

## Changes to obstetric handbook 27/Feb/2023.

Shown here in blue with some of the surrounding unchanged writing from the book in black

### Page 38

Expectant management of the third stage of labour if uterotonic drugs are not available

7) The woman should be instructed to inform the midwifery staff if she experiences any vaginal bleeding that is heavier than previously present.

8) Examine the placenta for completeness.

### Page 114 Invasive placenta

#### Treatment for abnormally invasive placenta in low resource settings

If at the time of an elective repeat CS, where it is immediately apparent that placenta accreta is present on opening the abdomen, and where both mother and baby are stable, CS should be delayed until the appropriate staff and resources have been assembled and adequate blood products are available. This may involve closure of the maternal abdomen and urgent transfer to a specialist unit for delivery or the arrival of an obstetrician that is sufficiently skilled to safely perform an obstetric hysterectomy.

If the fetus has already been accessed and delivered through the uterine incision but accreta prevents safe placental removal and, where an obstetrician who is sufficiently skilled to undertake obstetric hysterectomy is not immediately available, then in a low resource setting the safest option would be temporary conservative management with clamping of the cord close to the placenta, closure of the uterus and abdomen, intravenous antibiotics, and obstetric hysterectomy performed 3-4 days later.

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Section A+10 Abnormally invasive placenta

Treatment for placenta accreta in well-resourced settings only

Placenta accreta will usually be diagnosed antenatally and the relevant obstetric staff assembled along with adequate blood products for a planned elective obstetric hysterectomy.

Very rarely conservative management may be attempted to try and avoid hysterectomy.  
Couvellaire uterus

### Page 136 Cervical tears

Other causes include:

1. Wrong application of forceps or a vacuum cup by an inexperienced operator
2. Use of the vacuum cup or forceps when the cervix is not fully dilated
3. Dangerous application of fundal pressure during labour (mostly undertaken at home or in clinics by untrained staff)

### Page 137

#### Management

If the mother is bleeding heavily from a cervical tear, call for help, including a nurse anaesthetist. It may be best whilst resuscitating with blood transfusion initially to manually pack the tear with a large sterile gauze pack as used during Caesarean section or sterile vaginal pack. Attach an artery forceps to the pack and let it remain just outside the introitus. Then repair when the mother is stable and most of the bleeding has stopped, unless there is

heavy ongoing blood loss despite compression, in which case repair needs to be undertaken urgently while resuscitation continues.

### **Repair**

1. Gently grasp the cervix with ring or sponge forceps. Apply a ring forceps at 12 o'clock and a second forceps at 3 o'clock and check the cervix between the two forceps. Then remove the 12 o'clock forceps and place it at 6 o'clock and again check for any tears. In this same manner check the whole circumference of the cervix by moving each ring forceps (see video in E Library). Tears are most common at 12 o'clock and 3 o'clock and 9 o'clock. There may be several tears.

### **Page 174**

Fetal movements are one of the main indicators of fetal wellbeing. A healthy fetus in the third trimester will be having cycles of alternating sleep and wakefulness, each episode lasting around 15-45 minutes. While asleep, the fetus makes few movements. While awake, however, the fetus should be very active.

Reduced or absent fetal movements is a warning that the fetus may be distressed. This is similar to the situation with a neonate or child: if an infant is quiet and immobile, it suggests that they may be unwell.

Pregnant women in the third trimester should be advised to count the fetal movements which they feel. There should be at least 10 individual movements felt in 12 hours. When a series of movements is felt, then each movement should be counted. If fewer than 10 movements are felt, then advice should be sought.

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7. Delivery should ideally be complete by 5 minutes after the breech reaches and distends the perineum
8. If extended legs are present encourage maternal pushing until popliteal fossae are visible. Then deliver each leg, by applying pressure in the popliteal fossa to flex the leg at the knee joint. Then slightly abduct the hip to deliver the leg. Repeat on the other side.
9. Do not handle the breech until delivered as far as the umbilicus but if there is no descent with maternal pushing apply gentle groin traction. This may cause the arms to extend and require attention.

### **Page 223**

Elective Caesarean section for breech

1. if vaginal birth is contraindicated
2. footling breech before the cervix is fully dilated

### **Page 226**

If the patient goes into premature labour, give prophylactic antibiotics: IV ampicillin or IV benzyl penicillin and discontinue antibiotics immediately after delivery if there are no signs of infection in the mother. Never try and stop contractions by using a tocolytic drug.

WHO has recently considered its guidelines for low resource settings on the use of corticosteroids to reduce the risk of neonatal respiratory failure after preterm birth. Please see the latest advice published recently following a randomised controlled trial as an additional page at the end of this chapter.

### **Extra page after page 228**

**New guideline for antenatal corticosteroids in the prevention of neonatal death or stillbirths in women at risk of preterm birth**

### **Reason for updated guideline**

A recent randomised controlled trial commissioned by WHO has led to the probability that the use of dexamethasone for treating women at risk of preterm birth does not, in low resource countries, increase the prevalence of maternal infection, contradicting concerns from earlier studies.

This recent evidence also confirms that antenatal dexamethasone significantly reduces the risks of neonatal death and stillbirth with no increased risk of chorioamnionitis or endometritis (New England J Med 2020; 383:2514-25 Antenatal Dexamethasone for Early Preterm Birth in Low-Resource Countries The WHO ACTION Trials Collaborators)

### **Criteria for women to receive dexamethasone in Liberia**

Maternal dexamethasone should now be given to women at gestational ages between 28 weeks +0 days and 35 weeks +6 days who are in suspected, diagnosed or established preterm labour. These can be patients who are having a planned preterm birth or an expected preterm birth within the next 48 hours or have PPROM and are expected to deliver within the next 48 hours.

Gestational age should be determined from the earliest USS recorded antenatally or an USS performed on admission.

### **Contraindications**

DO NOT GIVE DEXAMETHASONE if there are any one or more of the following:

1. Existing or recent (within the previous 2 weeks) use of systemic glucocorticoids for any illness.
2. Clinical signs of infection that is oral temperature >37.5°C, suspected chorioamnionitis, tender uterus, foul smelling amniotic fluid and presumed or proven infection for which antibiotics are being taken as treatment rather than as preventive therapy
3. Signs of shock – persistent tachycardia (>100beats/min), hypotension (systolic blood pressure <90mmHg), increased respiratory rate (>25 breaths/min), confusion, oliguria (<30ml/hour)
4. Major fetal anomalies
5. Contra-indication to glucocorticoid steroids.
6. Immunosuppressed state for example due to HIV infection or malnutrition.

### **Dose to be given**

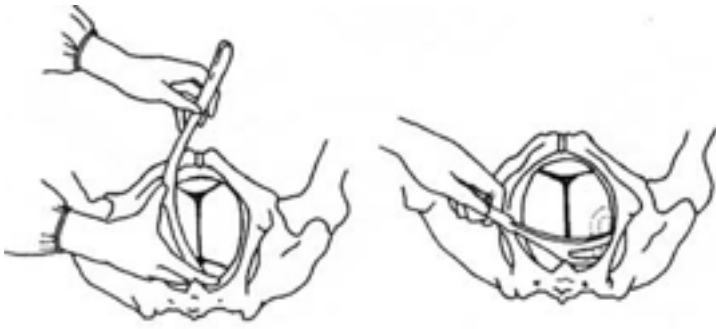
Dexamethasone 12mg IM by injection 12 hourly for a total of 2 doses. However, if infection is detected before the course has been completed, discontinue the dexamethasone.

**NB Do not give tocolytics to women who have PPROM and always communicate with neonatal staff before delivery occurs.**

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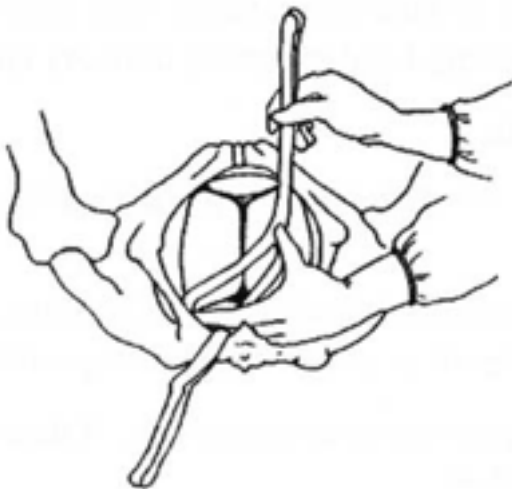
9. Wearing sterile gloves, insert two fingers of the right hand into the vagina on the side of the fetal head. Slide the left blade gently between the head and fingers to rest on the side of the head (see Figure E4.2).

Figure E4.2 Applying the left blade of the forceps.



10. Repeat the same manoeuvre on the other side, using the left hand and the right blade of the forceps (see Figure E4.3).
11. Depress the handles and lock the forceps (Figure E4.1).
12. Difficulty in locking usually indicates that the application is incorrect. In this case, remove the blades and recheck the position of the head. Reapply only if the head is in the appropriate position for the use of forceps.

Figure E4.3 Applying the right blade of the forceps (the left blade is already in place).



13. After locking, check that the sagittal suture lies vertically in the midline between the shanks of the forceps. [Ease the pressure off the handles creating the lock between contractions to reduce possibility of damage to the fetal head.](#)

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### Caesarean section including post-operative care

#### Indications

1. Placenta praevia
2. Abruption with continued severe bleeding or fetal distress
3. Uterine rupture
4. Fetal distress
5. Obstructed labour
6. Prolapsed cord if the fetus is still alive and cannot soon be delivered
7. Mal-presentations/malpositions, for example transverse lie [but not all malpositions need CS: some cases of OT/OP/face with chin anterior can be delivered vaginally.](#)
8. Two or more previous CS

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15. Ensure sterile procedure: iodine or chlorhexidine solution and sterile drapes etc.
16. Start 72-hour course of IV antibiotic just before skin incision.

17. Pre-load IV infusion immediately before surgery if spinal anaesthetic, and ensure lateral left tilt with wedge or pillow
18. Ensure trained midwife, or ideally neonatal clinician, is present in case neonatal resuscitation is needed. This is especially important for fetal distress, thick meconium or preterm delivery.
19. Ensure emergency anaesthetic drugs and equipment are present and working.
20. Is the indication for CS still valid?
21. Minimise risk of gastric content aspiration. This is a particular risk with Caesareans under GA. For elective Caesareans, nil by mouth for 4-6 hours, plus an antacid such as 30 mL of 0.3% sodium citrate (preferably non-particulate) or 300 mg of magnesium trisilicate. Antacids reduce the stomach acid, thereby minimising damage to the lungs if aspiration occurs.

#### **Additional measures**

If pubic hair could interfere with incision, shave immediately before disinfection of skin. Have a whiteboard in the operating theatre on which to record swab, needle and instrument counts.

The following should be documented to aid clear communication between healthcare professionals:

CATEGORY 1: immediate threat to the life of the woman or fetus ([fetal distress](#)).

Page 474 to 475

#### ***Opening the abdomen***

Abdominal and uterine scars are two separate issues. Classical section is a vertical uterine scar, [sometimes](#) but not always associated with a vertical [skin](#) scar. A vertical abdominal [skin](#) scar may be present with either a classical or lower segment uterine scar.

#### ***Skin incision***

There are 3 possible skin incisions allowing entry into the abdomen namely the Joel-Cohen incision, the Pfannenstiel incision and the midline vertical incision.

A low transverse skin incision is associated with less postoperative pain, is cosmetically more appealing, and has a low risk of wound dehiscence compared with a midline incision. A minimum length of 15 cm is required (which accommodates an open Allis forceps). Excision of the previous scar may improve healing and cosmetic results, especially if there is keloid scarring.

**The Joel-Cohen incision** is straight, 3 cm below the line that joins the anterior superior iliac spines (see Figure E5.1).

The subcutaneous tissues and fascia are only opened in the middle 3 cm with a scalpel and extended laterally with blunt finger dissection. Blunt finger dissection is then used to separate the rectus muscles vertically and then open the peritoneum.

However, compared with Pfannenstiel-based CS (see below), the Joel-Cohen-based procedure has been shown to be associated with a reduction in blood loss, operating time, time to oral intake, fever, duration of post-operative pain, analgesic injections, and time from skin incision to birth of the baby.

The Pfannenstiel incision This is a curved incision 15 cm long, approximately 3 cm above the pubic symphysis.

The skin and rectus sheath are opened transversely using sharp dissection. The rectus muscles are not cut and the fascia is dissected along the rectus muscles using sharp dissection. The peritoneum can be opened by blunt dissection if it is a first CS.

Assess whether or not exposure is adequate. Adhesions should be identified and the uterus should be checked for rotation and corrected prior to delivery. The uterus usually rotates to the right side (dextro-rotation).

The lower uterine segment (LUS) should then be assessed for adequacy to allow incision and delivery. The visceral peritoneum that covers the LUS should be opened and separated digitally from the LUS. A V-shaped depression should be identified in the midline with fixed peritoneum above and loose peritoneum below. This should be lifted and incised taking care not to cut the bladder.

The bladder is then displaced inferiorly using a Doyen's retractor. Push down the bladder with fingers.

Dextro-rotation of the uterus should be corrected to ensure that a symmetrical incision is made. The operator should check that the presenting part is in the pelvis and should have a plan for delivery of the fetus.

### **Opening the transverse lower segment uterine incision**

Using a scalpel, a 3cm transverse incision is made 1–2 cm below the upper margin of LUS. A lower segment transverse incision is used because entry into the uterus is easier and there is a lower incidence of uterine rupture with subsequent pregnancies. It is important to make the uterine incision large enough to deliver the head and body of the baby without tearing the incision. Widen the incision by placing a finger at each edge and gently pulling upwards and laterally at the same time.

### **Pages 476 to 477**

Attempts should be made to complete the LUS incision without rupturing the membranes. At CS, the risk of fetal laceration may be 2%. This can be avoided if the membranes are left intact. Care should be taken with rupture of membranes occurring prior to the CS and when there is a known occipito–posterior position (the face immediately below uterotomy).

If the lower uterine segment is thick and narrow, extend the incision in a crescent shape, using scissors instead of fingers to avoid extension into the uterine vessels. If the LUS is well formed, blunt rather than sharp extension of the uterine incision should be used as it reduces blood loss, incidence of postpartum haemorrhage and the need for transfusion at CS. The fingers should be placed in a position that encourages outwards and upwards extension. Care should be taken to avoid downward tearing, particularly during Caesarean sections that are conducted during the second stage of labour. There are risks of tearing into the vagina, bladder base and broad ligament. If further wound extension is required, a J incision is preferable to an inverted T incision to avoid blood vessels and enable adequate access.

Do not close the visceral peritoneum as this hitches the bladder higher on the lower segment.

There is no necessity to close the parietal peritoneum.

**A sub-umbilical midline vertical procedure** should be considered if access to the upper

uterus is required, or problems were encountered with a transverse incision during a previous C/S. Entry to the peritoneal cavity should be undertaken with care.

### Indications for Classical Caesarean uterine incisions:

A classical uterine procedure is indicated if any of the following are present:

- An inaccessible lower segment due to dense adhesions from previous Caesarean section
- Transverse fetal lie, with the fetal back down for which a lower uterine segment incision cannot be safely performed, especially if membranes are already ruptured.
- Fetal malformations (e.g. conjoined twins)
- Large lower segment fibroid
- Placenta praevia with large vessels in the LUS
- Placenta praevia complicated by placenta accreta
- Carcinoma of the cervix
- Planned hysterectomy at CS
- Preterm delivery with poorly formed lower segment

**A low midline vertical incision (De Lee)** can be useful if the lower uterine segment is poorly formed/ inadequate or thick wherein a transverse incision would be difficult and unwise (for example in extreme prematurity).

**J-extension of the low-transverse uterine incision.** When additional exposure to the uterine cavity is required to deliver the fetus, the low-transverse incision can be extended laterally and cephalad (upwards) to increase the length of the incision without endangering the uterine arteries.



Low transverse

Low vertical De Lee

Classical

Inverted T

J extension of low transverse

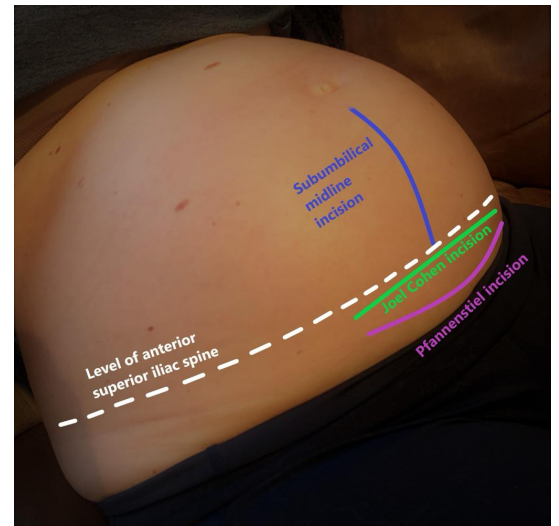
**Women with classical or low midline vertical incisions should be offered elective CS in future at 37 completed weeks of gestation (i.e. at 37 weeks).**

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#### General measures during CS

Handle tissues gently, eradicate dead spaces, retract tissues with instruments, reposition suture needles with forceps and ideally remove needles before tying sutures.

Figure E5.1 Positions of transverse and lower midline skin incisions for Caesarean section



In the following circumstances, **delivery of the head** can be difficult:

- Caesarean section in the second stage of labour following failed forceps/ventouse **or shoulder dystocia with fetal distress when the head is very low**
- occiput-posterior position
- after-coming head of baby with breech presentation
- transverse lie
- prematurity and oligo-hydramnios, where the lower segment is poorly formed and thick
- Before opening the uterus, a transverse lie should be converted to cephalic or breech presentation by pushing the baby gently, encouraging a 'forward roll' in utero. If the uterus is opened on a transverse lie, an arm may present, making it very difficult to deliver the baby.

*Manoeuvres that may help include the following:*

- If the baby's head is deep down in the pelvis or vagina, ask an assistant (wearing sterile gloves and using chlorhexidine obstetric cream) to reach into the vagina (which must be sterilised as described above), and push the baby's head up into the uterus. Then lift and deliver the head (see Figure E5.2).
- application of forceps when the head is too free to deliver.
- with transverse lie, grasp a foot and do breech extraction keeping the back anterior if possible
- if continuing to have difficulty, consider carefully reaching above the incision and

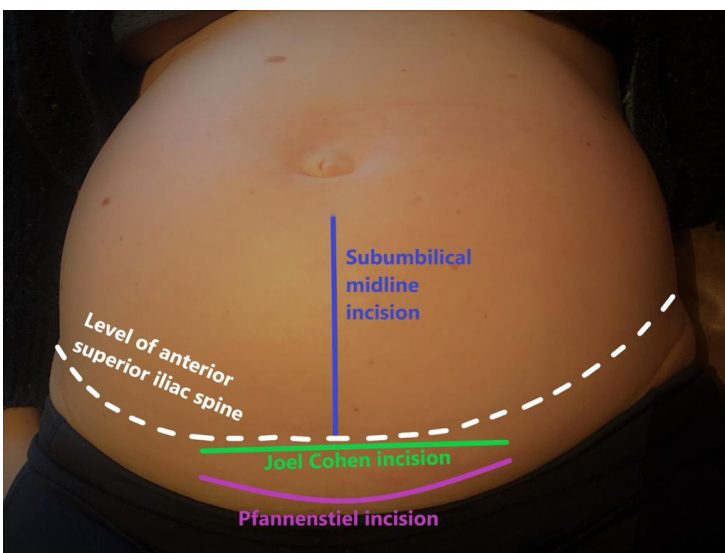
attempt a breech extraction before the head is delivered. Be especially careful not to overextend the fetal neck.

#### **Proximity of the uterine vessels to the LUS**

Be aware of the proximity of the uterine arteries to the ends of the uterine incision (Figure E5.3), and be very careful not to extend the incision by tearing it and damaging these arteries.

#### **Placenta praevia**

Posterior placenta praevia generally has no impact on the delivery of the baby. However,





with both posterior and anterior placenta praevia, the uterus is likely to remain atonic following delivery, causing excess blood loss and requiring **oxytocin** infusion.

If anterior placenta praevia is present, depending on how low it reaches, it may be possible to insert your hand below the placental edge, to access the presenting part and deliver the baby.

If that is not possible, then it is necessary to cut through the placenta (very carefully, to avoid fetal trauma) to access the presenting part and deliver the baby.

The presenting part is usually free and can be held up out of the way when going through the placenta.

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### **Delivery of the baby and placenta**

1. Clear instructions should be given to the assistant. Any correction of uterine dextro-rotation should be maintained. The fetal lie should be stabilised with fundal pressure.
2. The operator should then insert a hand between the LUS and the fetal head. The fetal head is delivered into the uterotomy in an occipito-transverse (OT) position by gentle lateral flexion.
3. Levering movements of the operator's wrist should be avoided as much as possible. Keep the wrist joint straight. If uterine contraction is present, wait until the uterus has relaxed before attempting to deliver the fetus.
4. The Doyen's retractor should be removed and the baby's head should be rotated to a flexed occipito-anterior position or delivered in the OT position. The assistant should apply fundal pressure continuously throughout the delivery and follow the baby down (particularly to avoid extension of the after-coming head of a breech presentation).
5. During delivery care should be taken with the baby's neck and shoulders. Excessive traction should be avoided, and pressure is predominantly by the assistant from above.
6. Gently lift the baby's head through the incision, Be aware of the proximity of the uterine arteries to the ends of the uterine incision and be very careful not to extend the incision by tearing it and damaging these arteries or extending the incision down towards the cervix.
7. Deliver the shoulders and body with gentle traction on the head to deliver the anterior shoulder and then lifting the head up to deliver the posterior shoulder to avoid tearing the lower uterine segment with the posterior shoulder.

### **Following delivery of the baby**

- Immediately give oxytocin 5 to 10 IU IV over 2-3 minutes to aid delivery of the placenta, and then infuse 40 units oxytocin in 500 mL of IV fluids (Ringer-lactate/Hartmann's or 0.9% saline) over 4 hours.
- Clamp and cut the umbilical cord. If the mother and baby are in good condition, delayed cord clamping for 1 minute is appropriate.
- Hand the baby to an assistant for initial care.
- If not given prior to incision for CS, give a single dose of a prophylactic antibiotic after the cord has been clamped and cut; ampicillin 2 grams IV or ceftriaxone 1 gram IV.
- Keep gentle traction on the cord and massage the uterus.
- Deliver the placenta and membranes.

### **Delivery of the placenta**

Spontaneous delivery of the placenta, after oxytocin has been given immediately after delivery of the baby, **OR** with controlled cord traction, is preferred to manual removal. However, sometimes manual delivery of the placenta will be necessary.

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Routine checking of the uterine cavity is essential to ensure that there are no retained placental fragments or membranes present as this cannot always be ensured by inspection of the placenta. [Also ensure there are no swabs inside the uterus.](#)

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### **Problems associated with Caesarean section**

1. In cases of previous CS, or a history of abdominal or pelvic surgery, or pelvic sepsis, [great care must be taken opening the parietal peritoneum as the bladder may be high and/or there may be bowel adhesions. It is advisable to gently grasp the parietal peritoneum with 2 small non-traumatic clips 3 cm apart. Palpate the intervening peritoneum between your thumb and index finger. If it feels thick there may be bladder or bowel adherent underneath. If this happens, try higher up until the thickness feels normal. Incise the peritoneum carefully using a scalpel.](#)
2. The bladder may also be high on the LUS after a previous CS. Incise the visceral peritoneum but do not be tempted to push the bladder down too far, as troublesome bleeding will be encountered. It is sufficient to expose the previous scar.
3. [Ensure there is an indwelling urinary catheter in place prior to commencing any CS.](#)
  
7. Excessive bleeding at Caesarean section is most commonly due to uterine atony, [lateral extension of the lower segment incision towards the uterine artery and associated vessels, or vertically downwards towards the cervix](#), or a combination of these three factors (see Section A+11 on postpartum haemorrhage).
8. Where a trial of forceps has taken place prior to Caesarean section, care must be taken to identify and suture any vaginal or cervical tears, which may bleed heavily. [Following an unsuccessful operative vaginal delivery, the surgeon should consider pushing the fetal head upwards, to disimpact it prior to carrying out Caesarean section.](#)
9. [Damage to the bladder is more likely in a repeat CS where the bladder may be high on the Lower Uterine Segment \(LUS\).](#)
10. [Damage to a ureter - more likely if there is extension of the incision at the angle of the lower segment when putting in haemostatic sutures](#)

### **Uncontrolled bleeding during CS**

The cause of the haemorrhage, whether due to atony or trauma, should be determined. Help should be sought from senior colleagues (if available). The anaesthetist must be informed about the haemorrhage, and blood should be cross-matched (at least 4 to 6 units).

In cases of vertical extension into the cervix and vagina, suturing should be attempted from the lowest part of the tear before suturing the transverse incision. [It can often be difficult to see the apex of the tear. Insert a suture at the lowest visible part of the tear, tie and leave the ends long and use this suture to gently pull upwards the lower aspect of the tear into the field of vision.](#)

[Sometimes the bleeding point cannot be identified, often from the broad ligament. Apply a firm pack for 5-10 minutes before going back to look for the bleeder. Remember to identify the ureter before inserting sutures.](#)

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### **Atonic uterus**

If the uterus is atonic despite IV oxytocin and an oxytocin infusion, massage the uterus, continue to infuse oxytocin, and give:

ergometrine 200 to 500 microgram IM (must not be used if the patient has hypertension or pre-eclampsia) and/or misoprostol 400 to 800 microgram orally or 800 micrograms rectally if the mother is drowsy or unconscious. **These drugs can be given together or sequentially.**

### **Breech delivery at CS**

The fetal back should always be kept upwards/anterior during breech delivery. **Slide a hand down between the breech and uterus and lift the breech out through the incision.**

If extended legs are present apply gentle groin traction until the popliteal fossae are seen. Then to deliver each leg, apply pressure using the index or index plus middle finger in the popliteal fossa to flex the leg at the knee joint. Then slightly abduct the hip to deliver the leg. Repeat on the other side.

Grasp the bony pelvis and rotate the trunk until a scapula is seen and then deliver arms by Lovset's manoeuvre and then deliver the head by the Maurice Smellie Veit manoeuvre.

In summary, apart from groin traction, these procedures are similar to those when performing an assisted vaginal breech delivery (see Section A+23).

### **Transverse lie delivery at CS**

Assess the position of the fetus, including the position of the head, before opening the uterus. If the membranes are intact and there is liquor around the fetus, try to convert the transverse lie to a longitudinal lie. **This is much more difficult if there is lack of liquor. If the transverse lie has been persistent, there is often a poorly formed lower segment, even if the membranes are intact. This is because there has been an absence of a presenting part in the lower segment. In such circumstances a De- Lee vertical incision in the lower segment is preferable, as it can be extended upwards into the upper segment if required.**

If the back is upwards (**superior**) reach into the uterus and find the baby's feet. Grasp a foot and pull gently through the incision to deliver the legs and complete the delivery as for breech extraction. **Be very careful not to tear the incision.**

If prior to CS the back is known to be downwards (**inferior**), a high vertical uterine incision may be preferred, but this is too late if only discovered once inside the uterus. After a transverse LUS incision has been made, a J incision or inverted T incision may facilitate delivery and should be considered. The J incision may be better than the inverted T incision which has a higher risk of future rupture.

**To repair a classical, De-Lee, J incision or inverted T decision, three layers of sutures are advisable.**

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#### **Actions after delivery where placenta praevia was present**

After delivery of the baby, **give oxytocin as both a bolus IV and as an IV infusion and manually remove the placenta. Then manually compress the uterus to inhibit further bleeding.**

In most women with placenta praevia, there will invariably be bleeding from the placental site. Under-sew the bleeding sites with chromic catgut or polyglycolic acid/ Vicryl sutures. If available, insertion of a haemostatic material can be very helpful.

If bleeding from the placental bed continues despite suturing, use uterine tamponade (such as with a condom catheter) before closing the uterine incision. Be careful not to place too large an initial volume of fluid into the condom. Close the uterine incision when bleeding is controlled.

If a posterior placenta praevia has been over-sewn, check that bowel has not been caught up in the suture by checking behind the uterus.

Watch for bleeding in the immediate postpartum period and take appropriate action. **Urgent** re-opening of the abdomen may be needed.

Fresh donor blood for transfusion is particularly important. Check whole blood clotting time, consider using Tranexamic acid (see Section A+11), and always, if available, give fresh donor blood transfusion.

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##### **Patients most at risk:**

1. Where uterine rupture has been repaired
2. APH, especially due to abruption (loss of clotting factors)
3. Pre-eclampsia, especially HELLP (low platelets)
4. Multiple pregnancy (increased risk of atony)
5. Polyhydramnios (increased risk of atony)
6. Anaemia (low reserve)
7. Previous CS (bleeding from incision site)
8. Prolonged labour prior to CS (atony)
9. Difficulties delivering the fetus: impacted head and possible tear to lower segment or [into the cervix](#)
10. Patients undergoing blood transfusion after surgery

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6. Notify community midwife on discharge, and warn regarding maternal and neonatal danger signs (see Section A5)

### **Placenta accreta and Caesarean section**

#### **In low resource settings**

If at the time of an elective repeat CS, where it is immediately apparent that placenta accreta is present on opening the abdomen, and where both mother and baby are stable, the CS should be delayed until the appropriate staff and resources have been assembled and adequate blood products are available. This may involve closure of the maternal abdomen and urgent transfer to a specialist unit for delivery or the arrival of an obstetrician who is sufficiently skilled to safely perform an obstetric hysterectomy.

If the baby has already been accessed and delivered through the uterine incision but accreta prevents safe placental removal, and where an obstetrician who is sufficiently skilled to undertake obstetric hysterectomy **is not immediately available**, then in a low resource setting the safest option would be temporary conservative management with clamping of the cord close to the placenta, closure of the uterus and abdomen, intravenous antibiotics, and obstetric hysterectomy performed 3-4 days later.

#### **In well-resourced settings only**

Placenta accreta will usually be diagnosed antenatally and the relevant obstetric staff assembled along with adequate blood products for a planned elective obstetric hysterectomy.

Very rarely, conservative management may be attempted to try and avoid hysterectomy.

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**See below for post caesarean section chart to guide safe monitoring**

Name .....		Hospital number .....		Age .....		Date .....		Chart number .....								
Vital sign	Time after CS	15 min	30 min	45 min	1 hour	1 hr 15	1 hr 30	1 hr 45	2 hr	Sign by Dr or OC if safe to monitor every 30 or 60 minutes	2hr 30	3 hr	4hr	5 hr	6 hr	
Resp. rate	25 or more or < 20 to 24									..... If not change to new sheet and continue every 15 minutes until safe to extend to 30 minutes						
	< 20															
	< 92%															
SpO <sub>2</sub>	92-94%									..... If not change to new sheet and continue every 15 minutes until safe to extend to 30 minutes						
	95 to 100%															
O <sub>2</sub> in L/min	Give figure									..... If not change to new sheet and continue every 15 minutes until safe to extend to 30 minutes						
	120 or higher															
	90 to 119															
	60 to 89															
Systolic BP	< 60									..... If not change to new sheet and continue every 15 minutes until safe to extend to 30 minutes						
	170 or higher															
	160 to 169															
	110 to 159															
	90 to 109															
Uterine tone	< 90									..... If not change to new sheet and continue every 15 minutes until safe to extend to 30 minutes						
	Contracted															
Uterine position	Floppy									..... If not change to new sheet and continue every 15 minutes until safe to extend to 30 minutes						
	As marked															
	Above marked															
Temperature	< 37.5 Deg. C									..... If not change to new sheet and continue every 15 minutes until safe to extend to 30 minutes						
	37.5 to 38.0															
	>38.0 Deg. C															
Mental state	Alert									..... If not change to new sheet and continue every 15 minutes until safe to extend to 30 minutes						
	Confused/coma															
Lochia	Normal									..... If not change to new sheet and continue every 15 minutes until safe to extend to 30 minutes						
	Heavy															

Red= danger urgent help. Orange = ask senior for advice: Green continue monitoring. Enter X or actual values for respiratory rate, pulse rate, systolic BP and temperature

If, however, a mother comes in fully dilated [with the presenting part \(excluding caput\) below the ischial spines](#) and obviously about to deliver she should have a vaginal delivery, with the post-delivery observations outlined below.

Any woman who has previously had one delivery by CS can aim for vaginal birth (VBAC – Vaginal Birth after Caesarean Section) provided there are no other complications. Women who have previously undergone a CS are ALWAYS at risk of uterine rupture, even if they have had a successful vaginal birth since the last CS. VBAC labours should therefore be planned at the CEmONC hospital not a peripheral clinic. If a woman suitable for VBAC presents in labour to a clinic where CEmONC is not available, she should be urgently transferred to the nearest hospital where these services are available. [If delivery is imminent with a fully dilated cervix and vertex \(excluding caput\) below the ischial spines, she should have a vaginal delivery with close post-delivery observations in the clinic.](#)

[Women with a CS scar must not be induced with prostaglandins including misoprostol.](#)

There is evidence that prostaglandins or misoprostol increase risk of uterine rupture therefore the preferred method of IOL is artificial rupture of membranes (ARM) followed by careful oxytocin infusion. If the cervix is not ready for ARM, a Foley catheter may be used to dilate the cervix prior to ARM (see Section 5). The Foley catheter could remain in situ for 12 hrs, before hopefully making the cervix suitable for ARM.

Following ARM [for induction of labour](#), oxytocin should be titrated to get to 3 contractions in 10 minutes, max 4 in 10 minutes and then try to decrease the oxytocin to allow the patient to have her own contractions.

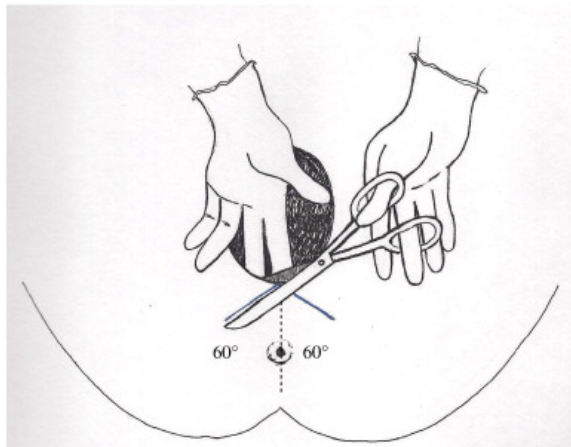
Most ruptures occur when arrest occurs at [4 to 5 cm](#) dilatation.

### [VBAC aim is to achieve a safe vaginal delivery](#)

1. Monitor the condition of the fetus [and, if possible, listen to the fetal heart rate every 15 minutes or preferably teach the mother to listen after every contraction. Often the first sign of uterine rupture is fetal distress.](#)
2. [Avoid prolonged labour and do not augment](#) labour with oxytocin or misoprostol.
3. Keep the woman safely prepared for urgent CS, if needed. [Give clear oral fluids only, group and X-match blood for transfusion and give antacids.](#)

If the midwife identifies any symptoms or signs of possible scar problems, she/he must promptly inform the doctor or obstetric clinician on duty. [VBAC is a high-risk labour. The obstetric clinician or doctor must regularly review the patient.](#)

Figure E7.2 Using two fingers to protect the baby's head while making the incision at no less than 60 degrees from the vertical



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9) Use scissors to cut the perineum about 3–4 cm in the medio-lateral direction (see Figure E7.2). It is essential that the episiotomy cut is not made where, if it turns into a tear, it will involve the anal sphincter. **The angle of the incision must be no lower than 60 degrees from the vertical.** Episiotomy scissors are available (Episcissors60) and will cut at 60 degrees thereby helping to avoid a third degree tear.

10) Control the baby's head and shoulders as they deliver, ensuring that CONTINUE AS ORIGINAL BOOK

Haematoma

This presents as a painful vulvo-perineal swelling which may have evolved over several hours. **The most common reason for a haematoma is a missed vaginal tear. If the haematoma is within the episiotomy scar, it will require re-opening of the scar under spinal or local anaesthesia to evacuate the haematoma.**

After evacuation of the clot, it can be very difficult to see a definite bleeding point. **Close the dead space and suture the tear or episiotomy and insert a vaginal pack together with a self retaining urinary catheter for 24 hours.**

Infection

The management depends on the appearance of the wound. Most commonly, there is superficial erythema and swelling, with separation of the skin edges.

This should be managed with oral antibiotics, and daily review. If the infection is more deep-seated, leading to dehiscence of the perineal body musculature, IV antibiotics should be administered for 24 to 48 hours. The wound must be kept clean **and any necrotic tissue requires wide surgical debridement, followed by secondary closure in 2 to 4 weeks, dependent on resolution of the infection.**

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The cervix should be fully dilated, and the head should be at -2 station or below, **and no less than 3/5 of the head descended into the pelvis and no overriding of the**



head above the symphysis.

#### Page 502

14. There is no need to close the incision unless there is bleeding.
15. Remove the stiff catheter and insert a soft normal Foley urinary catheter.

#### Page 504

**The fetus must be dead for a destructive procedure to be undertaken.**

- Ensure that the mother is adequately resuscitated
- **Ruptured uterus and placenta praevia must be excluded.** An ultrasound scan can be extremely valuable
- Ensure anaesthesia (general or regional), or sedation and analgesia with **IV paracetamol**, morphine, midazolam and/or ketamine).

#### Page 505

- In all cases place an indwelling urinary (Foley) catheter.
- There is always a high risk of chorio-amnionitis and therefore give triple IV antibiotics

#### Page 506

**Hydrocephalus: craniocentesis where obstructed labour and dead fetus**

#### Page 507

**Craniocentesis with a closed cervix**

- Palpate for the location of the fetal head. **Ultrasound can be very helpful.**

#### Page 509

Cleidotomy, division of one of the clavicles, is indicated where the impacted shoulders of the dead fetus prevent delivery. **The most accessible clavicle is divided using stout scissors.**

Post-procedure care

After delivery, examine and repair any tears to the cervix or vagina, and/or undertake episiotomy repair.

**Consider leaving** a self-retaining catheter in place until bladder injury has been excluded.

#### Page 510

Obstetric hysterectomy may be indicated where there is uterine rupture or trauma, **major postpartum haemorrhage**, especially when accompanied by DIC, morbidly adherent placenta (usually placenta praevia and/or accreta), or severe sepsis.

#### Page 512

**Postpartum haemorrhage PPH (see Section A+11)**

PPH is a common occurrence after all types of delivery, be it vaginal or Caesarean.

#### Page 520

4. If there is considerable bleeding from the placental site, the uterus can be tamponaded; ideally with a condom catheter (see Section A=11). Remember to document any swabs used to tamponade if a condom catheter is not available; they will need to be removed when the patient's condition has improved.