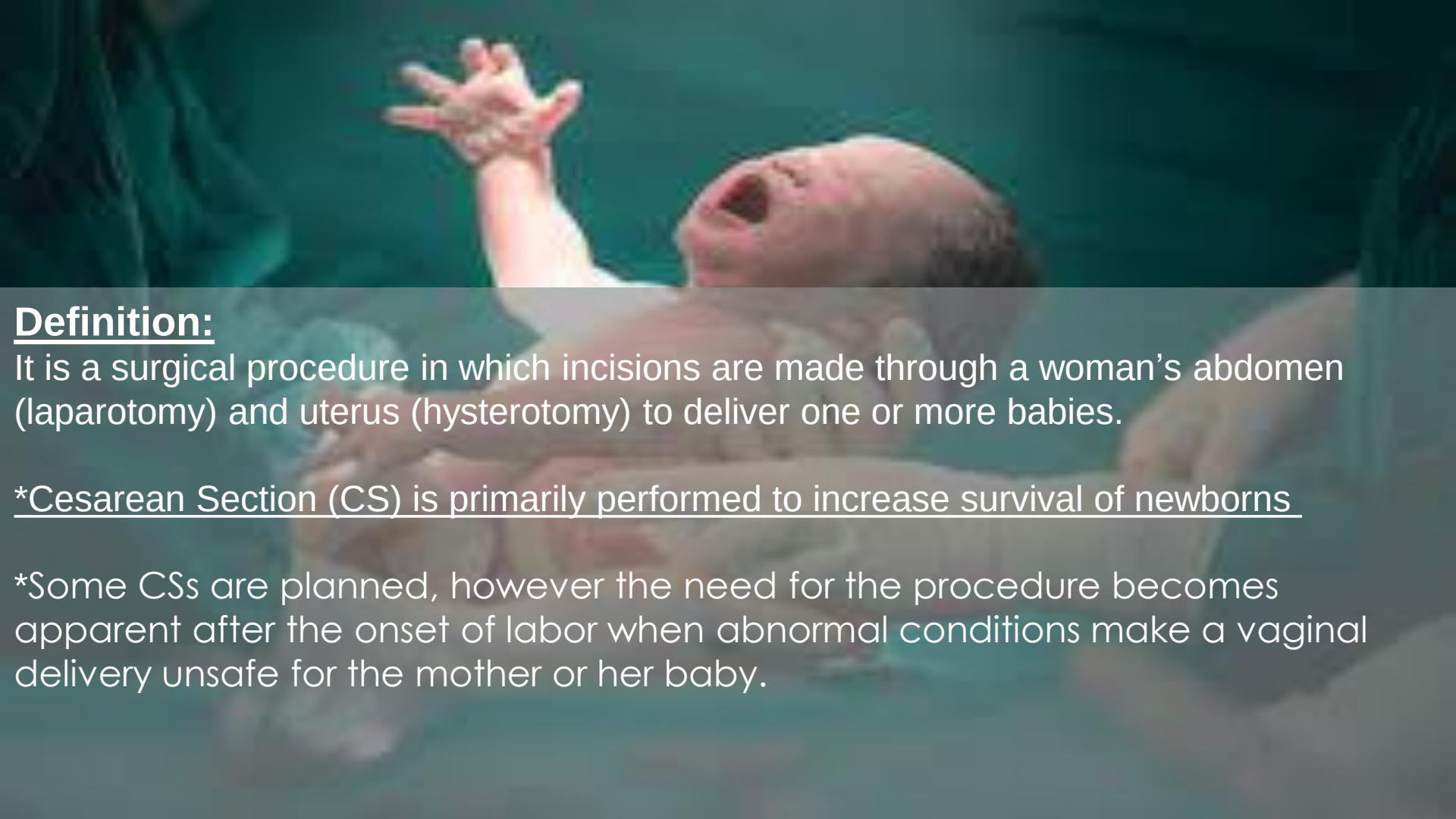
Cesarean section

By:
Afnan jaber
Al Yomna Nayel
Al harith aljaafreh
Ahmad shehadeh

Supervised by: Dr. Suad Aljaafreh



Definition:

It is a surgical procedure in which incisions are made through a woman's abdomen (laparotomy) and uterus (hysterotomy) to deliver one or more babies.

*Cesarean Section (CS) is primarily performed to increase survival of newborns

*Some CSs are planned, however the need for the procedure becomes apparent after the onset of labor when abnormal conditions make a vaginal delivery unsafe for the mother or her baby.

Notes

Maternal mortality rate for all Caesarean sections is 5 times that for vaginal delivery, especially with emergency cesareans performed in labor.

Maternal mortality is largely anesthetic related

Risks are those from any major procedure: hemorrhage, infection, visceral injury (injury of the bladder or bowel), thrombosis

Classification

Elective

- CSs are planned in ahead time.

Emergency

- When the cesarean section is done because of sudden deterioration in maternal or fetal condition during labor or due to non-progress, failed induction or failed trial.

Classification according to the urgency

1)Requiring immediate delivery

immediate threat to life of woman or fetus

2)Requiring urgent delivery

maternal or fetal compromise which is not immediately lifethreatening

3)Needing early delivery

but no maternal or fetal compromise

4)Elective delivery

at a time to suit the patient and maternity team

Indication:

*Fetal:

1. Cord prolapse
2. fetal distress
3. Fetal macrosomia > 4500 gm
4. Multiple pregnancy
5. Transverse lie and Malpresentation brow, mentoposterior, shoulder & compound presentations, breech
6. Failed induction, obstructed labor and Failure to progress in labor (Dystocia) (CPD)
7. Severe PET-relative contraindication

Indication:

*Maternal:

1. Repeat cesarean delivery
2. Abnormal placentation (eg. placenta Previa, placenta accr
3. Obstructive lesions in the lower genital tract, including leiomyomas of the lower uterine segment that interfere with engagement of the fetal head
4. Pelvic abnormalities that preclude engagement or interfere with descent of the fetal presentation in labor.
5. Active genital herpes infection or maternal HIV infection

1-Unless there are maternal or fetal indications for cesarean delivery, vaginal delivery should be recommended.

2- should not be performed before 39 weeks gestation without verifying fetal lung maturity (due to a potential risk of respiratory problems for baby)

3-it is not recommended for women who want more children (due to the increased risk for placenta Previa and gravid hysterectomy with each cesarean delivery)

Criteria for trial of labor include:

1. patient consent

2. non-repetitive cesarean indication (e.g., breech, placenta Previa)

3.previous low segment transverse uterine incision

4.clinically adequate pelvis.

Successful vaginal delivery rate is up to 80% in carefully selected patients.


PREOPERATIVE FOR
CS

- ❑ fasting 12 hours preoperative
- ❑ I.V line .
- ❑ Fluids .
- ❑ Foley catheter .
- ❑ fetal and maternal monitors.
- ❑ Antibiotic prophylaxis .
- ❑ Antiacids.

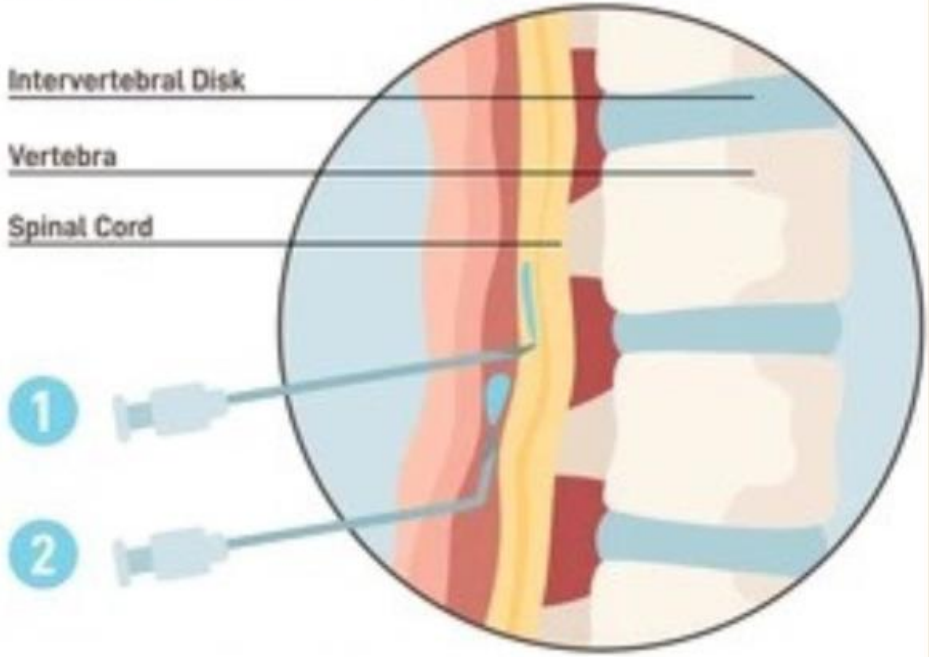
LAB TESTS:

- ❑ CBC .
- ❑ BLOOD TYPE AND CROSS MATCH .
- ❑ COAGULATION STUDY .
- ❑ ULTRASOUND

ANESTHESIA

- SPINAL
- EPIDURAL
- GENERAL

Epidural Anaesthesia



1 - Epidural Anaesthesia
2 - Spinal Anaesthesia

SPINAL

Advantages :

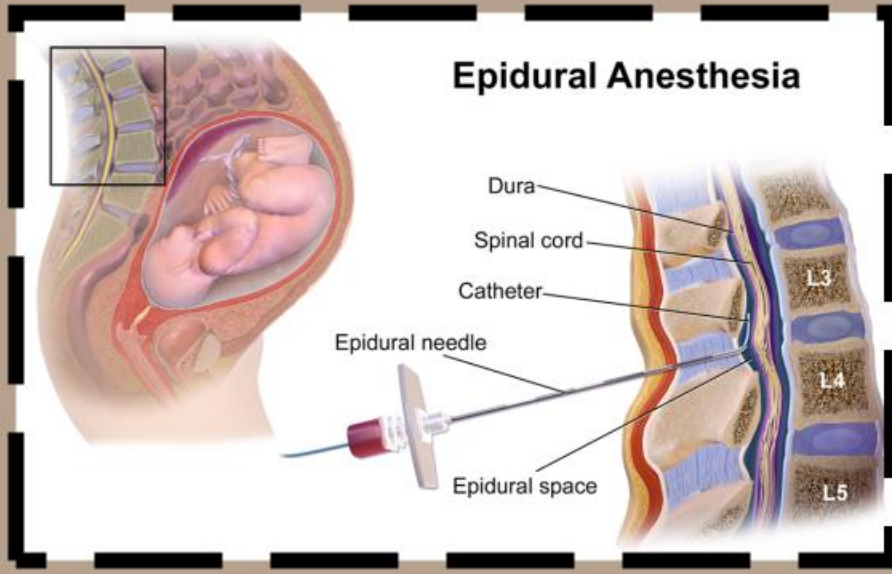
- Simple and rapid onset
- Minimal fetal exposure to drug
- Allow time for careful abdominal wall incision and good haemostasis
- Avoidance of complication of general anesthesia (uterine atony and pulmonary aspiration)

Disadvantages :

- Hypotension
- nausea and vomitting
- spinal headache
- Post-operative shivering

Advantages :

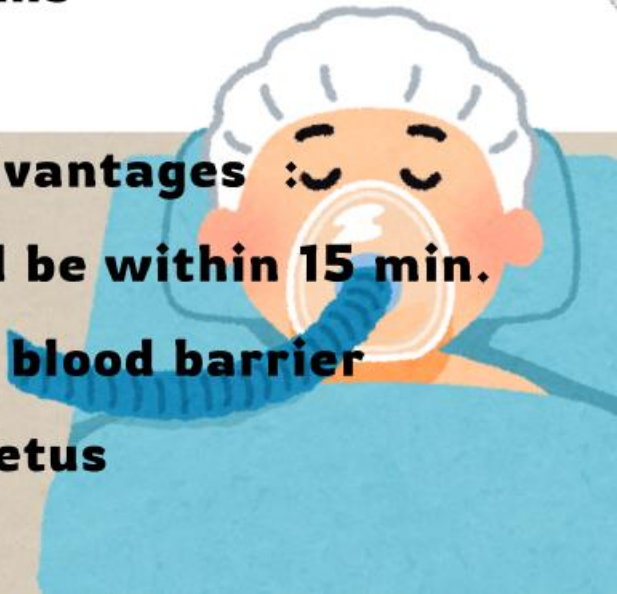
- Less incidence of hypotension because of slow onset of sympathetic block
- Less incidence of spinal headache
- Allow repeated administration through epidural catheter if the surgery is prolonged
- Epidural catheter allow administration of post-operative analgesia



General anesthesia :

Advantages :

- Can be given quikly (suitable for emergency CS)
- Blood pressure and breathing are easily controlled
- Better in patient with psychological problems



disadvantages :

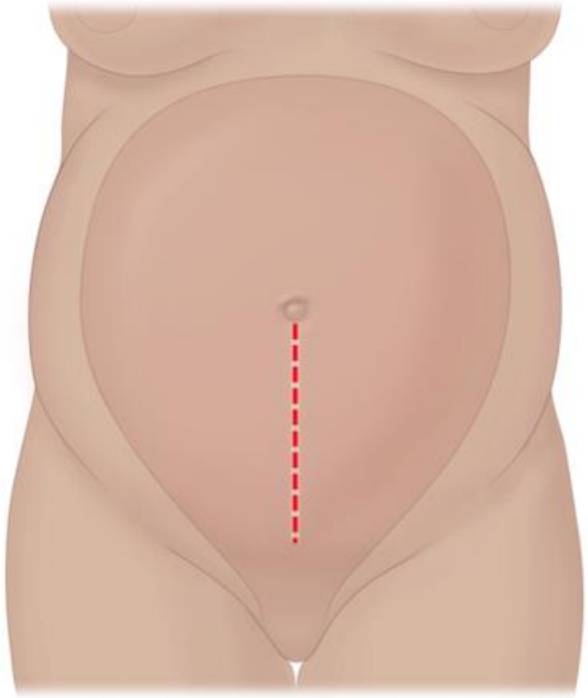
- Extraction of the fetus should be within 15 min.

Nitous oxide can cross placental blood barrier

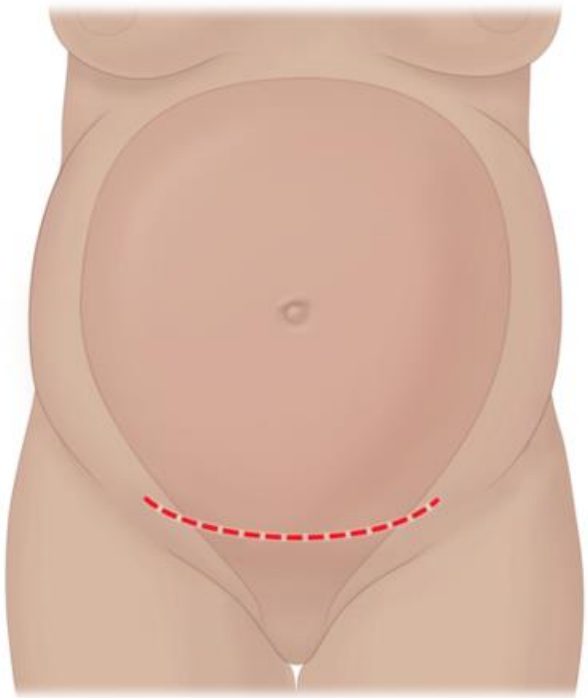
cardiodepressant effect on the fetus

- Acid aspiration syndrome

ABDOMIN & UTERINE INCISION



Vertical

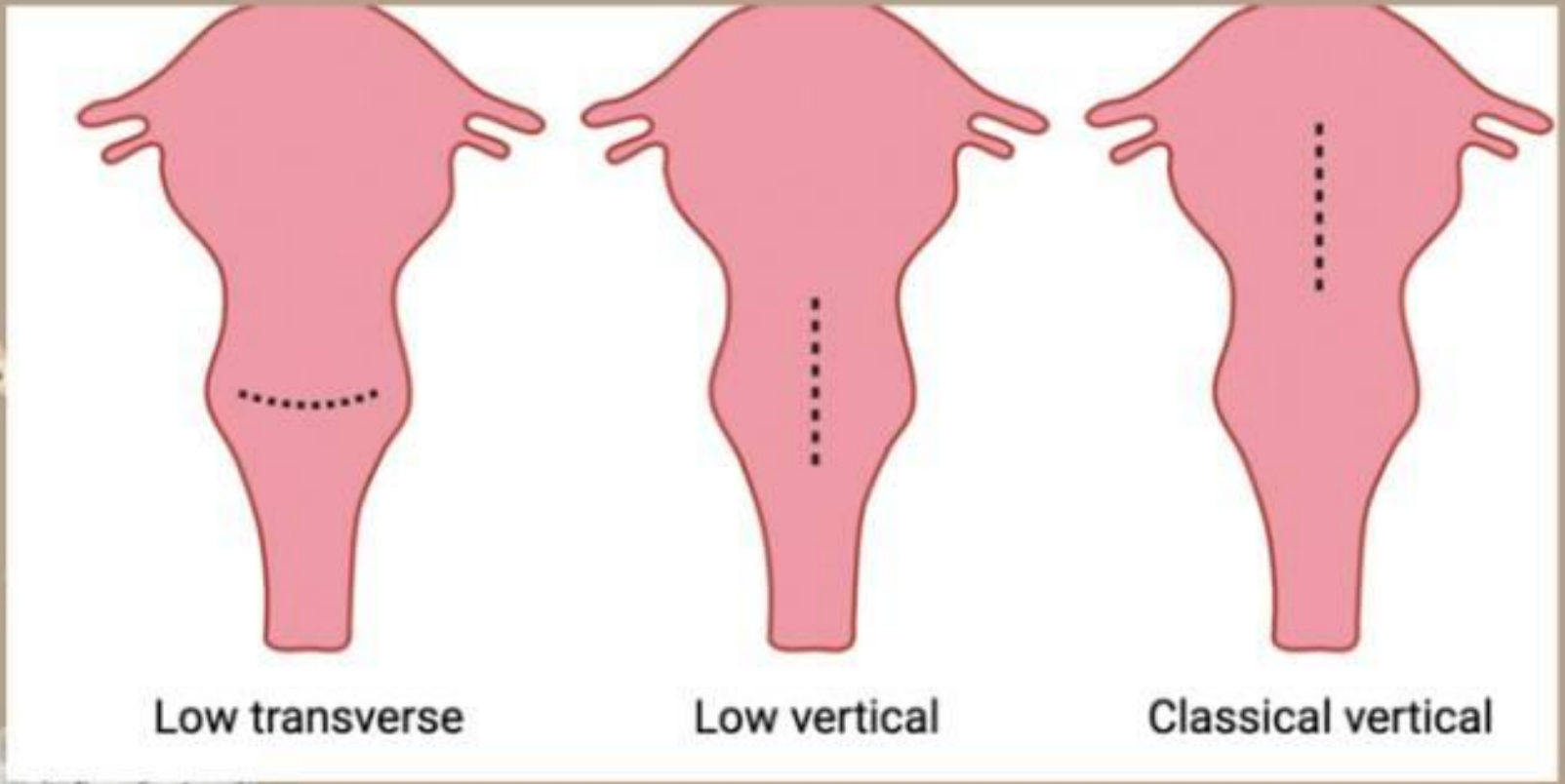


Horizontal

	Transverse incision	Vertical incision
Cosmetic appeal	More	Less
Postoperative pain	Less	More
Wound dehiscence	Less	More
Incisional hernia	Less	More
Technical skill	More	Less
Time taken	More	Less
Access to upper abdomen	Less	Good, can be extended

WHICH IS INDICATED IN CASES OF EXTREME MATERNAL OBESITY ????

Uterine incision



Low segment transverse incision(Monroe-Kerr)

- Most common uterine incision 90%
- Low transverse incision is smaller, horizontal and made near the bikini line.
- Obstetricians can then deliver the baby, however because of the smaller incision ,they may need to use forceps or a Vacuum .

Advantages:

1.trial of labor in subsequent pregnancy is safe

2.Less risk of bleeding

3.Less adhesions

4.less uterine infection

5.Easy to repair

6.Less likely to rupture in next pregnancy

Disadvantages :

1.fetus must be longitudinal lie

2. lower segment must be developed

3. varicosities or myomas in the lower segment.

Classical upper segment incision

- This made in the contractile fundus of the uterus and less commonly performed.
- Easy to perform, no bladder dissection is needed.
- The classic C-section involves a larger, vertical incision down the lower abdomen.

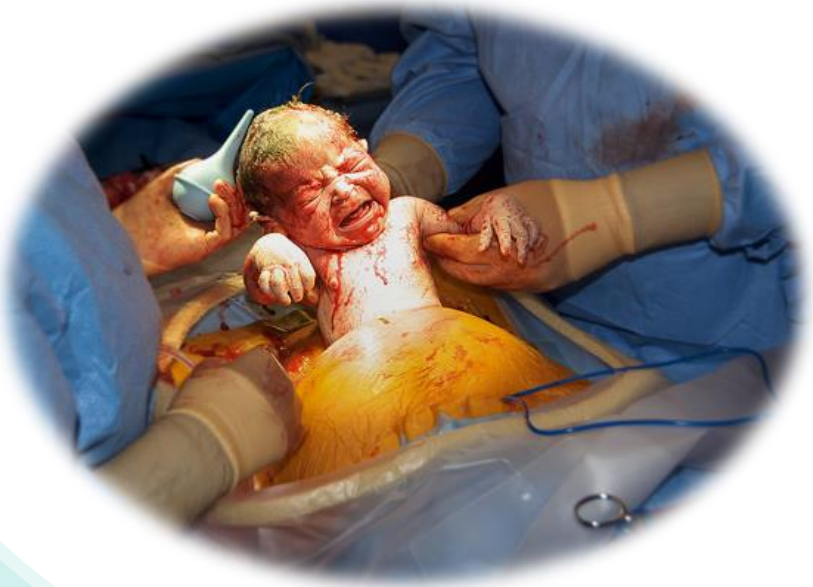
Advantages :

1. any fetus(es) regardless of intrauterine orientation can be delivered
2. lower segment varicosities or myomas can be bypassed

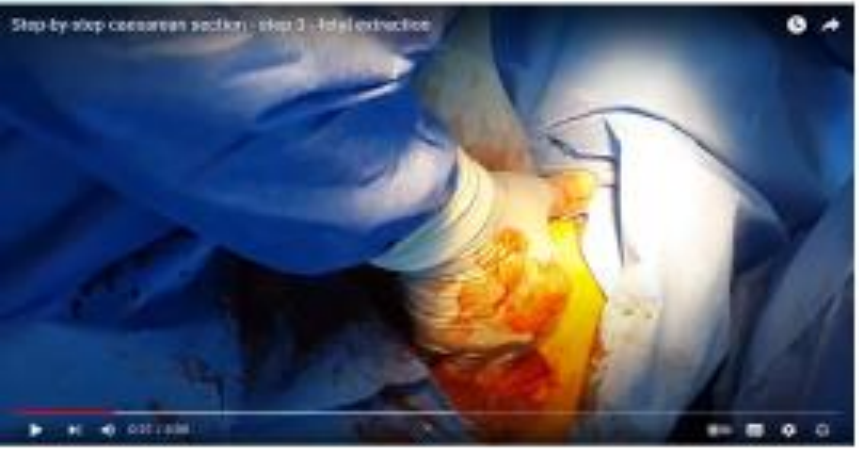
Disadvantages:

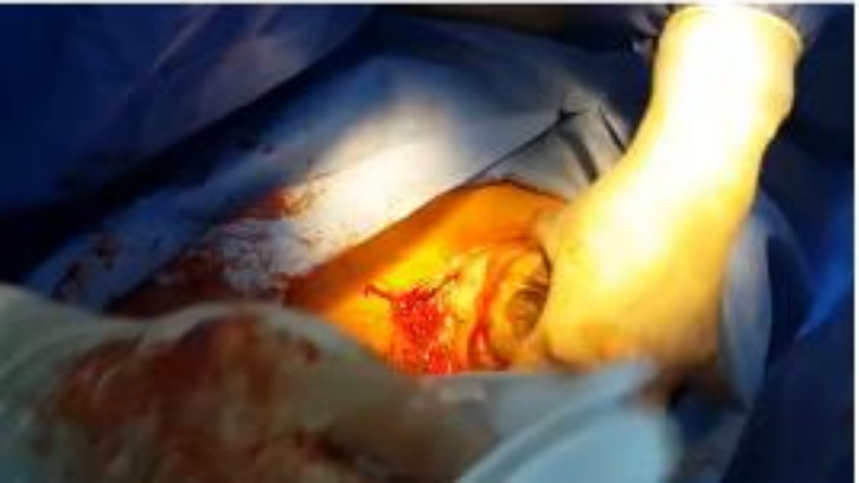
1. trial of labor in a subsequent pregnancy is unsafe
2. Difficult to repair
3. More bleeding
4. High risk for adhesion
5. Higher risk of rupture in subseqent pregnencies 1.5% - 5%

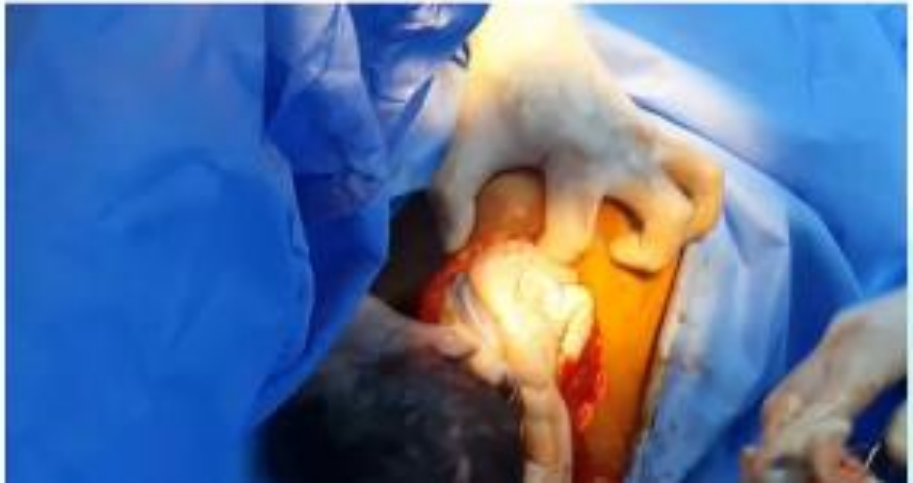
Delivery of the Fetus – Placenta & Repair Of Uterus and abdominal closure

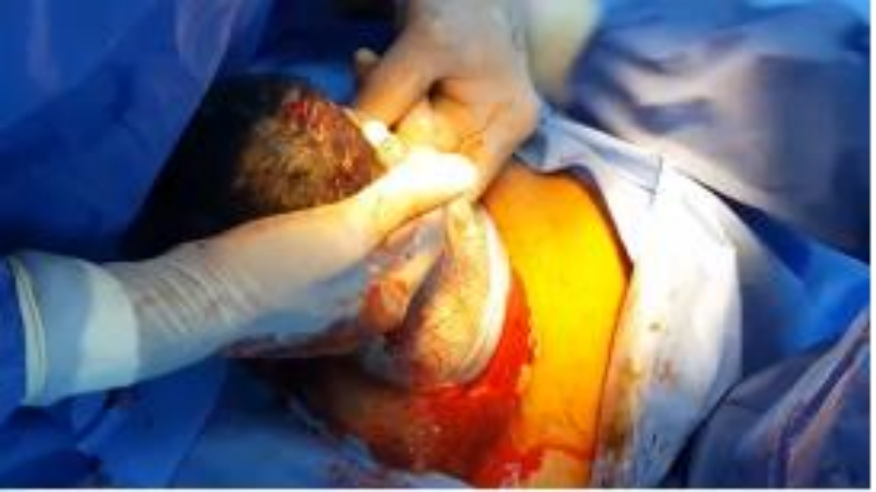


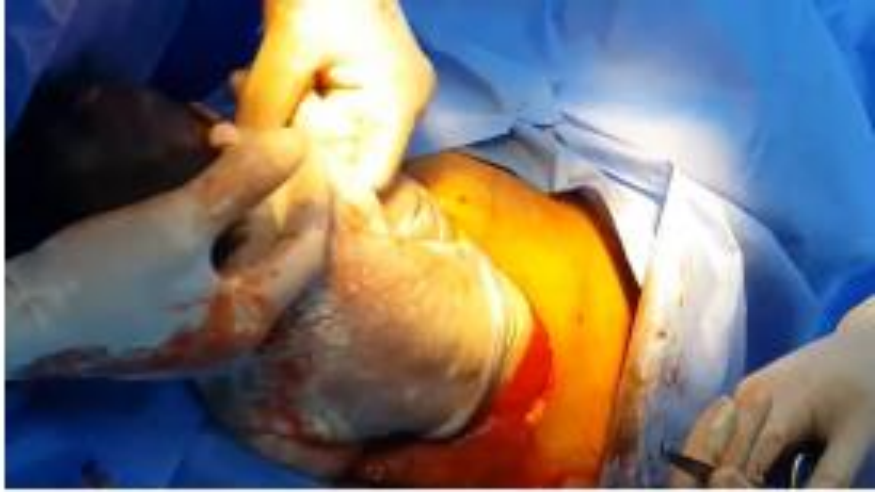
Delivery Of Fetus

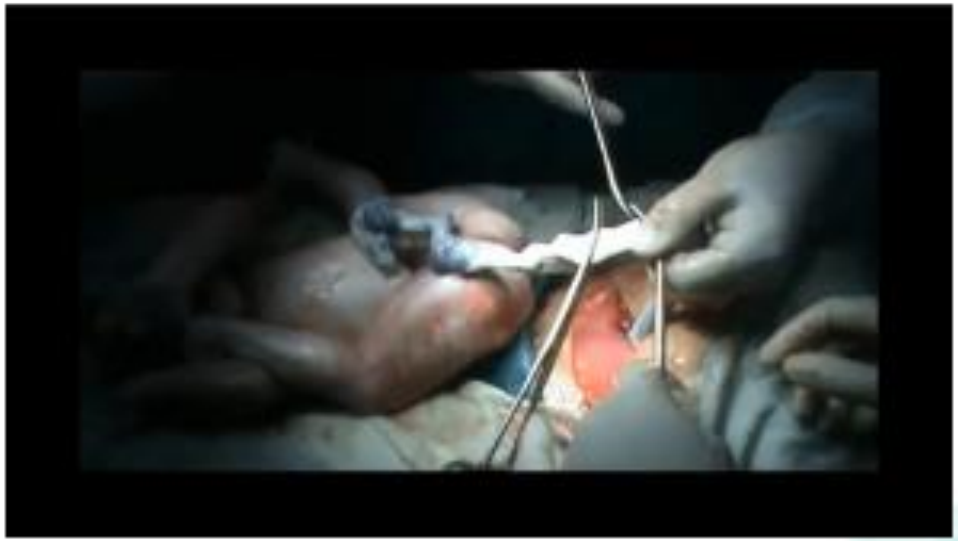






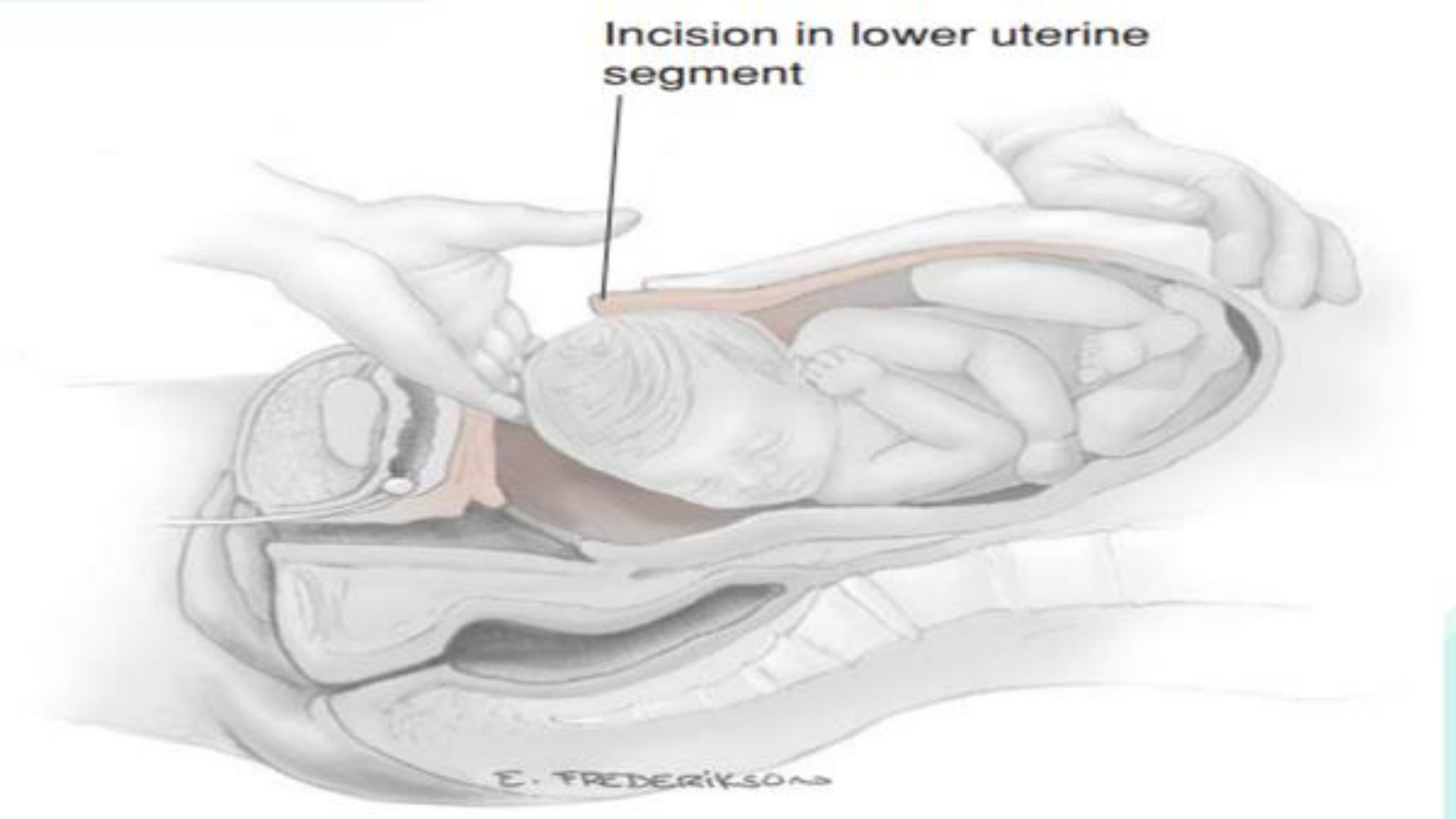






Fetal Delivery

- In Cephalic Presentation, a hand is slipped into the uterine cavity between the symphysis and fetal head.
- The head is elevated gently with the fingers and palm through the incision.
- Once the head enters the incision, delivery may be aided by Modest Trans-abdominal Fundal Pressure.
- The round head may be difficult to lift through the uterine incision in a relatively thick-lower segment that is un-attenuated by Labor. In such instances, either forceps or vacuum device may be used to deliver the fetal head.


Incision in lower uterine segment
E. FREDERIKSON

Steps Taken After Head Delivery

- After head delivery, a finger should be passed across the fetal neck .
- ***The head is rotated to an occiput transverse position,***
- The sides of the head are grasped with two hands, and gentle downward traction is applied until the anterior shoulder enters the hysterotomy incision
- Next, by upward movement, the posterior shoulder is delivered.

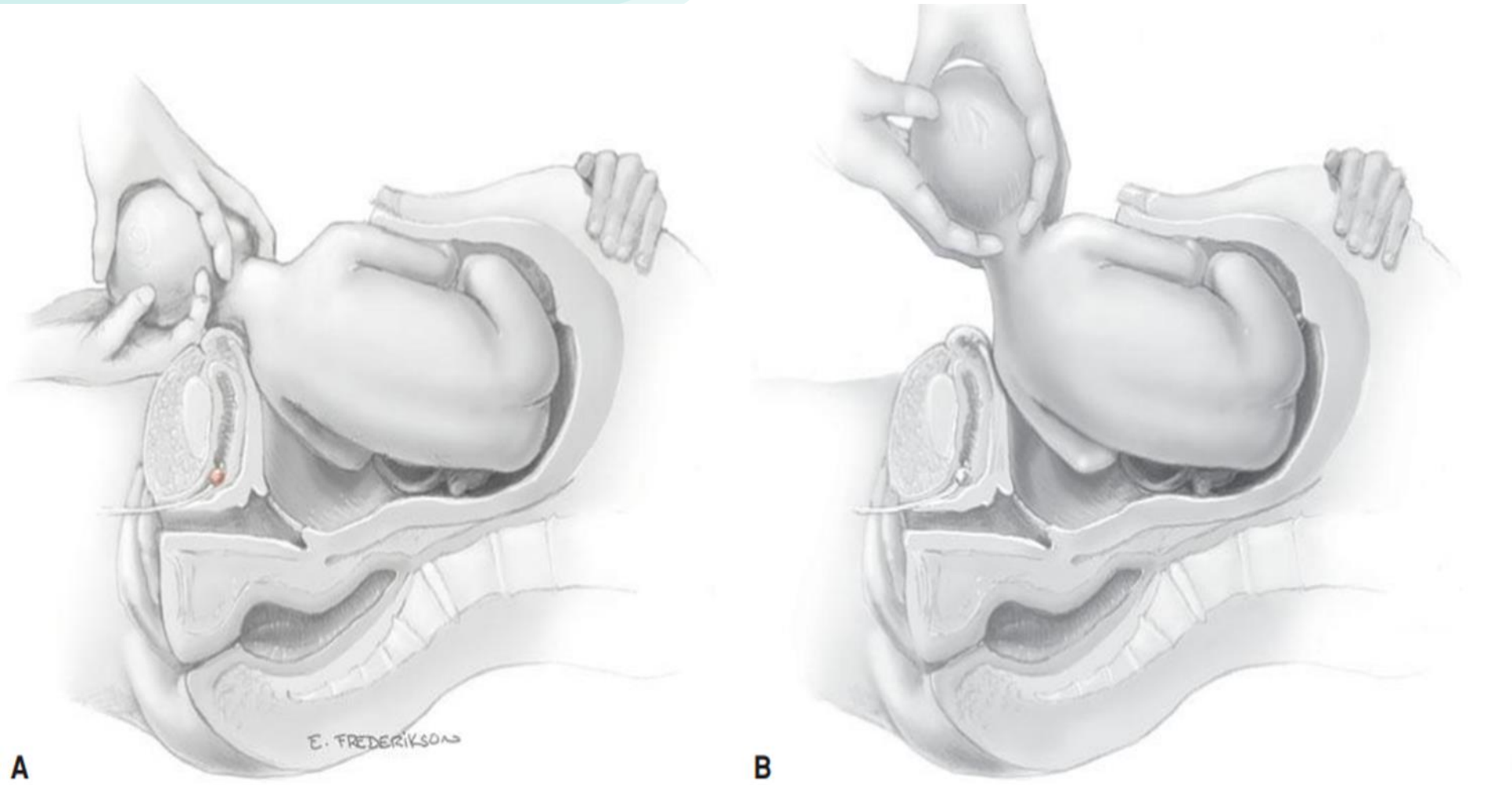


FIGURE 30-8 The anterior **(A)** and then the posterior **(B)** shoulder are delivered.

Placental Delivery

- The placenta is then delivered spontaneously, or manually along with some cord traction may reduce the risk of operative blood loss and infection
- **Fundal massage may begin as soon as the fetus is delivered to hasten placental separation and delivery.**
- Immediately after delivery and gross inspection of the placenta, the uterine cavity is suctioned and wiped out ***to remove avulsed membranes, vernix, and clots***.

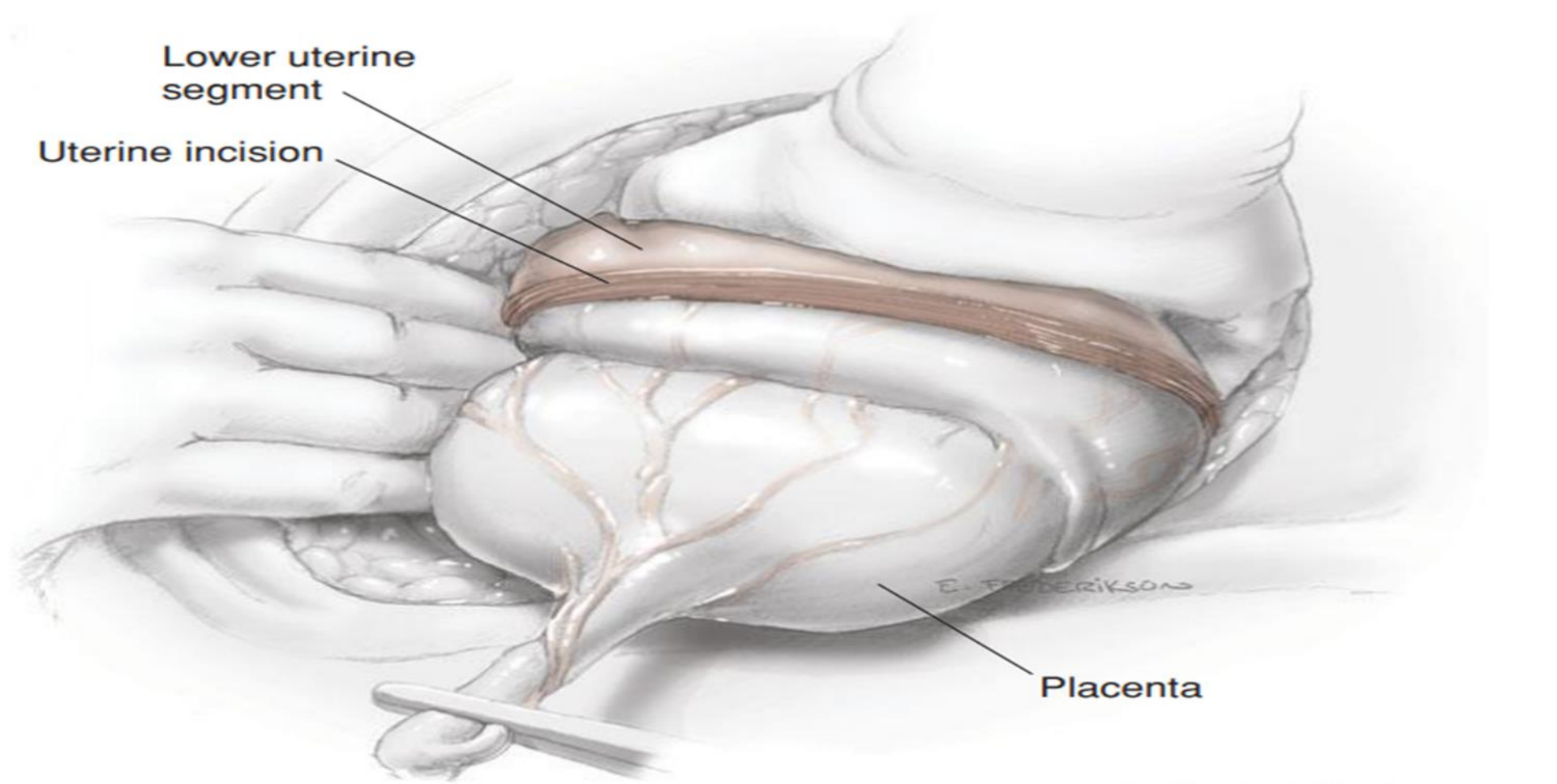


FIGURE 30-9 Placenta bulging through the uterine incision as the uterus contracts. A hand gently massages the fundus to help aid placental separation.

Uterine Repair - Exteriorization

- After placental delivery, the uterus is lifted through the incision onto the draped abdominal wall, and the fundus is covered with a moistened laparotomy sponge. Although some clinicians prefer to avoid such **uterine exteriorization,**
- it often has benefits that outweigh its disadvantages.
- For example, **the relaxed, atonic uterus can be recognized quickly and massage applied.**
- **The principal disadvantage is discomfort and vomiting caused by traction in cesarean deliveries performed under regional analgesia**.

After Exteriorization

- The uterine incision is then closed with **one or two layers of continuous 0- or No. 1 absorbable suture** .

- **Single-layer closure is typically faster and is not associated with higher rates of infection or transfusion**

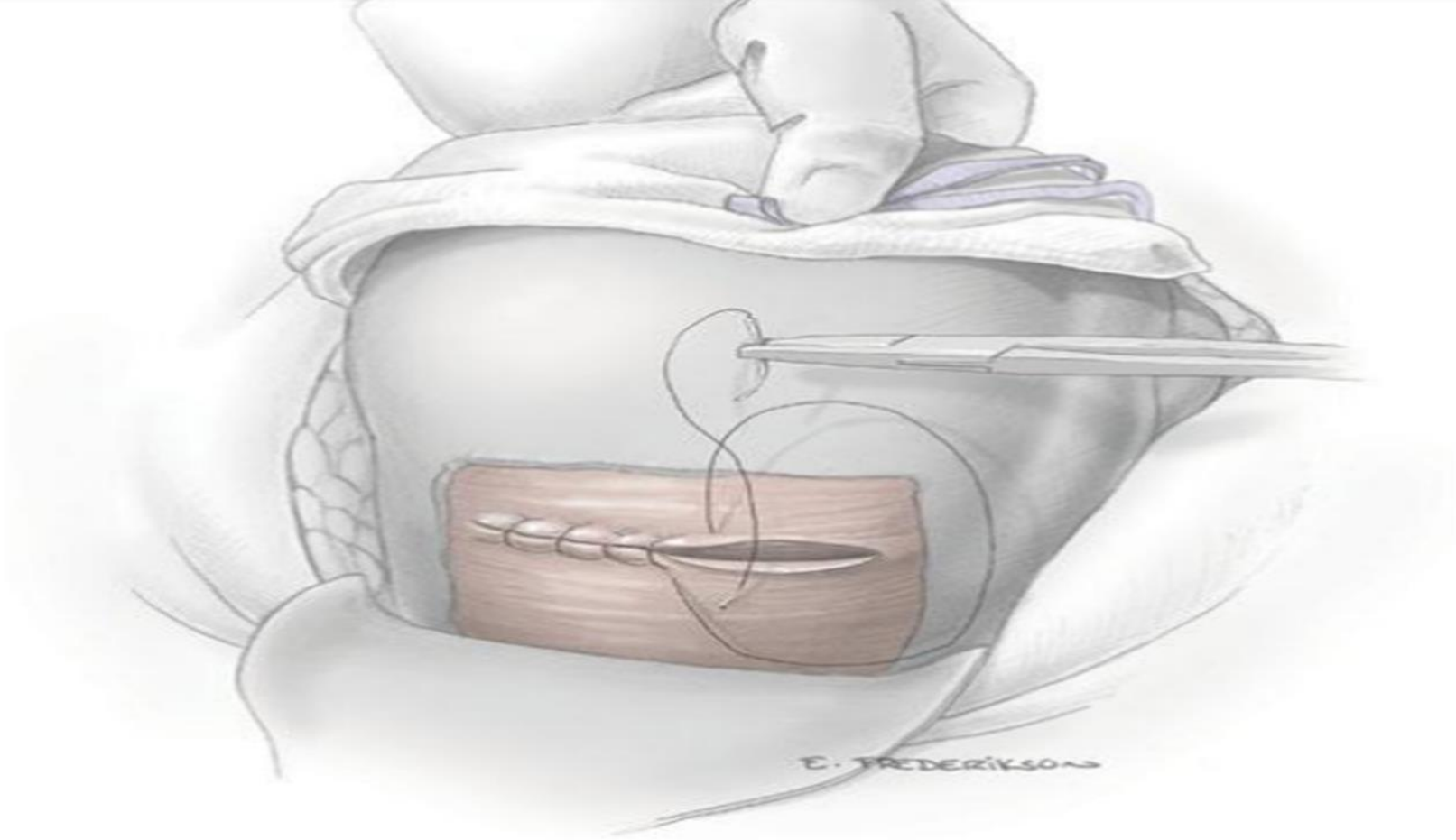


FIGURE 30-10 The cut edges of the uterine incision are approximated with a running-lock suture anchored at either angle of the incision.

Abdominal Closure

•Any Laparotomy Sponges are removed and the para-colic gutters are gently suctioned of blood and amniotic fluid.

•The subcutaneous tissue usually need NOT be closed if it is less than 2 cm thick.

•With thicker layers, closure is recommended to minimize seroma and hematoma formation, which can lead to wound infection and/or disruption.

CS Complications

Although caesarean section is relatively safe , the women need to be counseled about potential complications .

***The risks associated with cesarean delivery can be divided into those that are :**

1-short term.

2-Long term.

3-risks to future pregnancies.

4-risks to the newborn.

Short term complication:

1. Hemorrhage:

- Blood loss during a cesarean delivery may be greater than during a vaginal delivery, however, the transfusion rate remains low at 1% to 2% of patients undergoing cesarean section.

- Excessive blood loss during a cesarean section typically results from laceration of uterine vessels that occurs with extension of the uterine incision. Additional lacerations may extend into the vagina and result in significant bleeding and increased operative time.

- **The mean estimated blood loss at cesarean delivery is approximately 1000 mL.**

2. Infection :

- Infection is one of the most common complications of cesarean delivery. In the absence of prophylactic antibiotics, the rates of postpartum endomyometritis can be as high as 35% to 40%.

- Another common complication of cesarean delivery is wound infection. Wound infections may occur in 2.5% to 16% of cesareans.

- **Risk for Infection increase with:** the presence of ruptured membranes [most important], With obesity particularly important role in the occurance of wound infection, blood transfusion.

Other Causes of infection :

- Atelectasis.
- Pneumonia (Aspiration).
- Bacteremia.
- Urinary tract infection.
- Deep Abscesses.

Source :

The most important source of microorganisms responsible for post caesarean section infection is the genital tract , particularly if the membranes are ruptured preoperatively

3. Incidental Surgical Injuries :

●**Bladder injuries are the most common injuries to surrounding structures occurring at the time of cesarean delivery**, Less common surgical injuries involve the bowel or ureters.

●Risk factors for any of these injuries are prior pelvic surgery (including prior cesarean deliveries), emergency cesarean delivery.

●Early recognition and prompt management of these injuries are key to preventing the development of further complications, such as sepsis, renal failure, and fistula formation.

4.Emergency Hysterectomy:

●The risk of the need for hysterectomy after or during a cesarean delivery is greater than after a vaginal delivery.

●The most important risk factor for emergency postpartum hysterectomy is a previous Caesarean section especially when placenta overlies the old scar , increasing the risk of placenta accreta.

●The most common indication for caesarean hysterectomy is: **uncontrollable maternal hemorrhage,**

●other indication include: atony , uterine rupture , extension of transverse uterine incision & fibroids preventing uterine closure & hemostasis.

5. Pain :

●Women who undergo cesarean delivery more commonly experience pain after delivery compared with those having vaginal deliveries.

●narcotic pain medications can have a significant impact on initial bonding between the mother and the newborn and on breastfeeding success rates, as well as maternal functioning postpartum; in addition, the risk for postpartum depression may be greater.

6. Thromboembolism :

•One of the leading causes of maternal mortality related to cesarean delivery is deep vein thrombosis resulting in pulmonary embolism.

•The incidence of such complication can be reduced by adequate hydration , early embolization & administration of prophylactic heparin.

7. Paralytic ileus :

•Expected in the first few days.

• Bowel sound are absent or hypoactive and there is no passage of gas.

8.Anesthesia complication :

- Abscess / meningitis
- epidural hematoma
- Failed intubation
- High neuroaxial block
- neurologic injury
- Respiratory arrest

9.Post operative Fever :

- Short after the onset of the Anesthesia : **Malignant hyperthermia.**
- **Within 30-45 min** : Bacteremia.
- **On first day** : Atelectasis.
- **On 3rd day** : Pneumonia or UTI.
- **On 5th day** : DVT
- **On 7th day** : Wound infection.
- **On 10-15 day** : Deep abscesses.

Long Term complication and risks to future pregnancies :

1. Adhesion formation:

• resulting from cesarean delivery is common and significantly contributes to the risk of complications at future deliveries.(Ectopic pregnancy risk will increase).

●can cause significant morbidity and mortality related to bowel obstruction, infertility, or organ injury during repeat abdominal surgery.

2. Uterine Rupture:

●The incidence of uterine rupture is higher in women who undergo a trial of labor after cesarean delivery.

3. Abnormal placentation

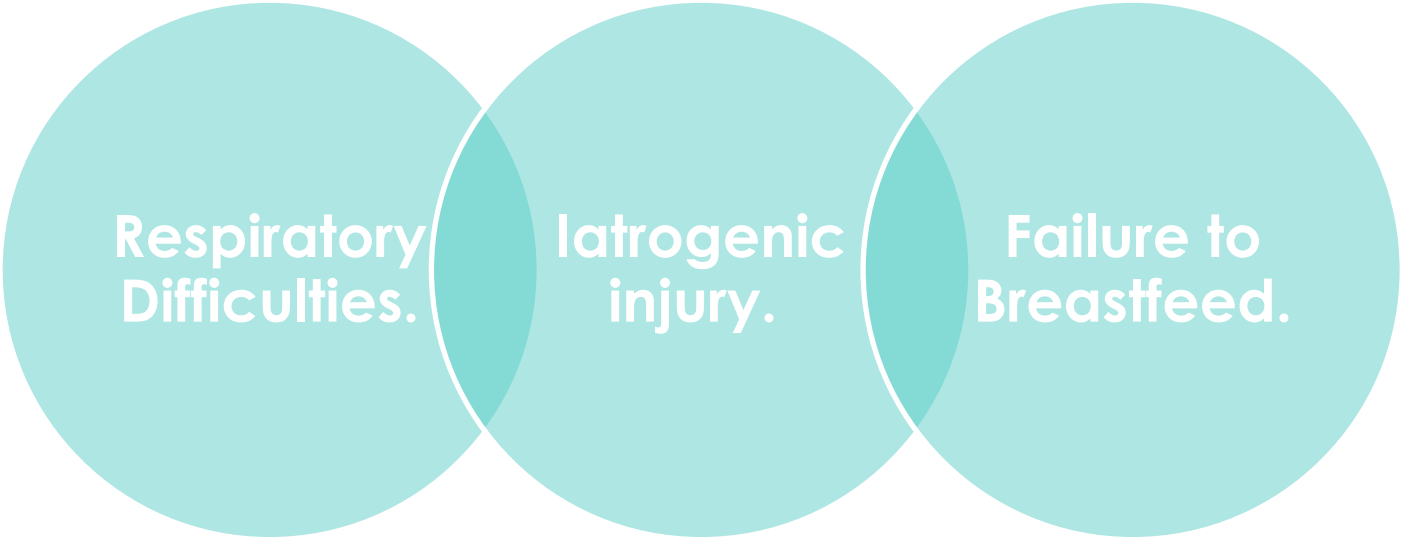
- placenta Previa ,accrete , abruptio.

4. Scar complications:

- Long-term abdominal scar complications include numbness, pain [Branches of the ilioinguinal nerve and the iliohypogastric nerve are severed by transverse abdominal incisions].

●Uterine scar complications include cesarean scar pregnancy and postmenstrual spotting (an indentation on the endometrial side of the cesarean scar).

Neonatal Complication



Pregnant Person

- Infection
- Blood loss and/or clots
- Bladder or bowel injury
- Amniotic fluid embolism
- Reaction to anesthesia

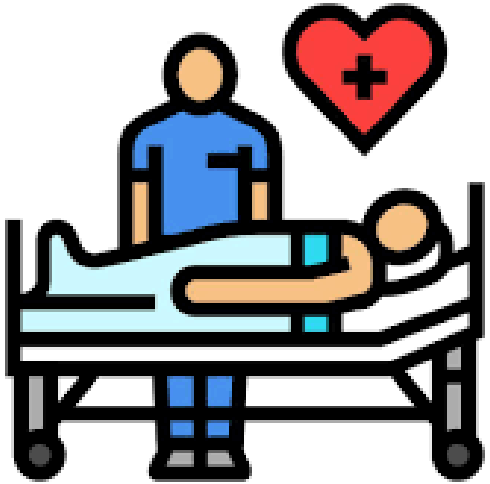
Baby

- Altered immune development
- Increased chance of developing allergies and asthma
- Reduced gut microbiome diversity

Future Pregnancies

- Need for future C-sections
- Uterine rupture
- Placenta problems
- Ectopic pregnancy
- Stillbirth
- Preterm birth

Postoperative care:



1. Maternal monitoring In the immediate postoperative period:

vital signs, uterine tone, vaginal and incisional bleeding, and urine output are monitored closely.

2. pain relieving:

analgesia followed by oral nonsteroidal anti-inflammatory drugs.

3.Bladder catheter:

Removing the catheter as soon as possible minimizes the risk of infection.

4. Diet and activity:

Early ambulation (when the effects of anesthesia have abated) and oral intake (within six hours of delivery) are encouraged

5. Breastfeeding:

can be initiated in the delivery room.

6. Wound care:

Dressings can be removed, and patients may shower within 48 hours of surgery.


Thank
You