Caesarean section

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

The **rates** vary in different countries and populations:

- the overall CS rate for nulliparous women in the UK has increased to about 24%
- for multiparous women who have not previously had a CS the rate is <5%
- for women who have had at least one previous CS the rate is increased to about 67%; most are elective.

Reducing CS rates

1-Offer external cephalic version if breech at 36 weeks

2- Facilitate continuous support during labour

3- Offer induction of labour beyond 41 weeks

4- Use a partogram with a 4-hour action line in labour

5- Involve consultant obstetricians in CS decision

6-Do fetal blood sampling before CS for abnormal cardiotograph in labour

7-Support women who choose VBAC

Some interventions to decrease morbidity from CS

- Preoperative haemoglobin check and correction of anaemia.
- Intraoperative prophylactic antibiotics given just before skin incision.
- Risk assessment and appropriate thrombo-prophylaxis (graduated stockings, hydration,early mobilization,andlow molecular weight heparin
- In-dwelling bladder catheterization during the procedure.
- Antacids and H 2 receptor analogues before surgery.
- Antiemetics as appropriate.
- Regional rather than general anaesthesia.
- General anaesthesia for emergency CS should include preoxygenation and rapid sequence induction to reduce the risk of aspiration.

Indications. The four major indications accounting for greater than 70% of operations are:1-Previous caesarean section.

2-Malpresentation (mainly breech).

3-Failure to progress in labour.

4-Suspected fetal compromise in labour.

Other indications, such as multiple pregnancy, placental abruption, placenta praevia, fetal disease and maternal disease, are less common. No list can be truly comprehensive and whatever the indication, the overriding principle is that whenever the risk to the mother and/or the fetus from vaginal delivery exceeds that from

Classifications

- ●● *Category 1*immediate,
- ‘crash CS’). *There is immediate threat to the life of* mother or fetus. Examples include

abruption, cord prolapse, scar rupture, scalp blood pH below 7.20, and prolonged fetal bradycardia.

Although a decision-to delivery interval of 30 min is a useful audit tool to help review local practice, it does not correlate directly with poor perinatal outcome.

●● *Category 2* urgent. *There is no immediate risk to the life of* mother or fetus. The delivery should be completed within 60–75 min. Delivery should be expedited in a timely manner but individual assessment remains critical.

Examples include those with

deteriorating CTG and a borderline scalp pH (especially in the early active phase of labour) or with slow progress in labour and poor maternal pain control.

●● *Category 3scheduled). Requires early delivery but with no current* maternal or fetal compromise.

This group has a wide range of indications, including

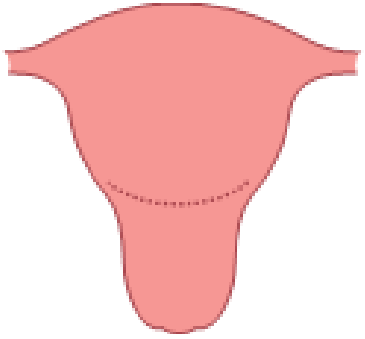
planned CS with Ruptured membranes at term, not contracting or a growth-restricted fetus in the preterm period with abnormal venous Doppler but a normal FHR tracing.

●● *Category 4 elective. The delivery is timed to suit the mother* and maternity staff. This replaces the term 'elective CS' and should normally be delayed until 39 weeks to minimize the incidence of transient tachypnoea of the newborn.

TYPES OF OPERATIONS:

- Lower segment
- Classical or upper segment.

Lower Segment Cesarean Section (LSCS): In this operation, the extraction of the baby is done through an incision made in the lower segment. It is the only method practiced in present obstetrics and unless specified, cesarean section means lower segment operation.



The commonest CS procedure uses a transverse incision in the lower uterine segment (LUS). The abdomen is usually opened with a Pfannenstiel (transverse suprapubic) incision. The Joel-Cohen technique involves blunt digital stretching and separation of tissues using the natural tissue planes, with minimal sharp dissection and non-closure of both peritoneal layers. This has advantages over

Pfannenstiel and traditional (lower vertical incision) techniques with improved short-term outcomes including shorter operating time, reduction in estimated blood loss and less pyrexia.

A vertical skin incision is indicated in cases of

1-extreme maternal obesity,

2-suspicion of other intra-abdominal pathology necessitating surgical intervention

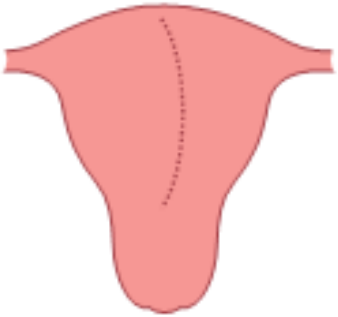
3- where access to the uterine fundus may be required (classical caesarean section).

The lower midline incision is made from the lower border of the umbilicus to the symphysis pubis, and may be extended caudally toward the xiphisternum.

Uterine incision

A lower uterine segment transverse incision is used in over 95% of caesarean deliveries due to ease of repair, reduced blood loss and low incidence of dehiscence or rupture in subsequent pregnancies .**The loose** reflection of vesicouterine serosa overlying the uterus is incised and divided laterally, the underlying lower uterine segment is reflected with blunt dissection, the developed bladder flap is retracted and the lower uterine segment is opened in a transverse plane for a distance of 1–2 cm; the incision is extended laterally to allow delivery of the fetus without extension into the broad ligament or uterine vessels.

Classical: In this operation, the baby is extracted through an incision made in the upper segment of the uterus.



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There are relatively few absolute indications for classical caesarean section .These include

1- a lower uterine segment obscured by fibroids or a lower segment covered with dense adhesions, both of which may make entry difficult.

2- placenta praevia,

3-transverse lie with the back down,

4-fetal abnormality (e.g. conjoined twins)

5-caesarean section in the presence of a carcinoma of the cervix (so as to avoid damage to the cervix and its vascular and lymphatic supply). C-

6-perimortum CS:

It is extremely emergency procedure it is done to women who have cardiac arrest. The baby may survive if delivery is done within 10 minutes of the maternal death

	Lower segment	*Classical*
Techniques	Technically slight difficult Blood loss is less The wall is thin and as such apposition is perfect Perfect peritonization is possible Technical difficulty in placenta previa or transverse lie	Technically easy Blood loss is more The wall is thick and apposition of the margins is not perfect Not possible Comparatively safer in such circumstances
Post-operative	Hemorrhage and shock—less Peritonitis is less even in infected uterus because of perfect peritonization and if occurs, localized to pelvis Peritoneal adhesions and intestinal obstruction are less Convalescence is better Morbidity and Mortality are much lower	More Chance of peritonitis is more in presence of uterine sepsis More because of imperfect peritonization Relatively poor Morbidity and Mortality are high
During future pregnancy	Scar rupture —is less 0.5 – 1.5%	More risk of scar rupture 4 – 9%

Procedure:

Pre-operative preparations:

1.Informed written permission for the procedure, anesthesia and blood transfusion is obtained.

2.Bladder should be emptied by a Foley catheter which is kept in place in the perioperative period.

3. FH sound should be auscultated prior to the operation.

4.Neonatologist should be made available.

5. Cross matched blood should be available.

Anesthesia: may be spinal, epidural or general.

Position: A left lateral tilt minimizes compression of the maternal inferior vena cava and reduces the

Incidence of hypotension (with its consequent

reductions in placental perfusion).

Surgical techniques

- Wear double gloves for CS for women who are HIV-positive
- Use a transverse lower abdominal incision (Joel Cohen incision) less postoperative pain and an improved cosmetic effect
- subsequent tissue layers are opened bluntly and if necessary extended with scissors and not a knife because it is associated with shorter operating times and reduced postoperative febrile morbidity.
- Use blunt extension of the uterine incision because it reduces blood loss, incidence of postpartum haemorrhage and the need for transfusion at CS
- Give oxytocin (5 IU) by slow intravenous injection
- Use controlled cord traction for removal of the placenta
- Close the uterine incision with two suture layers

- In midline incision, mass closure with slowly absorbable continuous sutures are used because this results in fewer incisional hernias and dehiscence.
- Check umbilical artery pH if CS performed for fetal compromise
- Consider women‟s preferences for birth (such as music playing in theatre)
- Facilitate early skin-to-skin contact for mother and baby

Complications associated with caesarean section

Morbidity and mortality associated with CS cannot be totally avoided.

Intraoperative complications occur in 12–15% of women and include:

- Uterine or uterocervical lacerations

Anesthetic complications in case of GA the main risk is related to may be due to atelactesis or to aspiration of the gastric contents which lead to aspiration pneumonia (Mendelson syndrome).

- Blood loss >1L
- Bladder laceration
- Blood transfusion
- Hysterectomy .
- Bowel lacerations
- Ureteral injury

Caesarean hysterectomy

The most common indication for caesarean hysterectomy is uncontrollable maternal haemorrhage;

The most important risk factor for emergency postpartum hysterectomy is a previous caesarean section – especially when the placenta overlies the old scar, increasing the risks of placenta accreta',Other indications for hysterectomy are atony, uterine rupture, extension of a transverse uterine incision and fibroids preventing uterine closure and haemostasis.

Postoperative complications

Postoperative complications occur in up to 1/3 of women and include:

- Endometritis .
- Wound infections .
- Pulmonary atelectasis.
- Venous thromboembolism.
- Urinary tract infections.

Ogilvie's sydrome (pseudo-colonic obstruction) is a rare complication following CS and presents with signs of intestinal obstruction (increasing pain and marked distension).A high index of clinical suspicion is required as vomiting is not a prominent feature. An urgent surgical opinion should be sought if abdominal X-ray confirms significant caecal dilatation. Caecal perforation is more likely with diameters over 10 cm and carries a mortality of 30–72%.

Vesico-vaginal or uretero-vaginal fistulae are extremely rare.

Maternal mortality with CS is estimated to be less than 0.33 per 1000 and is usually related to the reason the CS was done, major haemorrhage or more rarely anaesthetic complications

Long-term effects of CS

In subsequent pregnancies there is a higher risk of:

- Uterine rupture (1:200 with spontaneous labour).
- Placenta praevia .
- Placenta accreta.
- Antepartum stillbirth: risk doubles with a previous CS.

Women undergoing multiple CS (≥ 3) are at higher risk of:

- Excessive blood loss
- Difficult delivery of the neonate .
- Dense adhesions .
- The risk of any major complication is higher .

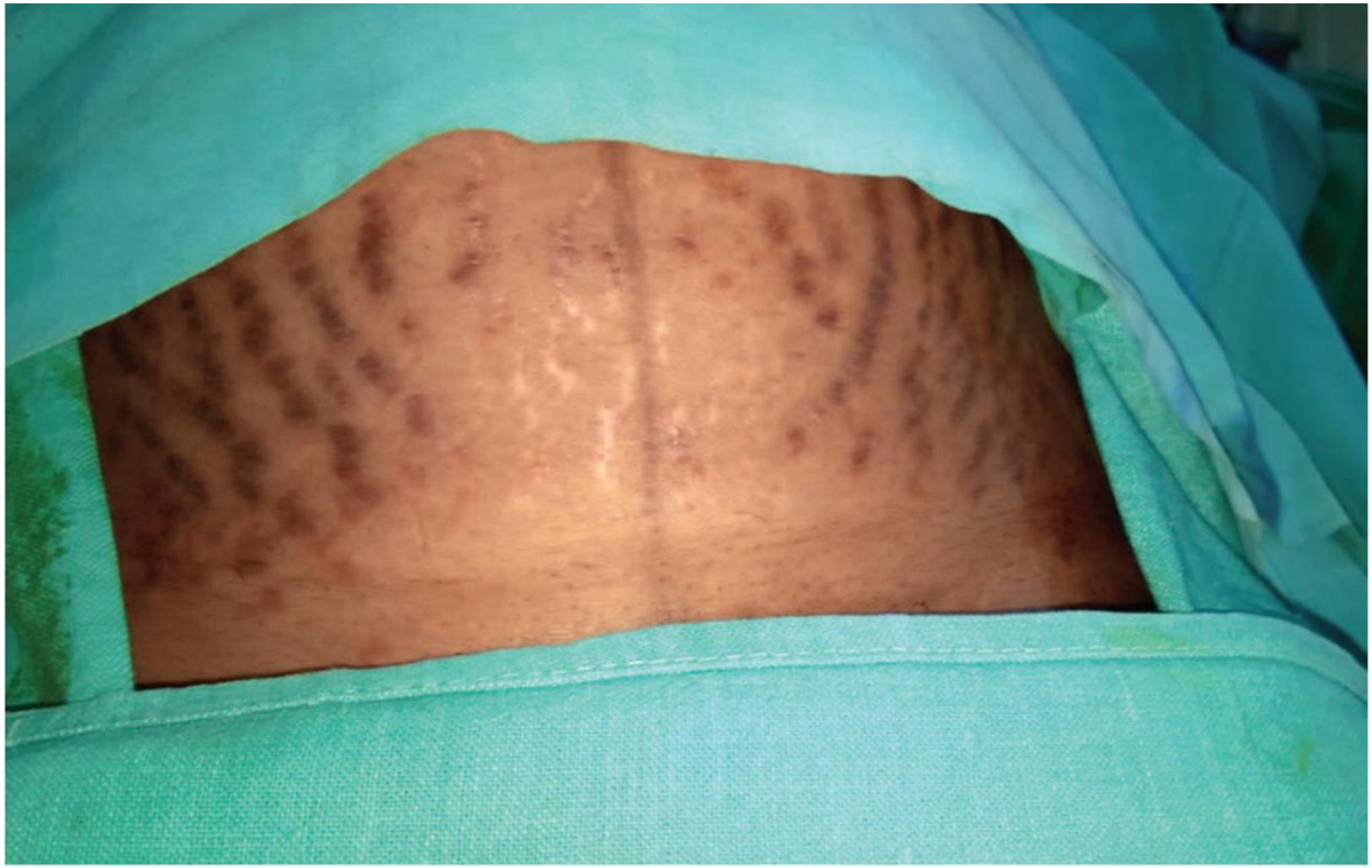

Fig. 7.16: Abdomen is painted with povidone iodine solution and is draped with sterile towels. Only the area of operation is exposed.

Fig. 7.17: Abdomen is opened by modified Pfannenstiel incision. Loose peritoneum of the uterovesical pouch is being stretched out and shown. It is incised transversely.

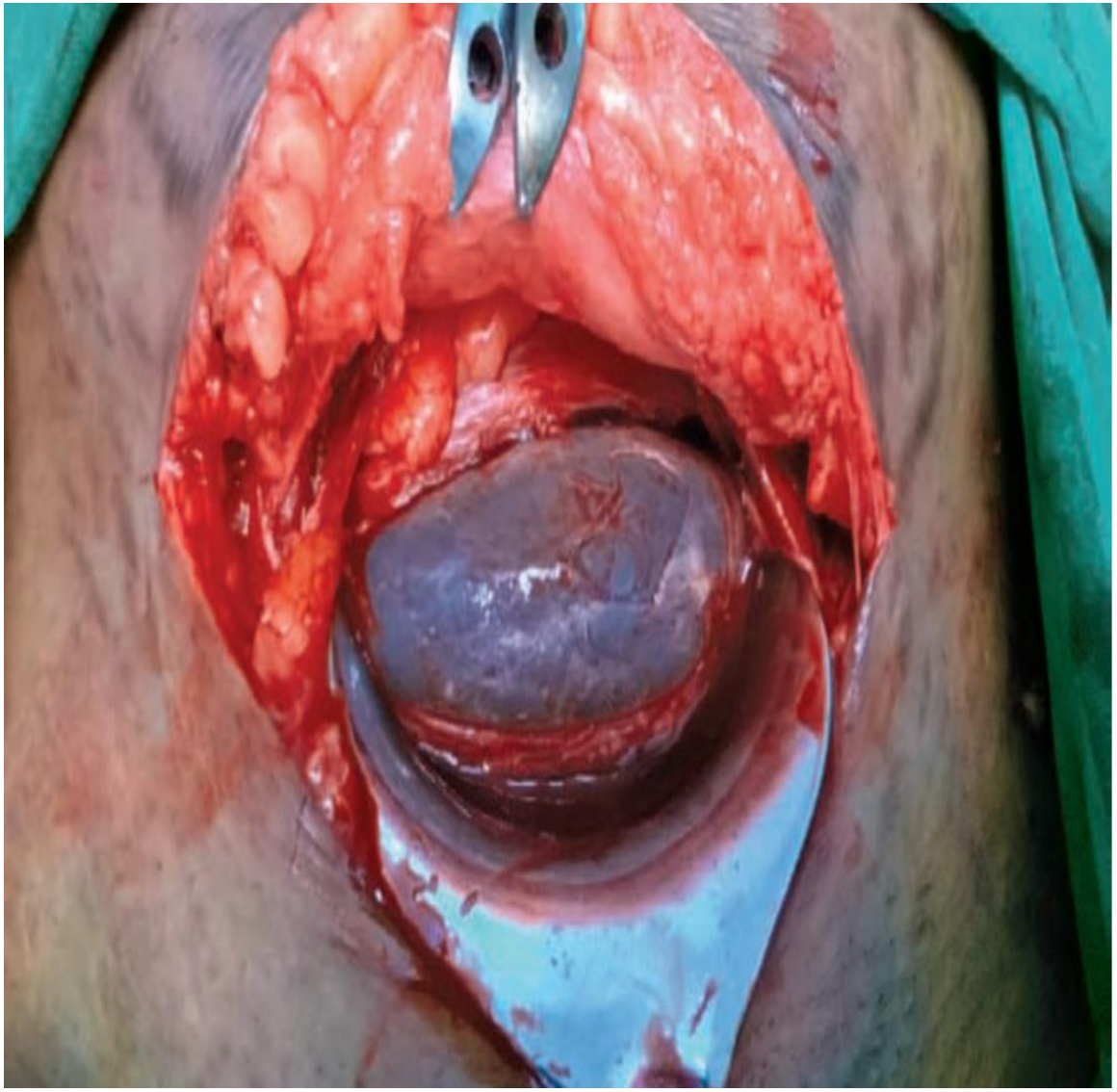

Fig. 7.18: Uterine Muscle incision (low transverse) has been made in this lower segment of the uterus (LSCS). The amniotic membrane is seen to bulge out with the pressure of amniotic fluid. This amniotic membrane needs to be ruptured to deliver the baby. Doyen's retractor is seen in place.

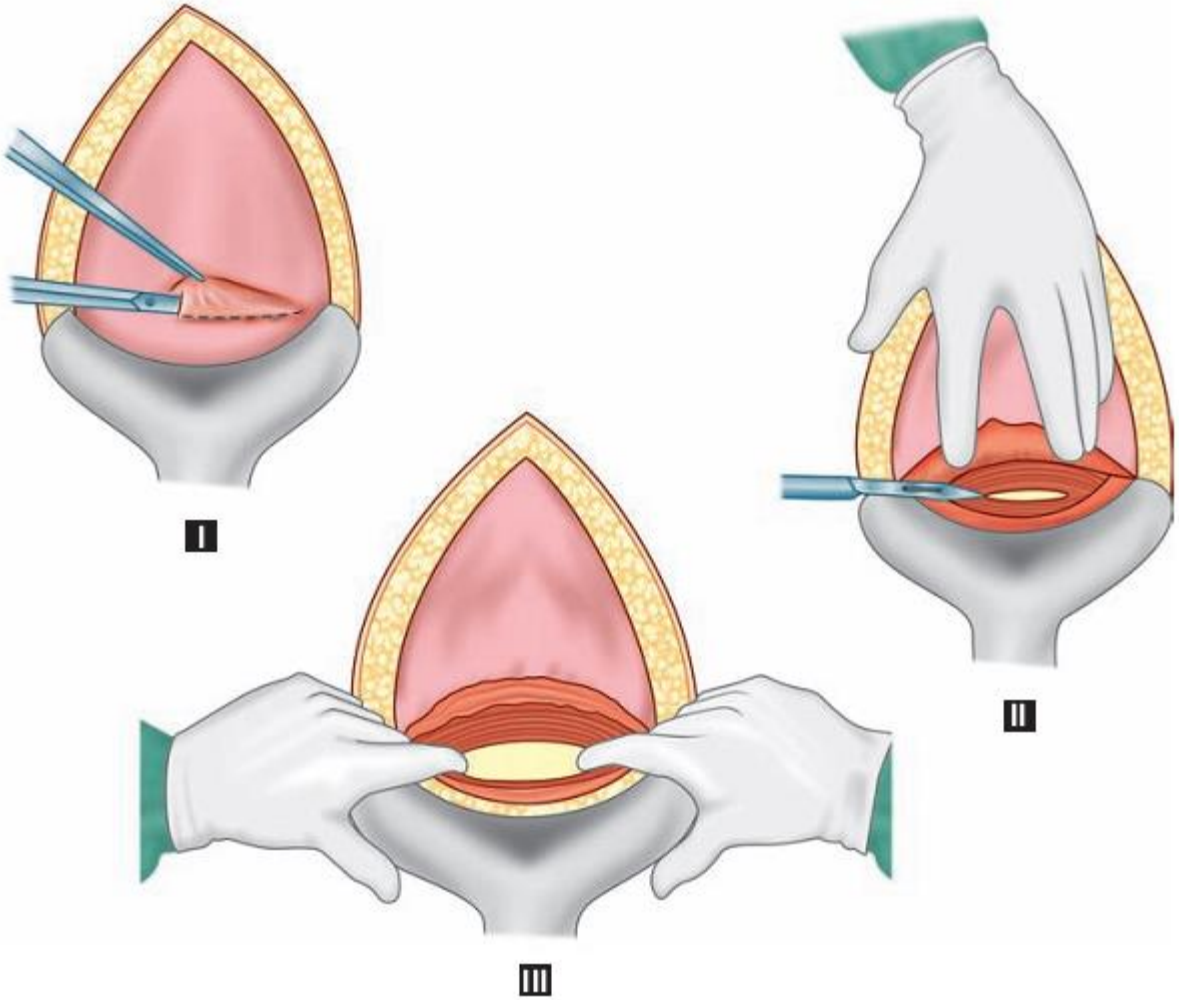
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Fig. 7.19: Delivery of the head.
The amniotic fluid is sucked out following rupture of the membranes. Doyen's retractor is removed. The head is delivered slowly with the fingers of the right hand, insinuated between the head and the lower uterine flap. Assistant applies some pressure on the fundus at this time.

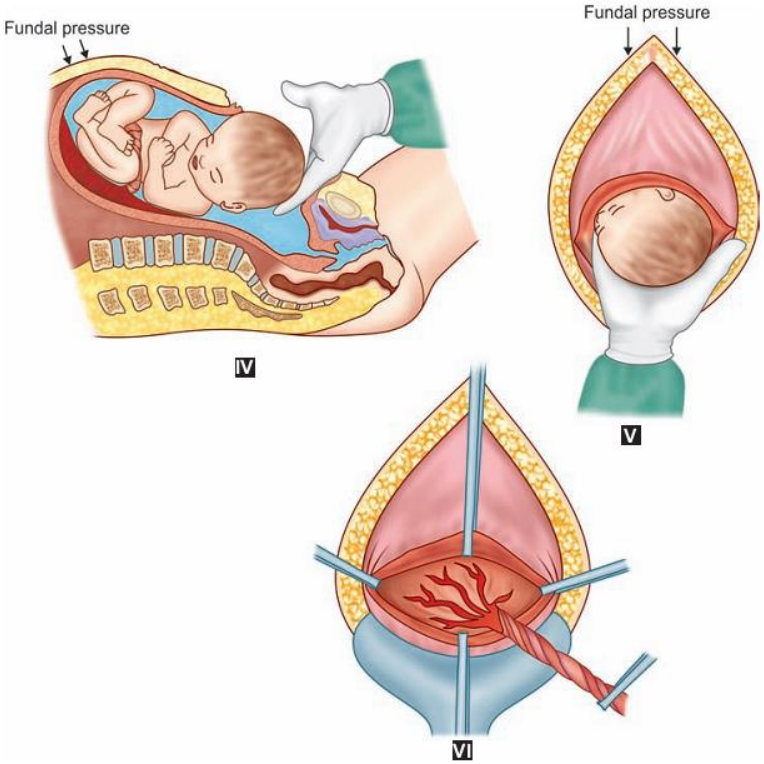


Fig. 7.20: Delivery of the baby is on progress. It is to be done slowly. The head is delivered by elevation and flexion using the fingers to act as a fulcrum. Note that Doyen's retractor has been taken out.

Fig. 7.21: Delivery of the head in cesarean section. Suctioning of the mouth, pharynx, is being done gently before delivery of the trunk

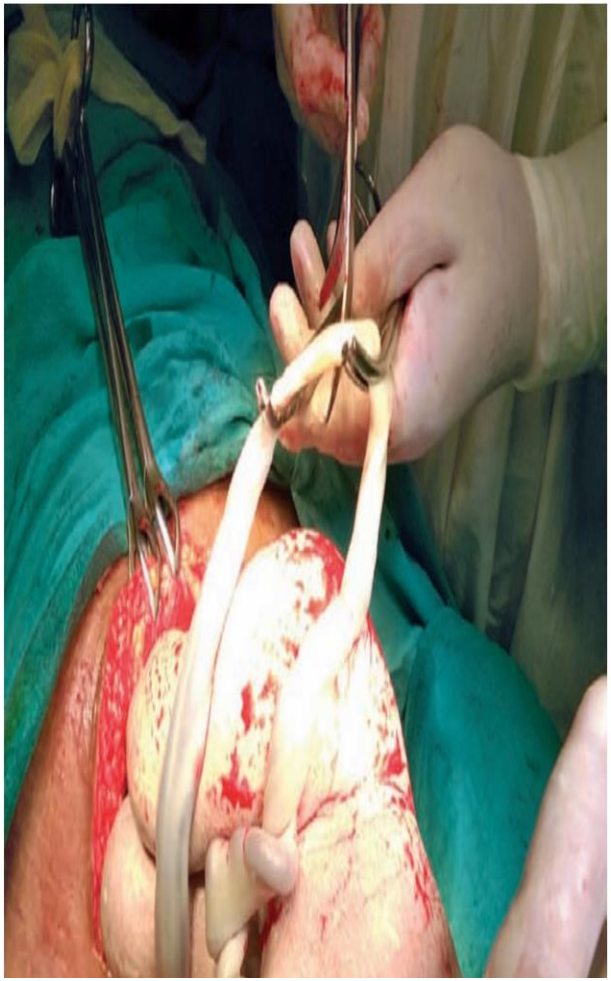


Fig. 7.22: Baby is delivered slowly. The cord is clamped and cut in between (See details of steps in the CD incorporated). Baby is handed over to the neonatologist for immediate care of the new born

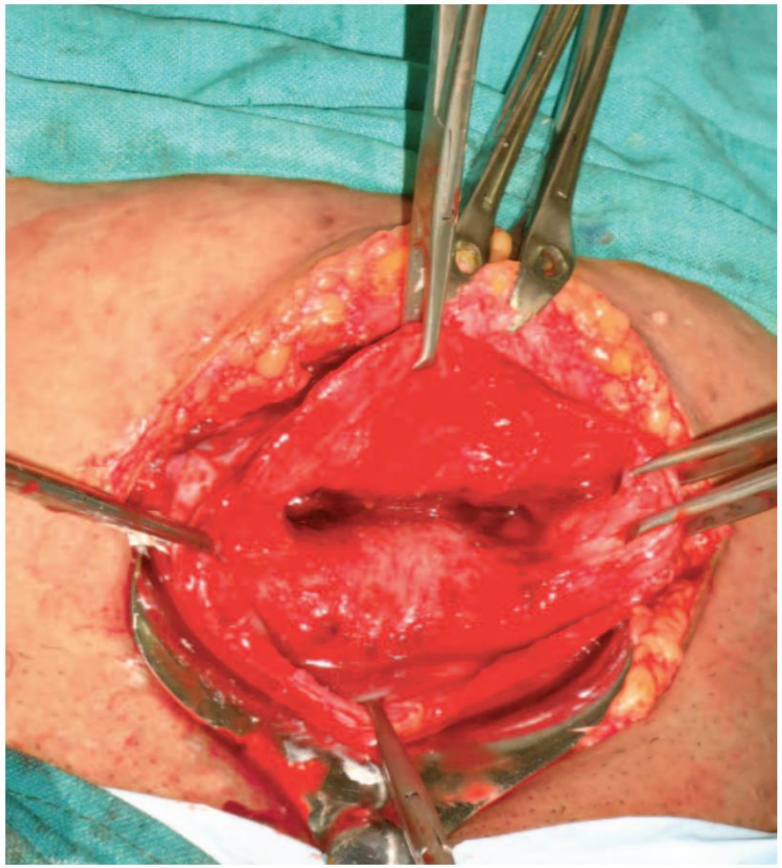
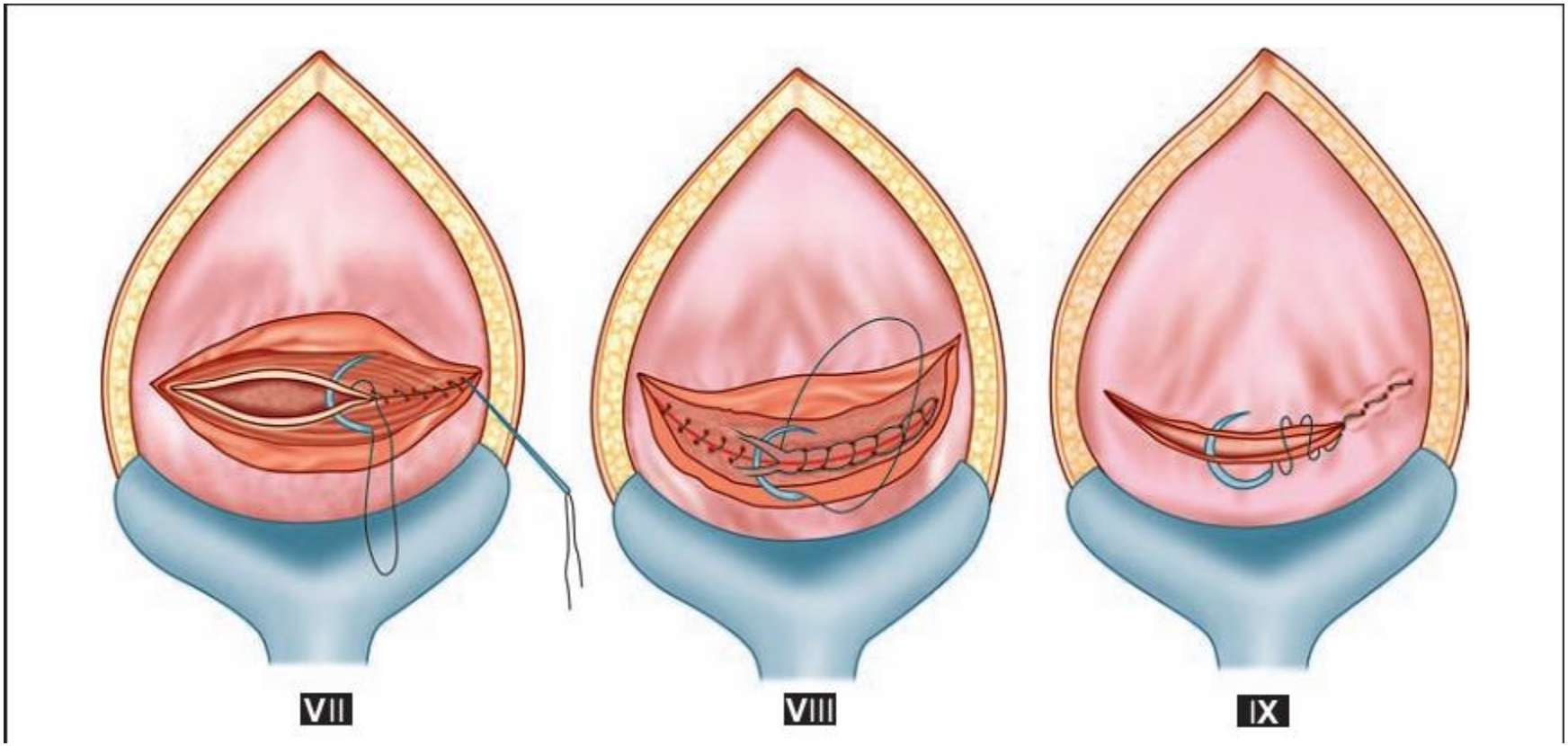


Fig. 7.24: The uterine wound is seen following delivery. Usually four Allis's tissue forceps (Green Armytage forceps) are used to hold the incision margins, two (one each) on the angles of incision. Another two (one each) on the upper and lower uterine flap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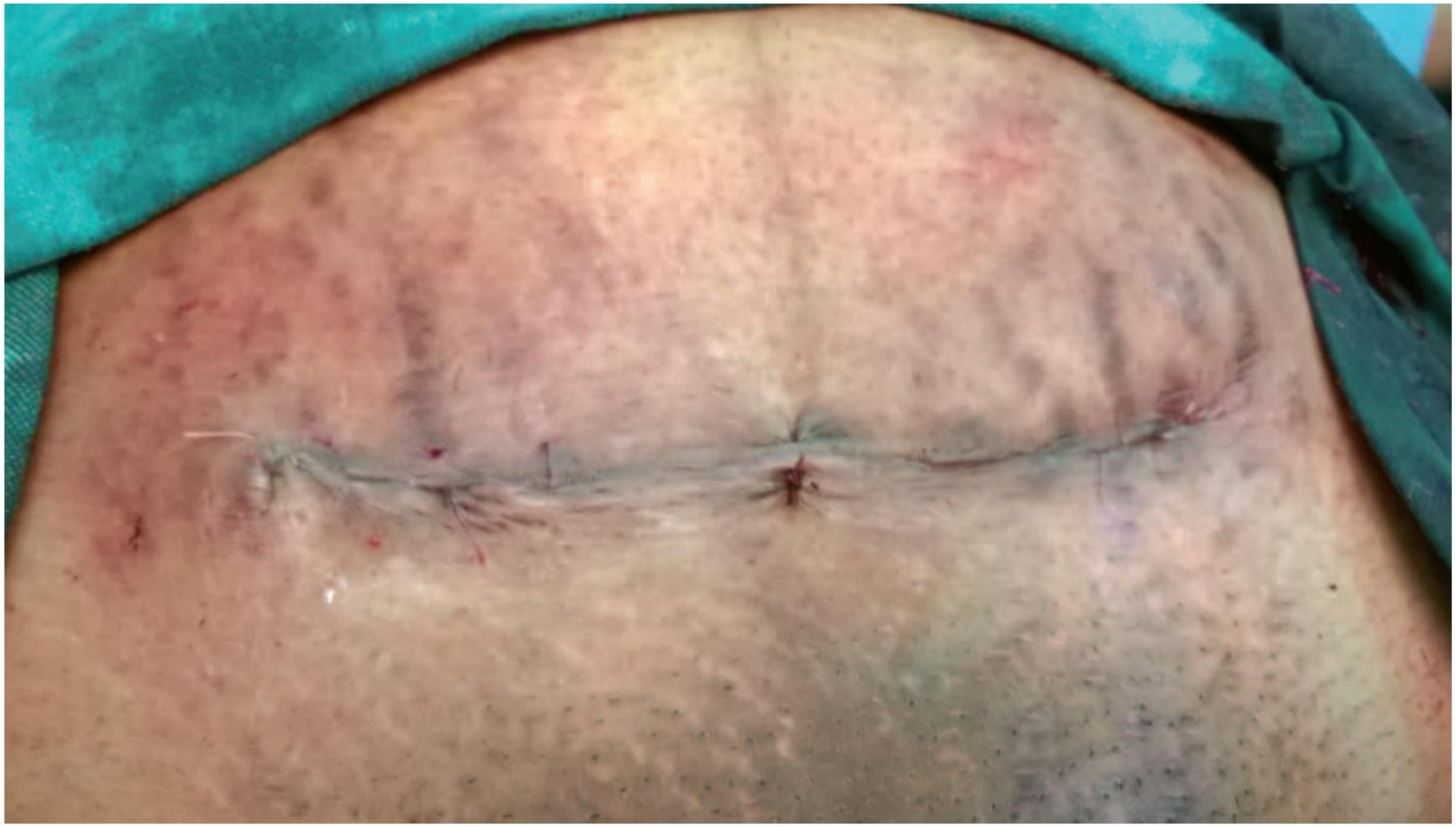

Fig. 7.26: Closure of the abdomen.
The mops are removed and the number verified. Peritoneal toileting is done. Doyen's retractor is removed. The abdomen is closed in layers. The vagina is cleaned of blood and blood clots. A sterile vulval pad is placed.

What is the recommended schedule of antenatal care for pregnant women with previous caesarean delivery?

Implementation of a vaginal birth after previous caesarean delivery (VBAC) versus elective repeat caesarean section (ERCS) checklist or clinical care pathway is recommended to facilitate best practice in antenatal counselling, shared decision making and documentation.

Suitability for planned VBAC

Which women are best suited to have a planned VBAC?

Planned VBAC is appropriate for and may be offered to the majority of women with a **singleton pregnancy of cephalic presentation at 37+0 weeks or beyond who have had a single previous lower segment caesarean delivery, with or without a history of previous vaginal birth.**

successful planned VBAC are 72–76%.

What are the contraindications to VBAC?

- previous classical caesarean section
- women with a prior inverted T or J incision
- women with prior low vertical incision
- previous uterine
- three or more previous caesarean deliveries