Cesarean Section

Definition:
It is the delivery of a viable fetus through an abdominal and uterine incisions.

Incidence:
- It is estimated to be 21.2% in the USA (1998).
- The incidence was four fold increased over the last few decades due to:
  1. Increased incidence of pregnancy in elderly women.
  2. Increased dependence on electronic fetal monitoring.
  3. Increased incidence of cesarean in breech presentation (100% in many opinions).
  4. Decrease in the use of forceps in midpelvic deliveries.
  5. Increased concern of malpractice litigation.
  6. Increased public awareness and interest in cesarean delivery.
  7. Increasing success of ART that increased the fraction of precious babies.
  8. The increased incidence of cesarean section increases automatically the rate of repeated section.

Types:

I- According to the timing of the operation:

1. Elective operation:
   * Done before the start of labor.
   * Disadvantages:
     a. The fetus may be still premature.
     b. The LUS may not be fully developed.
     c. The lochia is not well drained due to the closed cervix.
   * IN parkland hospital, elective section is done only when the following data are available.
     a. Relevant precise date of the LMP.
     b. Relevant U/S examination early in pregnancy.
     c. Relevant serial measures of fundal height before mid pregnancy.
   * Elective section is done when:
     a. The fetus had completed 38Ws gestation.
     b. The fetal weight equals the weight of the previous term baby or > 3 kg, Weight measure should be done twice 2 different sonographers.
2. Selective operations:
* Operation done after the start of labor pains.
* Advantages = Disadvantages of the elective operation.
* Disadvantage = Advantage of the elective operation.

II- According to the operative technique:
1. Upper segment operation (classical CS).
2. Lower segment transverse incision operation.
3. Lower segment vertical incision operation.
4. Extraperitoneal operation.
5. Cesarean hysterectomy.

Indications:
1. Repeat cesarean section: This is the most common indication (42%).
2. Cephalopelvic disproportion.
3. Antepartum hemorrhage:
   a. Placenta previa.
   b. Accidental hemorrhage.
4. Malpresentations.
5. Abnormal uterine action (enumerate).
7. Soft tissue obstruction.
8. Miscellaneous indications:
   a. The presence of a weak scar in the uterus from a previous myomectomy or repair of rupture uterus.
   b. Previous successful plastic repair of the cervix or coplorrhaphy.
   c. After successful repair of urinary fistula.
   d. Permanent cerclage.
   e. Cancer cervix or vagina.

II- Fetal Indications:
1. Persistent abnormal fetal heart pattern + Scalp pH < 7.2
2. Double fetal problem such as LBW + malopresentations, fetal distress, multifetal gestation.
3. APH.
4. Maternal herpes genitalis with intact membranes.
5. Fetal ITP.
7. Precious baby (elderly primigravida, history of infertility, bad obstetric history).

**Contra-Indications:**

1. A dead fetus, except in:
   a. Extreme degrees of pelvic contraction.
   b. Previous 3 or more sections.
   c. Severe antepartum hemorrhage.
   d. Cervical dystocia.
   e. Failure of uterine response with no availability of PGs.
   f. Cases with progressive retinopathy.
   g. Obstructed labor with no availability of destructive operative.
2. Fetal monstrosities, unless vaginal delivery is considered difficult or dangerous.
3. Eclampsia is a relative contraindication due to the high mortality from shock.

**Preoperative preparation:**

1. The female is admitted on the day of surgery (provided that no obstetric or medical disorders needing more prolonged admission).
2. If the woman is admitted before surgery, mild sedation at the night before the operation may be prescribed.
3. Fasting for 8 hours before the operation.
4. 30 ml of any antacid is useful to prevent lung damage from gastric secretion if aspiration occurs.

**V- Cesarean hysterectomy:**

*Mainly indicated in:*
1. Uncontrollable post-partum hemorrhage from uterine atony.
2. Concealed accidental hemorrhage when the uterus does not respond to the usual measures of controlling atony.
3. Placenta accreta encountered during section.
4. Multiple fibroids indicating hysterectomy.
5. Other indications of hysterectomy as operable genital malignancy.

**Post operative care:**

1. Monitor vital signs, uterine contractions and urine output/hour for 4 – 6 hours.
   Once fully awake, stable vital signs and urine output is ≥ 30 ml/hour, no bleeding or other complications, transfer the patient to her room.
2. The catheter is removed as soon as the patient becomes ambulant (usually after 6 hours). If she can't move, the patient should be encouraged to move her legs in bed.

3. Pain control is usually by doses of epidural analgesia or by small doses of narcotics (25 – 50 mg pethidine). Narcotics are better given in small frequent doses that large loading doses.

4. Proper fluid therapy for the 1st 24 hours (to maintain urine output to 500 – 1000 ml/day) then switch to oral feeding after documentation of intestinal movements starting with sugary fluids and gradually proceed to solid food. Oxytocin infusion is maintained as needed.

5. Encourage deep breath and coughing.

6. Bowel sounds are usually heard on the 2nd postoperative day. Before this time, the patient complain of some distension and gas pains. Full bowel movements are documented after passage of flatus. Passage of flatus may be aided with glycerin suppositories or rarely by enema (C/I in appendectomy).

7. In non complicated cases, the wound need no extra care and the patient can go home. Non absorbable sutures are removed on the 6th day. After that, the patient can take a shower but followed by proper drying of the wound.

8. The patient is encouraged to breast feed from the 2nd morning. If the baby died, suppression of lactation is effected immediately.

9. Prophylactic antibiotics (controversial):
   a. One gram ampicillin + 80 mg gentamycin after cord clamping followed by 2 more doses 6 hours apart.
   b. Single dose of velosef 2g after delivery of the infant followed by another dose 3 – 4 hours later if surgery last for > 90 minutes.

**Advantages of ISCS over USCS:**

1. Hemorrhage is less, as the placental site is away from the incision and the lower segment is thin and less vascular.

2. The scar in the uterus is stronger, and rupture in subsequent pregnancies is extremely rare (0.2%). The reasons for stronger union are:
   a. Better healing because the lower segment is passive during the puerperium, and the wound is at rest.
   b. Better coaptation of the edges can be obtained since the lower segment is thin. Perfect coaptation of the thick upper segment is impossible and there is a tendency for hematoma formation to become included between the edges of the wound. This interferes with proper healing of the classical incision.
   c. The scar is away from placental implantation in subsequent pregnancies which erodes the scar predisposes to the its rupture.
3. Less liability to ileus and acute gastric dilatation since the bowels do not appear in the wound and are not manipulated during the operation.
4. Less danger of infection because of better peritonization and firmer healing. Even if infection occurs it will be extraperitoneal and localized in the pelvis. For this reason, the operation is applicable to potentially infected cases as after failed forceps or trial labor.
5. The low site of the wound avoids post-operative adhesions and the danger of subsequent intestinal obstruction.

Thus, **USCS is only indicated in the following conditions:**

1. The presence of adhesions or large tumor at the lower segment.
2. Cases with cancer cervix.
3. Successful repair of VVF.
4. When hysterectomy is to be done.
5. Transverse lie when back is anterior or down.
6. Preterm delivery (as the LUS is not fully developed).
7. When very rapid delivery is needed (relative).

**Disadvantage of LSCS:**

1. The lower operation is more difficult technically (needing bladder dissection, special skill in fetal extraction particularly the extraction of a deeply engaged head).
2. Risk of lower uterine segment injury which extend to the cervix, vagina, and base of the broad ligament. There injuries may be difficult to repair and needs aggressive surgery to secure the patient.
3. The risk of urinary bladder injury.
4. The risk of uterine artery injury.

**Disadvantages of the Classical operation:**

1. More risk of hemorrhage.
2. Greater tendency to rupture of the scar in subsequent pregnancies (2%).
3. Convalescence is usually complicated by distension.
4. Greater danger of peritonitis of infection is present in the uterus.
5. Post-operative adhesions are common with the danger of intestinal obstruction.
6. The mortality rate is higher than that of the lower segment operation.
Problems encountered during cesarean section:

Bowel Injury:

Types and etiology:
1. Serosal or muscularis tear from blunt dissection of adherent bowel.
2. Accidental crushing of the bowel with a clamp specially in cases with attempting to control pelvic Hge.
3. Thermal injury with diathermy.
4. Partial or complete sharp injury with scalpel or scissors during abdominal entry or sharp dissection specially in cases with dense pelvic adhesions.
5. Inclusion into suture during abdominal closure.

Bladder Injury:

Incidence:
0.31 % for bladder injury (including cystotomies done mostly at repeat section).

Causes:
1. The most common cause is during dissection of the bladder off the lower uterine segment.
2. During the uterine incision.
3. Extension of the uterine incision into the bladder.

Ureteral Injury:

Incidence: 0.09 %.

Causes:
1. Extension of the uterine incision.
2. Secondary to haemostatic ligatures in the base of the broad ligament.

Extensions of uterine incisions:

Transverse incisions:
- Transverse incisions tend to extend into the uterine vessels leading to profuse hemorrhage and resultant shock in a short time.