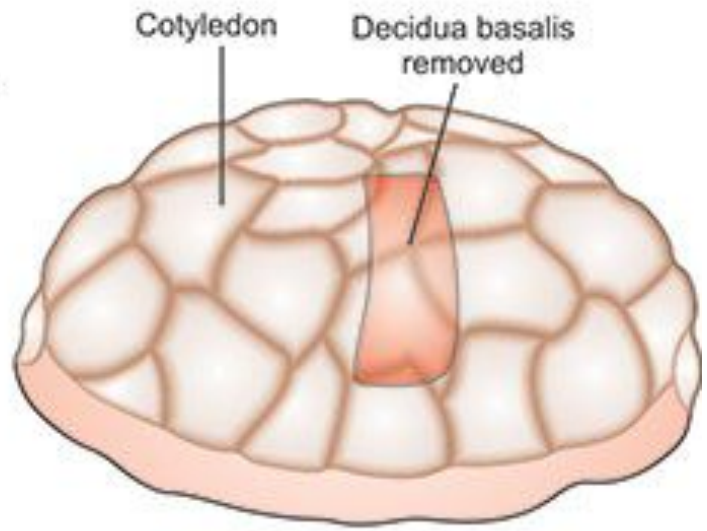

A


B


MATERNAL SURFACE OF PLACENTA
Cotyledon
Septum of Cotyledon
©1960 Ross Laboratories
Columbus, OH


FETAL SURFACE OF PLACENTA


Umbilical cord
Amnion
Chorionic plate
Chorionic vessels
Fetal surface


Cotyledon
Decidua basalis removed
Maternal surface

Normally maternal surface is dark red in colour but white patches/ infarctions may be seen on maternal surface that may be due to the disposition of lime salts. The edges of the maternal surface form a uniform circle.

Maternal Surface:

1. Lay the placenta flat on the examining surface, putting the lobes together, and observe for any missing lobe.
2. Note the color of the maternal surface, which should normally be dark red.
3. White patches found on the maternal surface are called infarcts.
4. Weigh the placenta (approximately 1/6 of the baby\'s weight at birth).
5. Place the placenta in a designated placenta bucket and disinfect the examination area.
6. Record the findings in the appropriate chart.
7. Report any abnormalities to the in-charge.

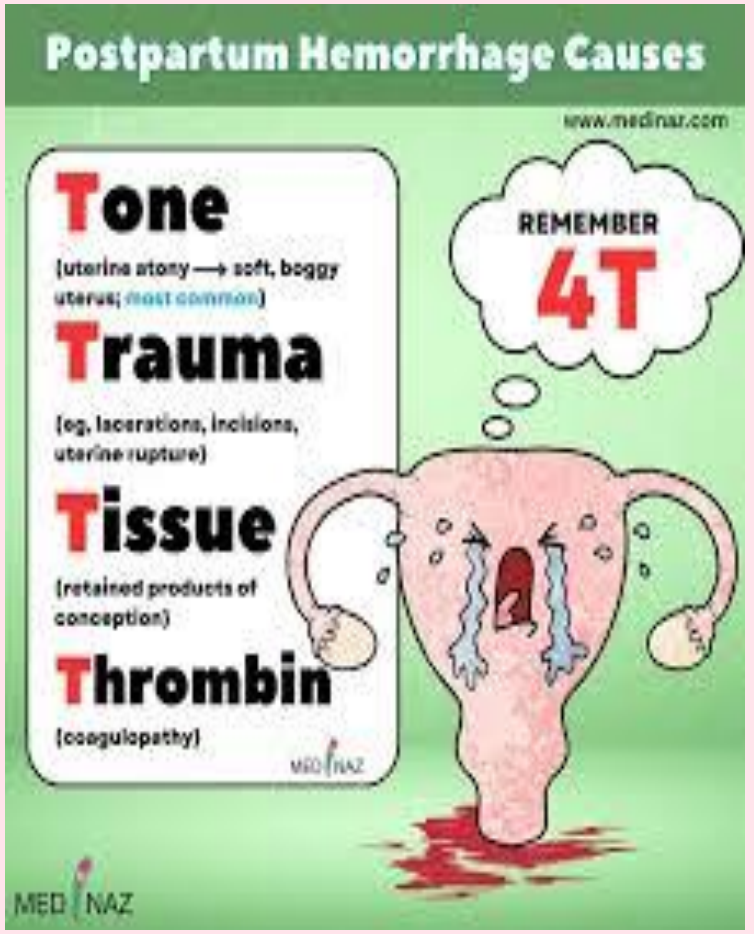
- PPH is fast, dangerous… but with the right steps, it’s 100% manageable.

? What is Postpartum hemorrhage?

- PPH is defined as Gush of blood:
  - ≧ 500cc after normal vaginal delivery.
  - > 1000cc after cesarean section or >1500cc blood loss after elective CS hysterectomy.
  - > 3000-3500ccl for emergent Cesarean hysterectomy.
  - 10% drop in hematocrit value between admission & PP period, or a need for blood transfusion.

- How to predict ?

  Obstetric index = pulse/ SBP



👩‍⚕️ Clinical Case 1 - Let’s Solve It Together!

- A 30-year-old woman, G2P1, at 42 weeks' gestation, admitted in active labor.
- History of gestational diabetes (on insulin).
- Previous C-section for non-reassuring fetal heart rate.
- Vital signs on admission : Pulse 90, BP 135/80, RR 18
- CTG shows : baseline heart rate of 145 and moderate variation with frequent accelerations and occasional early deceleration .
- Underwent elective repeat C-section with complete placenta removal.
- Post-op: Heavy uterine bleeding + clots.
- Examination shows soft uterus on palpation
- Her bleeding continuous despite fundal massage ,packing and use of oxytocin ,misoprostol and carboprost .

- Vitals now
- Pulse : 120
- RR: 20
- BP :90/70
- Hb : 8 g/dL
- Hct :24%
- Plt :120K
- PT :11sec
- PTT :30sec

*mass transfusion protocol is activated and B- lynch uterine com placed to control her bleeding .

?? What do you think the cause ?

?? Calculate obstetric inex ?

?? What is the type and stage of her shock ?

?? What do you think is the mass transfusion protocol?

?? What if B-lynch failed ?

🎯 What Did We Learn?

- ✅ Always assess uterine tone first
- ✅ Escalate early if meds fail
- ✅ B-Lynch suture = uterus-sparing life-saving option

*** **Massive Transfusion Protocol = Rapid, organized replacement of RBCs, plasma, and platelets in a 1:1:1 ratio to stop bleeding and save the patient's life.**

Case 2 - Persistent Bleeding Despite Firm Uterus

- 30-year-old G1P1 woman with GDM , delivered vaginally at 39 weeks.
- 30 minutes after deliver of healthy newborn 4.2 kg develops progressive weakness and sweating .
- Placental expulsion occurred 15 minute after delivery of child and showed a normal sized placenta with medial umbilical cord insertion and complete amniotic membranes .
- Postpartum estimated blood loss is **1000ml**
- General appearance : pale and exusted
- Vital signs :pulse 111, BP 85/60 , temp 37,4
- Abdominal examination :firm, mildly tender uterus palpate at umbilicus level
- External genital exam : intact vulva and perineum
- CBC : Hb10 (admission 11.5) ,,PT 15 sec ,,PTT36 sec

❓ What is the most likely cause of this postpartum hemorrhage?

- 🟧 Uterine atony
- 🟥 Vaginal/cervical laceration ✅
- 🟦 Retained placenta
- 🟨 Coagulopathy

- 📌 Hint: Uterus is firm = not atony.

?? Stage of shock ? How we know it ?

?? Obstetric index ?

✅ Explanation: Cervical or Vaginal Laceration

- Persistent bleeding despite firm uterus = Trauma.
- Likely due to unrecognized laceration of the cervix or upper vagina.

- 🧠 Check cervix + vagina thoroughly when bleeding persists.
- Firm uterus + ongoing bleeding = think beyond atony.

Case 3 – secondary PPH

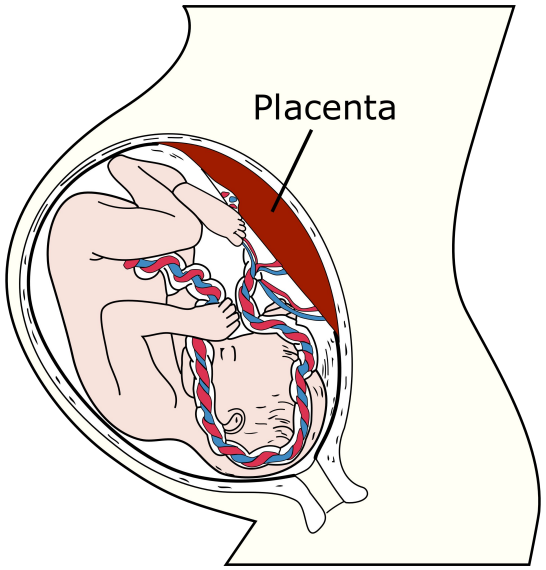
A 26-year-old G2P2 woman underwent a normal vaginal delivery 10 days previously. She comes into the doctor's clinic complaining of a large amount of bright red bleeding beginning since 5 PM the previous day. Which of the following is the most likely diagnosis?

A. Uterine atony
B. Cervical laceration
C. Vaginal laceration
D. Subinvolution of the uterus
E. Normal menses

RETAINED PLACENTA

DEFINITION

The placenta is said to be retained when it is not expelled out even 30mts after the birth of the baby.



Gross anatomy of mature placenta

Shape - Circular disc

Diameter - 15-20cm

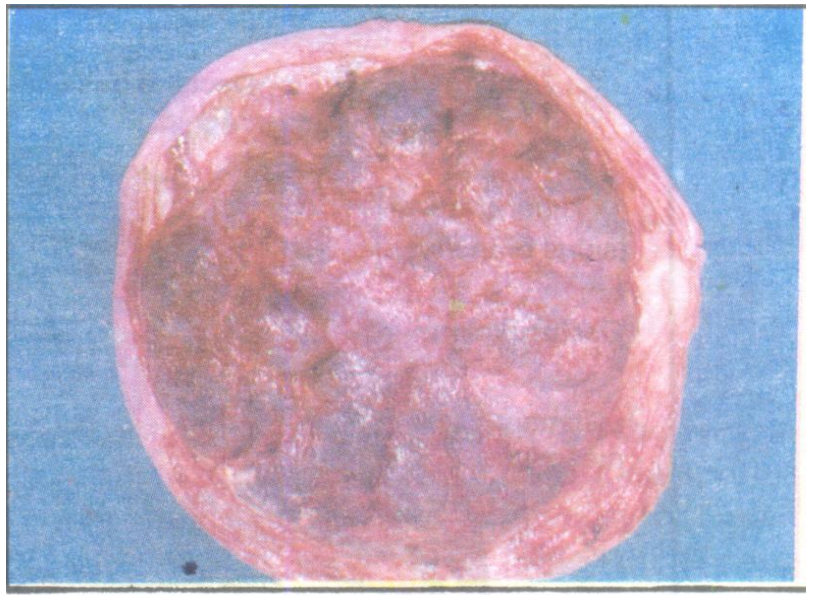
Thickness - 2.5cm at its centre,
thin off towards the edge

By touch - It feels spongy

Weights - about 500gm

Surface - fetal surface and
maternal surface

Margin - Peripheral margin



Phases of expulsion of placenta:-

1. Separation through the spongy layer of decidua
2. Descent into the lower segment and vagina
3. Finally its expulsion to outside

Retained placenta

Separated

1. Atony
2. Rupture uterus
3. Constricting ring

Non separated

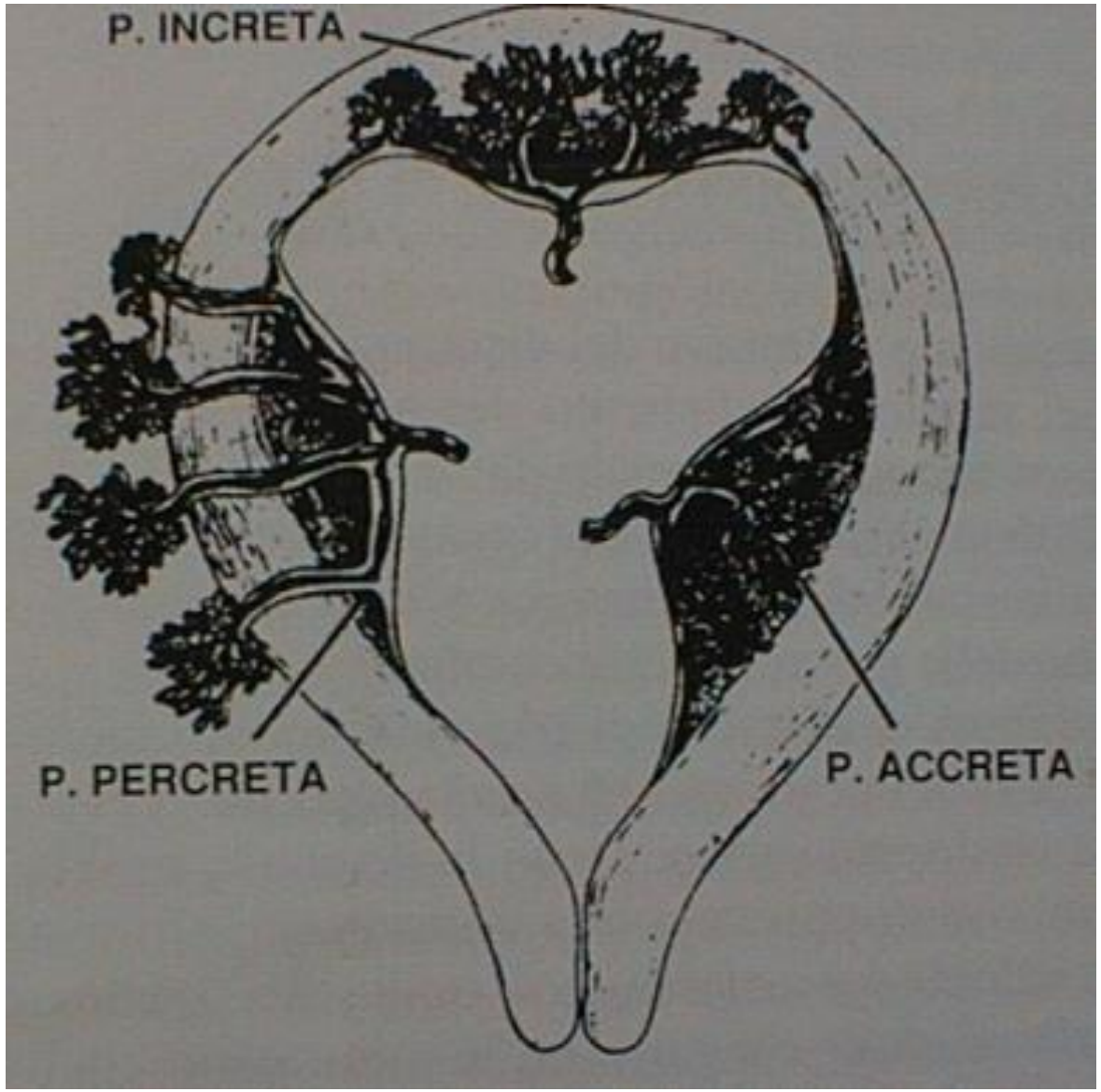
1. Atony
2. Adhesion
   a.simple
   b.pathological

-Morbid adherent placenta – partial or rarely, complete

- Placenta accreta

- Placenta increta

- Placenta percreta



Comlications :

1. Post-partum haemorrhage.
2. Shock – mainly due to:-

a.haemorrhage

b.retained more than one hour

c. Frequent attempts of abdominal manipulation

1. Puerperal sepsis.
2. Thrombophlebitis – in the pelvic and leg veins.
3. Embolism
4. Placental polyp.

Diagnosis

-Diagnosis is made by an arbitrary time spent following delivery of the baby

-by visualizing the retained parts by U/S

Ultrasound : for retained placental fragments
(Hyperechoic mass inside the uterine cavity)

Management :-

- Period of watchful expectancy
  - •Watch for bleeding
  - •Note the signs of separation of placenta
  - •The bladder should be emptied using a Foleys catheter
  - •Any bleeding during the period of expectant Mx should be managed.
- Placenta is separated and retained

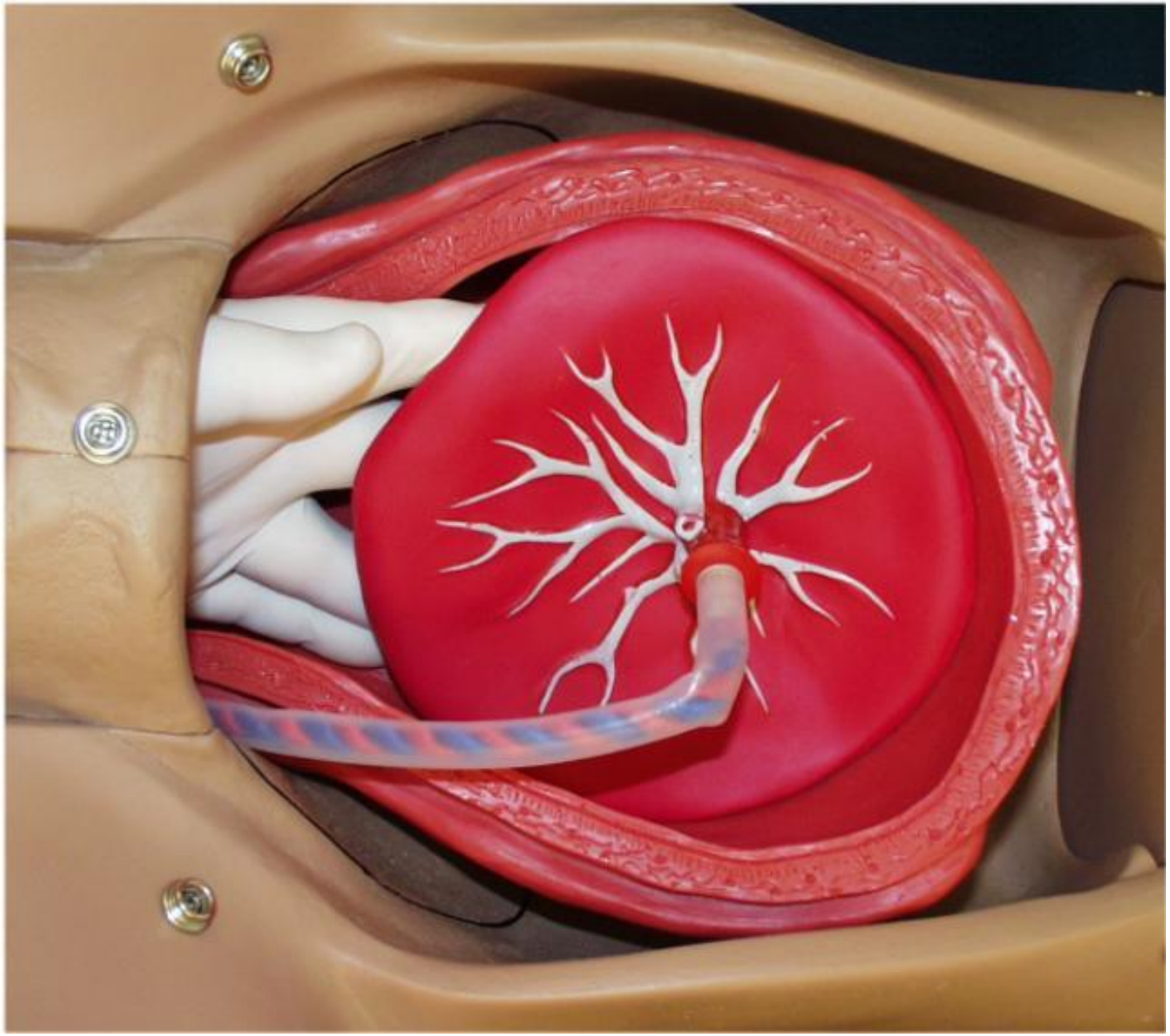
  - To express the placenta out by controlled cord traction. - -
- Unseparated retained placenta

  - Manual removal of placenta under G.A

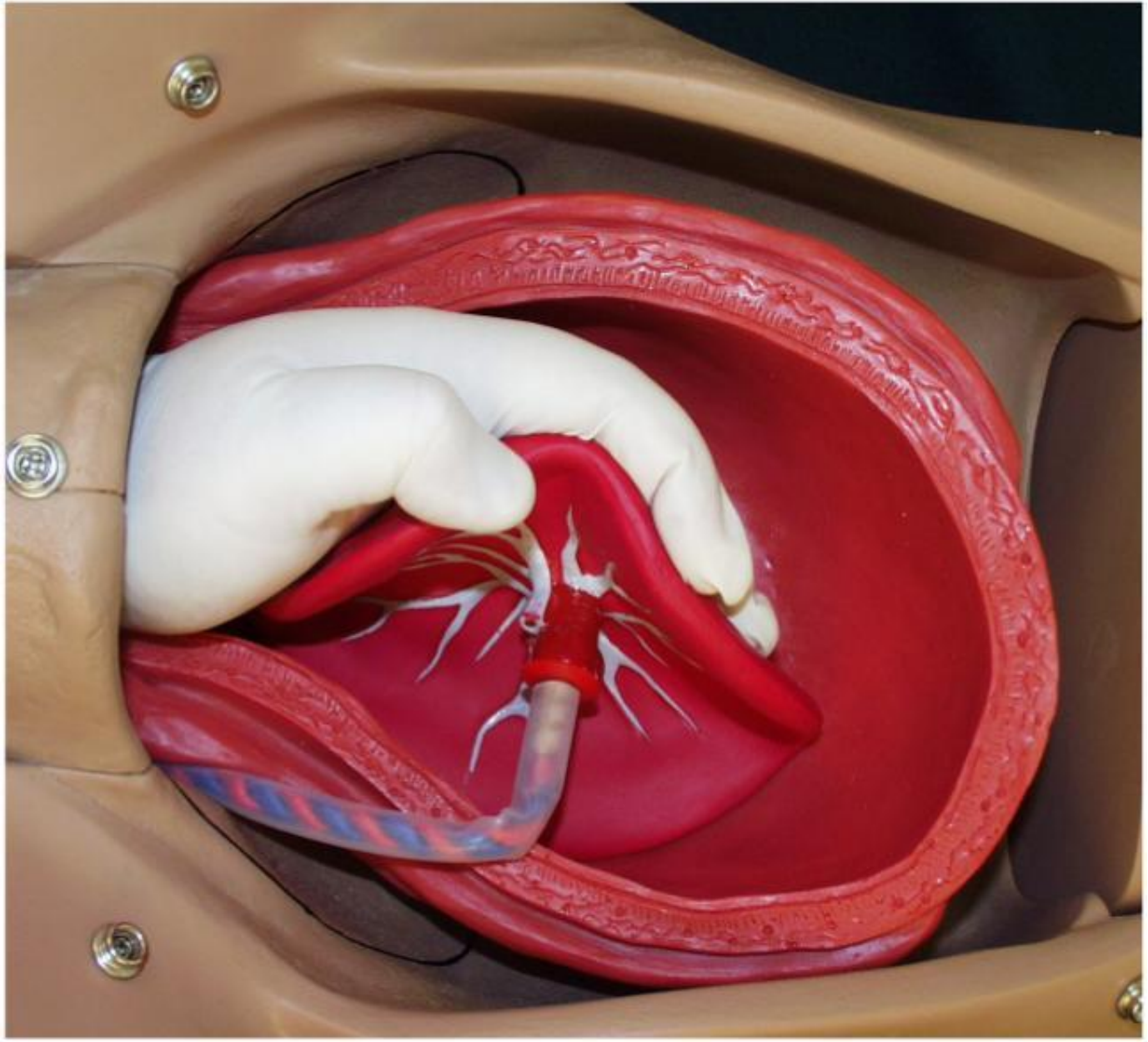
Manual Removal of the Placenta

One hand is inserted through the vagina and into the uterine cavity.

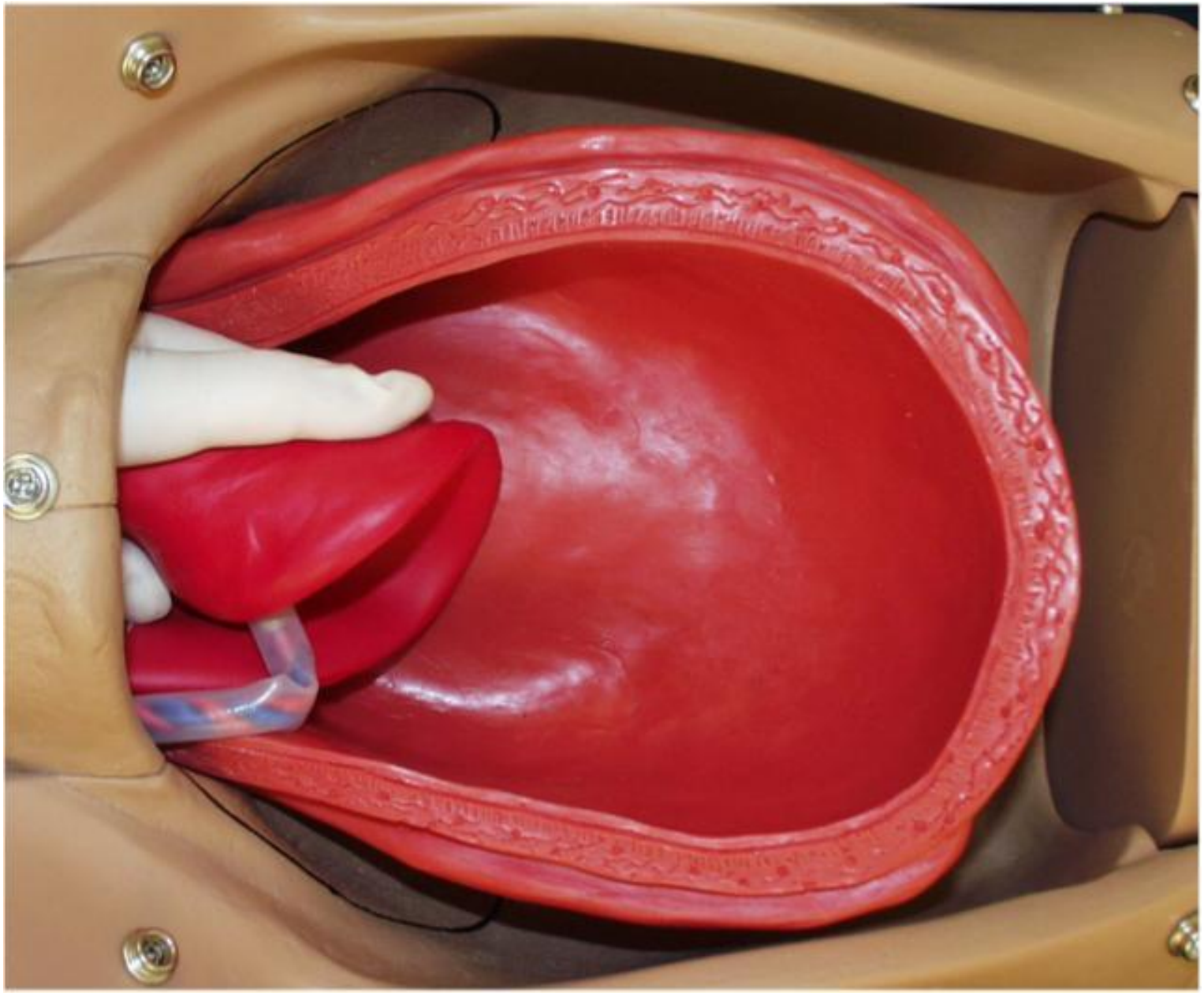
1. Insert the side of your hand in between the placenta and the uterus.
2. Using the side of your hand, sweep the placenta off the uterus.
3. After most of the placenta has been swept off the uterus, curl your fingers around the bulk of the placenta and exert gentle downward and outward traction. You may need to release the placenta and then re-grab it.
4. Then pull the placenta through the cervix,Most placentas can be easily and uneventfully removed in this way.



Separate the placenta from the uterus with a sweeping motion



After the placenta is mostly separated, curl your palm around the bulk of it.



Continue to grasp the placenta as you remove it from the uterine cavity

Management of unforseen complications during manual removal :-

1. Hour glass contraction – placenta either inseparated or separated – partially or completely, may be trapped by a localised contraction of circular muscles of the uterus.

- This ring should be made to relax by

   a. Deepening the plane of plane of anesthesia (halothane)

   b. Subcutaneous injection of .5ml of 1 in 1000 adrenaline Hcl.

A 35-year-old G5P4 woman at 39 weeks' gestation is undergoing a vaginal delivery. She has a history of previous myomectomy and one prior low-transverse cesarean delivery. She was counseled about the risks, benefits, and alternatives of vaginal birth after cesarean, and elected a trial of labor. She proceeded through a normal labor. The delivery of the baby is uneventful. The placenta does not deliver after 30 minutes, and a manual extraction of the placenta is undertaken. The placenta seems to be firmly adherent to the uterus.

- What is the most likely diagnosis?
- What is your next step in management for this patient?

Considerations

This patient has had two previous uterine incisions, which increases the risk of
placenta accreta.

The placenta is noted to be very adherent to the uterus, which is the clinical definition of placenta accreta, although the histopathological diagnosis requires a defect of the decidua basalis layer.

The usual management of true placental accreta is hysterectomy WHY????

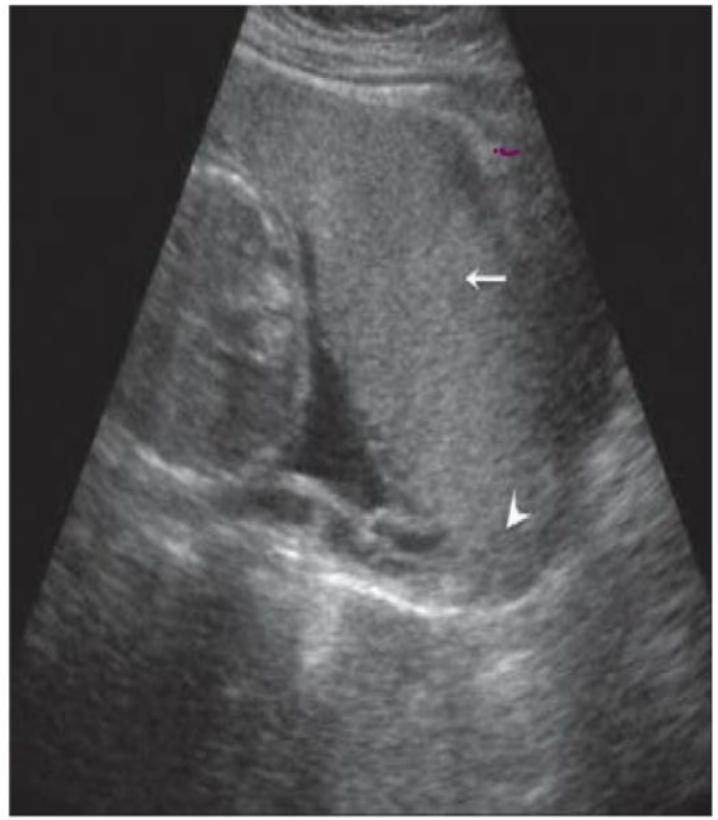
Conservative management of placenta accreta, such as removal of as much placenta as possible and packing the uterus, often leads to excess mortality as compared to immediate hysterectomy.
Nevertheless, in the rare case of a younger patient who strongly desires more children, this option may be entertained

DEFINITIONS:-

PLACENTA ACCRETA: **Abnormal adherence of the placenta to the uterine wall**
due to an abnormality of the decidua basalis layer of the uterus. The placental villi are attached directly to <50% myometrium.

PLACENTA INCRETA: The abnormally implanted placenta penetrates into >50% myometrium.

PLACENTA PERCRETA: **The abnormally implanted placenta penetrates entirely through the myometrium into the serosa. Often invasion into adjacent organs (eg, bladder, bowel) is noted**.




PMID: 24733409

Uterine inversion

Ahmad abunawwas

Uterine inversion

- **Definition :"Uterine inversion is a rare and serious obstetric emergency in which the uterus turns inside out, typically occurring during or after delivery.** Obstetrics by Ten Teachers, 20th Edition

- **Incidence: It's estimated to occur in 1in 2500 deliveries.**

- **If not promptly recognized and treated , uterine inversion can lead to severe hemorrhage and shock, resulting in maternal death.**

CLASSIFICATION

- **Based on the degree of inversion**

First degree -There is dimpling of the fundus which still remains above the level of Internal os.

Second degree - The fundus passes through the cervix but lies inside the vagina.

Third degree (complete) - The endometrium with or without the attached placenta is visible outside the vulva .

Note: "The cervix and part of the vagina may also be involved in the process. It may occur before or after separation of placenta"

- **Based on the time of onset**

Acute: occurs immediately after delivery and before the cervix constricts.

Sub-acute: once cervix constricts.

Chronic: >4weeks after delivery.

Inversion of the uterus

- **It has been attributed to use of excessive cord traction and fundal pressure (Credé maneuver) during the third stage of labor** especially in the setting of an atonic uterus with fundal implantation of the placenta.

- **also it can occur spontaneously**

Risk factors

- **Previous uterine inversion**
- **Macrosomia**
- **Rapid or prolonged labor**
- **Usage of uterine relaxant(Tocolytics)**
- **short umbilical cord**
- **Nulliparity**
- **placenta accrete**

Signs and symptoms

Symptoms:

- The most common presentation is a **complete uterine inversion with sever pph.**
- Mild to severe lower abdominal pain.
- Mild to severe vaginal bleeding.

Signs:

- **General examination**: **Shock:** out of proportion to blood loss.

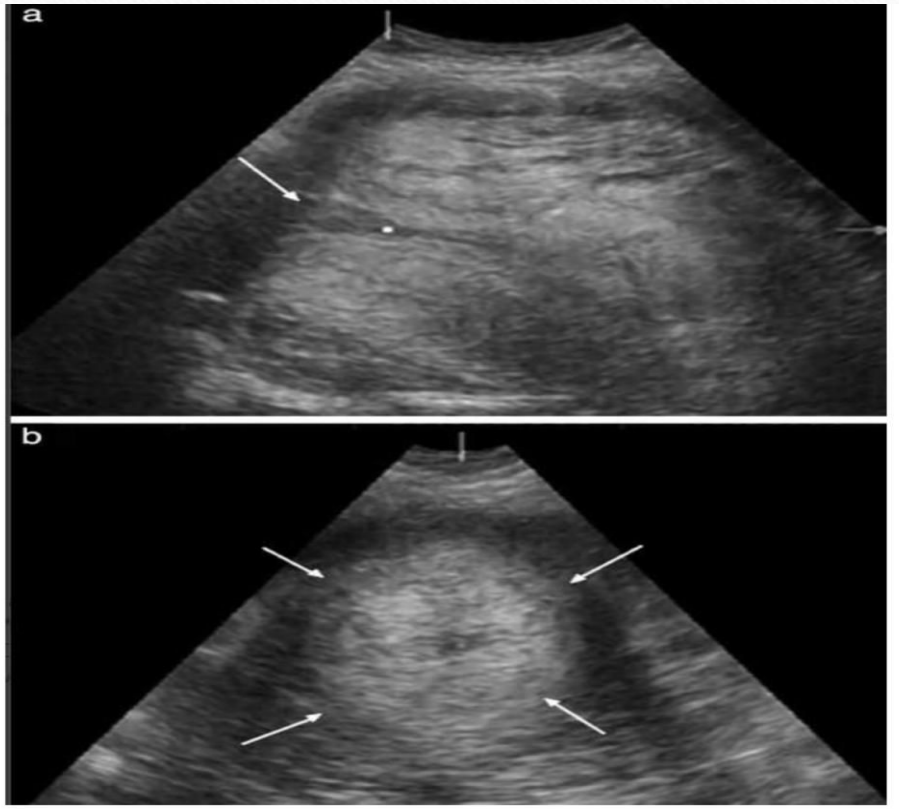
-More neurogenic due to traction on the peritoneum & press On the tubes ,ovaries , & maybe, the intestine.

-Parasympathetic effect of traction on the ligaments supporting the uterus &maybe associated with bradycardia

- **vaginal examination**: **smooth, round mass** protruding from the cervix or vagina.
- **abdominal examination**: absence of uterine fundus in third degree.

Diagnosis

- **Mainly Clinically**
- **Radiographic imaging** (ultrasound magnetic resonance)



Ultrasound images of the uterus in the sagittal plane showing the inverted fundus as a central crater-like depression (arrow) (a) and in the axial plane showing the constriction ring (arrows) (b).

- Importantly , In women with significant vaginal bleeding ,treatment should not be delayed for radiologic confirmation

MANAGEMENT

Call for help

Before the shock develops

- **urgent manual replacement is necessary**
- **Push back the inverted uterus by steady firm pressure with fingers.**
- **Support the abdomen with the other hand (counter-support).**
- **Keep the hand inside the uterus until it contracts with oxytocin .**
- **Remove the placenta after contraction.**

It can be removed before if:

(a) It helps make replacement easier.

(b) It is partially separated to reduce blood loss.

- **Treat shock and arrange blood transfusion at the same time.**

MANAGEMENT

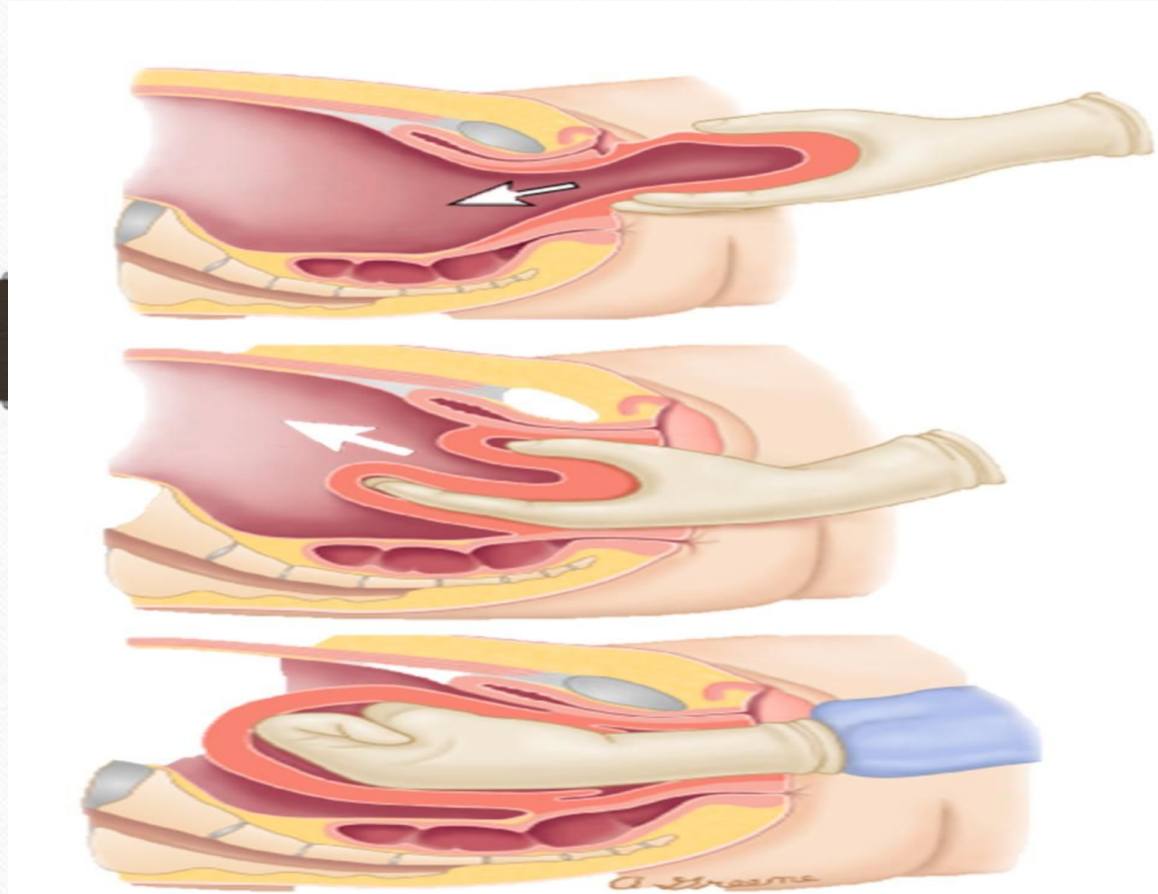
Call for help

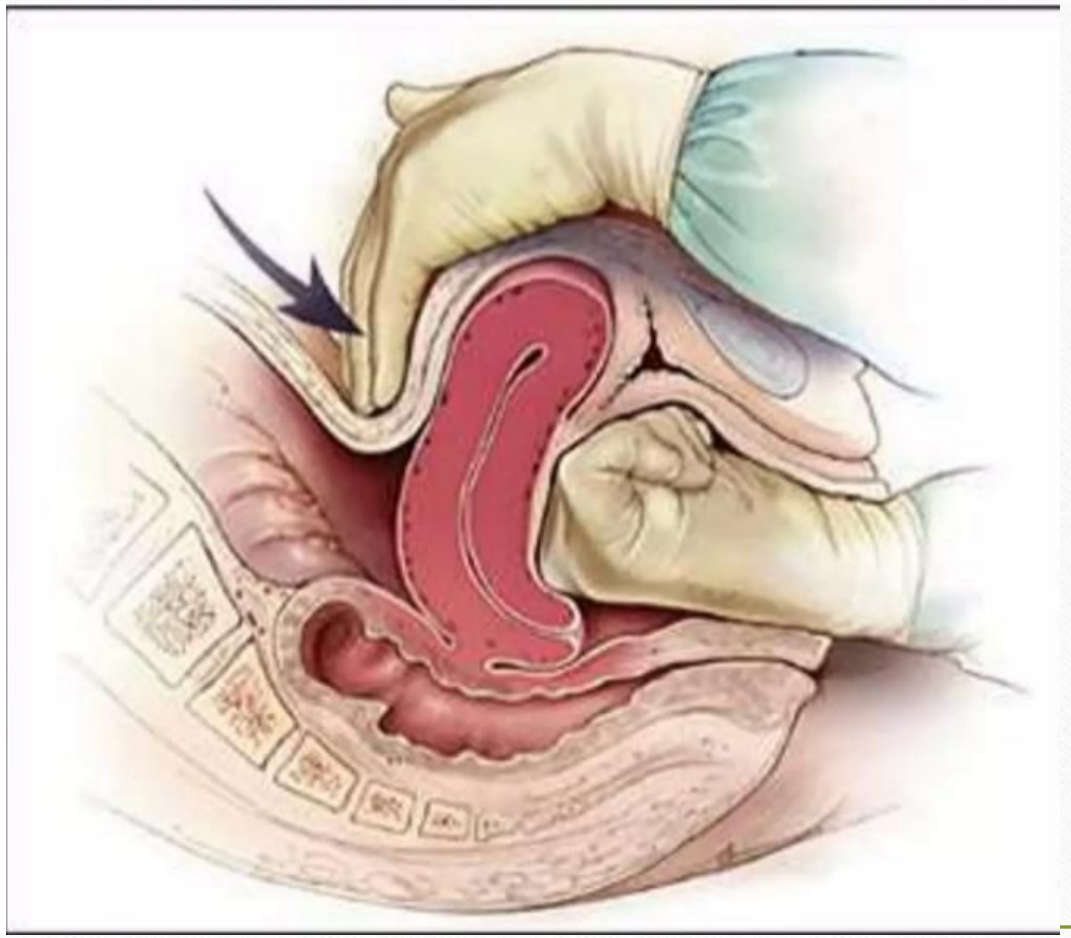
after the shock develops

- **The treatment of shock should be instituted with an urgent dextrose saline drip and blood transfusion**
- **Foot end of the bed is raised**
- **Replacement of the uterus either manually or hydrostatic method (O'Sullivan's) under general anesthesia is to be done along with resuscitative measures.**
- **pack the vagina with antiseptic roller guaze.**

*** Hydrostatic method is quite effective and less shock producing.**

Johnson maneuver
fist replacement maneuver
manual replacement maneuver





Hydrostatic Method)O'Sullivan's (

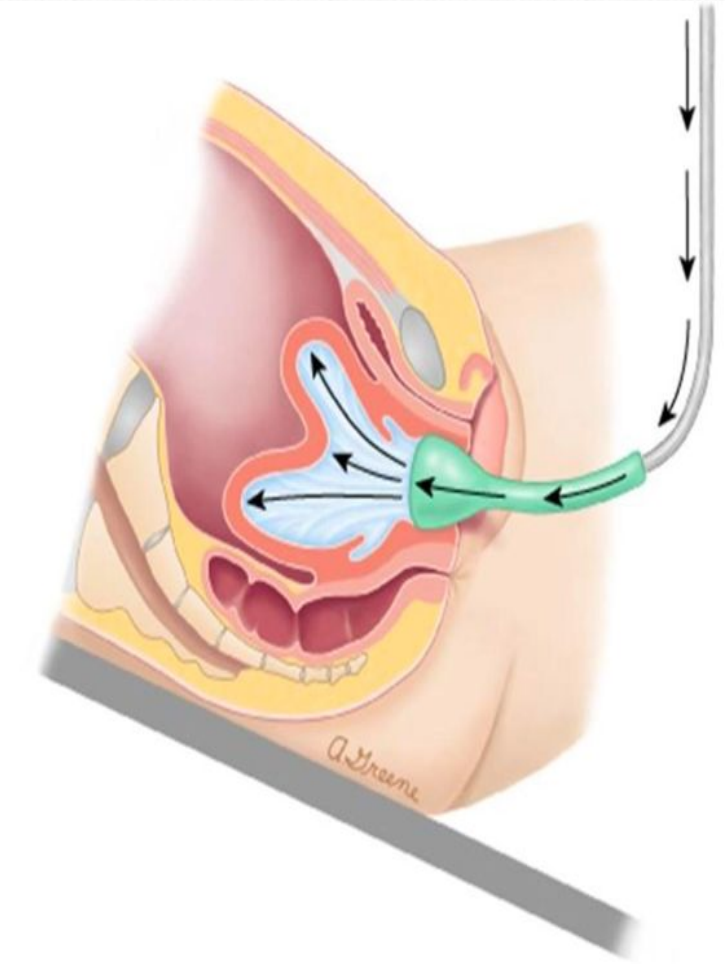
• If manual reduction fails, simple hydrostatic pressure can help

-2 to 5 liters of fluid may be needed.
-Patient should be placed in reverse Trendelenburg-lithotomy position.

•Warmed sterile saline is infused into the vagina.

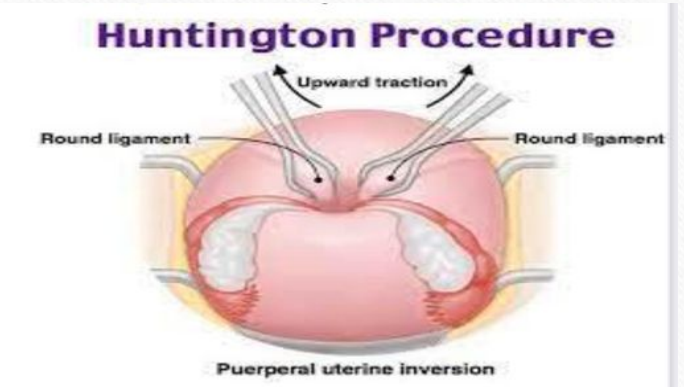
•The hydrostatic pressure inside the vagina may force the inverted fundus back to its normal place.

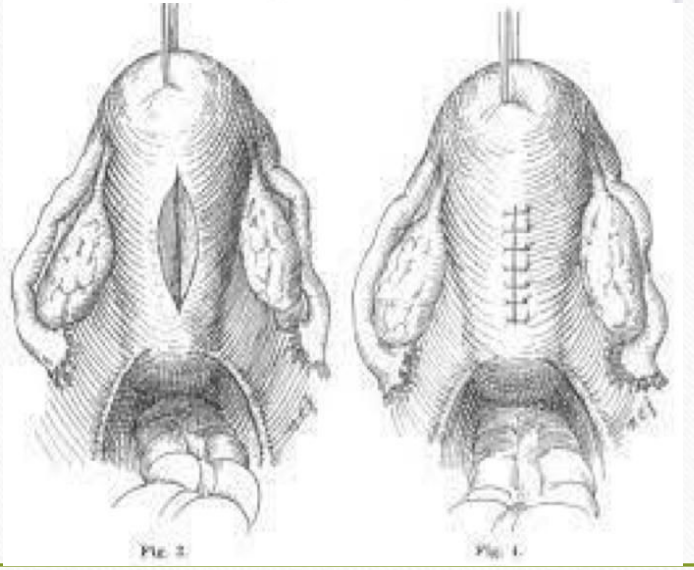
•Possible complications: infection, failure of the procedure, and saline embolism.



Surgical options include Huntington and Haultaim's procedures:

- **Huntington procedure**
- Locate the cup of the uterus former the inversion.
- Dilate the constricting cervical ring digitally.
- Place clamps in the cup of the inversion below the cervical ring and gentle upward traction is applied.
- Repeated clamping and traction continue until the inversion is corrected.
- **Haultaim's procedure**
- Incision is made in the posterior portion of the inversion ring, to increase the size of the ring and allow repositioning of the uterus.
- Further steps as in Huntington procedure.





AMNIOTIC FLUID EMBOLISM

Sewar madadha

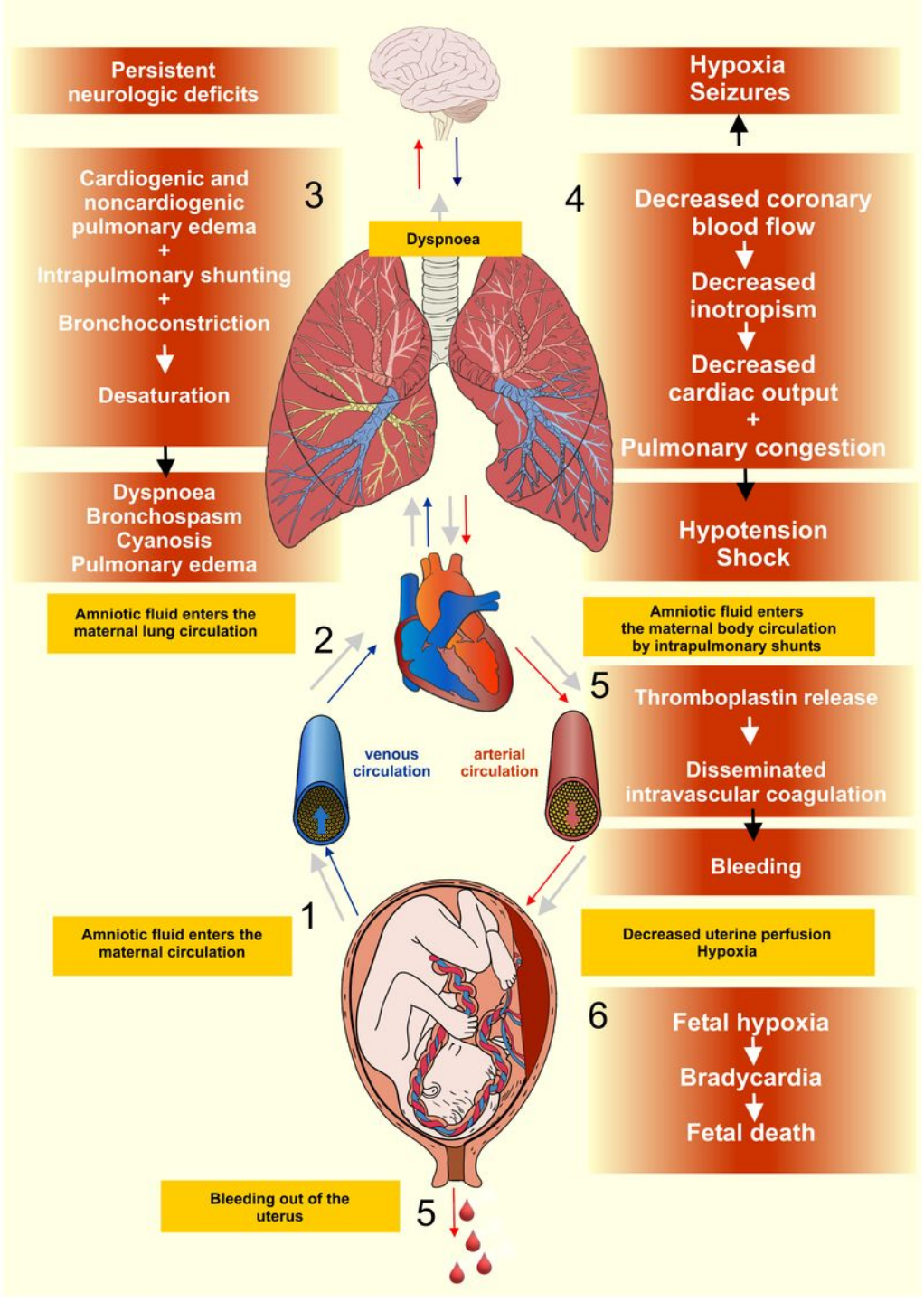
DEFINITION

- Amniotic fluid embolism (AFE) is a rare life-threatening condition that caused by the entry of fetal cells and debris from amniotic fluid into maternal circulation, that typically occurs during labor.

INCIDENCE

- FE is rare, ranging from 1.9 to 6.1 cases per 100,000 deliveries in a review of reports from Australia, Canada, the Netherlands, the United Kingdom, and the United States

AMNIOTIC FLUID EMBOLISM PATHOPHYSIOLOGY


Persistent neurologic deficits
Hypoxia Seizures
Cardiogenic and noncardiogenic pulmonary edema + Intrapulmonary shunting + Bronchoconstriction
Desaturation
3
4
Dyspnoea
Decreased coronary blood flow
Decreased inotropism
Decreased cardiac output
+
Pulmonary congestion
Dyspnoea Bronchospasm Cyanosis Pulmonary edema
Hypotension Shock
Amniotic fluid enters the maternal lung circulation
Amniotic fluid enters the maternal body circulation by intrapulmonary shunts
2
5
Thromboplastin release
venous circulation
arterial circulation
Disseminated intravascular coagulation
Bleeding
Amniotic fluid enters the maternal circulation
1
Decreased uterine perfusion Hypoxia
6
Fetal hypoxia
Bradycardia
Fetal death
Bleeding out of the uterus
5

PATHOPHYSIOLOGY

- entry of amniotic fluid (which contains fetal cells and other antigenic material) into the maternal systemic circulation via a breach in maternal/fetal interface leads to abnormal activation of humoral and immunologic processes and release of vasoactive substances, similar to the systemic inflammatory response syndrome.

PATHOPHYSIOLOGY CONT..

- As a result, pulmonary pressures usually become acutely elevated, the right ventricle (RV) pressure increases, and the RV begins to fail.
- RV failure may subsequently lead to left ventricle (LV) failure and systemic hypotension.
- activation of factor VII and platelets and release of inflammatory mediators likely activates the coagulation cascade, resulting in disseminated intravascular coagulopathy (DIC).

RISK FACTORS

- Maternal age > 30 years.
- Multiparity.
- Complicated labor (e.g., placenta previa/abruption, forceps delivery, cesarean delivery, eclampsia).
- Invasive procedures (e.g., amniocentesis, abortion)
- Blunt abdominal trauma.

CLINICAL FINDINGS

- AFE is abrupt and rapidly progressive condition.

- Classically , patients present with cardiorespiratory compromise or sudden hypoxia and hypotension, SOB, tachypnea ,cyanosis,and hemorrhage due to disseminated intravascular coagulopathy (DIC).

Symptoms	Signs
Dyspnea	Hypotension
Cough	Fetal Distress
Headache	Pulmonary edema/ARDS
Chest Pain	Cyanosis
	Coagulopathy
	Seizures
	Bronchospasm
	Cardiopulmonary arrest
	Uterine Atony

DIAGNOSIS

AFE is a clinical diagnosis.

Supportive studies are used to help guide management and rule out complications.

- Arterial blood gas analysis: Hypoxemia, acid-base disorders.
- CBC: Anemia, thrombocytopenia.
- Coagulation studies: ↑ aPTT, ↑ PT, ↓ fibrinogen.
- - Pulmonary artery blood sample: Presence of squamous cells, hair, or other fetal debris in maternal blood.
- ECG, chest X-ray, and/or V-Q scan.

DIAGNOSTIC CRITERIA

- Sudden cardiovascular collapse or hypotension
- Evidence of DIC (ISTH score ≥3)
- Onset during labor or within 30 mins post delivery
- Absence of fever ≥38°C during labor

THE FOLLOWING A THROUGH H MNEMONIC WAS DEVISED BY THE AMERICAN HEART ASSOCIATION TO HELP PROVIDERS REMEMBER CAUSES OF CARDIAC ARREST THAT SHOULD BE CONSIDERED IN PREGNANT PATIENTS :

A: Anesthetic complications, Accident/trauma

B: Bleeding

C: Cardiac

D: Drugs

E: Embolic causes

F: Fever

G: General including hypoxia, electrolyte disturbances

H: Hypertension

MANAGEMENT

- Initial goals include high-quality CPR, hemorrhage control, reversal of coagulopathy, and consideration of urgent delivery if gestational age permits.

ABCDE survey

- Respiratory support and immediate hemodynamic support as needed.

- Prepare for emergency delivery.

- Set up IV Infusion.

- Airway control: Endotracheal intubation.

- Maximal ventilation and oxygenation.

▪Management of cardiac arrest in pregnancy

- Initiate CPR.
- Perform left uterine displacement.

▪ Treatment of DIC

-Blood products as needed.

- Anticoagulation: If hypercoagulability is the leading problem.

- Consider advanced treatment options (e.g., antithrombin) in consultation with a specialist

- Delivery may improve maternal outcomes and is advised when fetal viability is possible, especially during maternal arrest.

- Diagnostic workup should exclude other causes such as pulmonary embolism, sepsis, and anesthetic complications.

- AFE remains a clinical diagnosis based on rapid symptom onset and exclusion of other conditions.

CASE..

- A 29-year-old woman, G2P1 at 40 weeks, developed sudden respiratory distress, hypotension, cyanosis, altered consciousness, and fetal bradycardia during labor.

Amniotic fluid embolism (AFE) was suspected.

How to manage ?

- Secure airway immediately→ intubate and give oxygen
- Support breathing → ventilate carefully (keep oxygen saturation >96%), use PEEP if needed.
- Support circulation → give IV fluids carefully (avoid overload), start norepinephrine if blood pressure is low.
- Emergency delivery → if fetal distress, do urgent cesarean section.
- Control bleeding → check for DIC with frequent labs, transfuse blood products if needed.
- Move to ICU → central and arterial lines, monitor heart, lungs, and labs closely.
- Prevent complications → VTE prophylaxis, glucose control, nutrition, infection prevention.

KEY POINTS – AFE RECAP

- AFE is rare, sudden, and life-threatening during or just after delivery.
- Presents with hypotension, hypoxia, and DIC – but not always all three.
- Clinical diagnosis based on exclusion and timing (labor or ≤30 min postpartum).
- Pathophysiology involves an immune-mediated inflammatory response, not a true embolism.
- Requires immediate supportive care: CPR, oxygen, fluids, vasopressors, blood products.
- Early delivery may improve maternal outcome.
- Rule out mimics like PE, sepsis, and anesthesia complications

- THANK YOU .