CAESAREAN SECTION

Caesarean section, like most other surgical procedures, needs careful planning and preparation to ensure no unwanted complications.

Preoperative issues

Operative abdominal delivery can be classified as either:

- planned (elective) or un-planned in which case the surgery is either:
- extremely urgent (maternal or fetal immediate life threatening conditions), urgent (maternal or fetal compromise without immediate life threatening situation) or emergency (no maternal of fetal compromise but require early delivery).
- Planned delivery refers to a situation where the delivery could be scheduled electively to accommodate either the patient or staff.

The following preoperative issues need specific mentioning:

Fetal lung maturity

- Iatrogenic lung disease of the newborn could result from elective delivery prior to term. It is therefore advised that elective deliveries need to be planned after 39 weeks gestation.
- Amniocentesis for fetal pulmonary assessment is indicated if elective caesarean section is planned at <39 weeks in a patient no medical or obstetrical complications and does not meet the following criteria:
    - It has been 36 weeks since a serum or urine human chorionic gonadotropin pregnancy test was found to be positive.
    - Fetal heart tones have been documented for 30 weeks by Doppler.
    - Ultrasound measurement at less than 20 weeks of gestation supports a gestational age of 39 weeks or greater.

Prevention of postoperative infection

Caesarean sections are prone to post-operative infection, especially if performed during labour as an emergency procedure. Precautions to prevent infection:

- Washing the abdomen with an antiseptic soap and
- Taking care not to shave the abdominal wall (asstd with increased risk of infection). If excessive hair growth – trim with scissors
- Prophylactic use of antibiotics should be used in all cases of caesarean section. It reduces the risk of infection-related complications and serious infection post operation.
- Antibiotic prophylaxis:
    - a first generation cephalosporin e.g. cefazolin 2g iv at the time of the operation.
    - Pre-incision broad-spectrum antibiotics are more effective in preventing post-caesarean infections than post-clamping narrow-range antibiotics, without prejudice to neonatal infectious morbidity. However, side effects cannot be excluded in the newborn baby and therefore it is recommended that intra-operative antibiotics be given after clamping of the umbilical cord
- Associated risk factors for postpartum infection include multiple vaginal examinations and offensive amniotic fluids. If infection if found at the time of surgery (such as offensive liquor), commence therapeutic antibiotic therapy to prevent the infection spreading or developing postpartum sepsis.

Fetal wellbeing

It is important for the surgeon to know the fetal status (especially in emergency caesarean sections where the fetus may be compromised).

In the planned (elective procedures): If the non-stress test is reactive, no further monitoring is indicated. In non-reactive tracing, prolong the monitoring.

In emergency procedures:

There need to be continuous monitoring of the fetus.
This should be at least with intermittent auscultation of the fetal heart.
The use of CTG's have not been shown to improve perinatal outcome. This may well be a good form of monitoring in areas under-served with staff to provide care to the women during labour. Persistent pathological CTG traces may indicate fetal distress.
If caesarean sections for fetal distress - establish that the baby is alive pre-procedure.
There is insufficient evidence at present to advise on how to monitor fetal well-being prior to delivery.

Thromboembolism

Pulmonary embolism is a risk during the puerperium.
Early mobilization is advised for low risk women.
The following conditions in women undergoing a planned (elective) abdominal delivery is an indication for thromboembolism prophylactic medication:

- Age over 35 years
- Parity of 4 or more
- Overweight >80kg at booking
- Labour duration 12 hours or more
- Current infection
- Gross varicose veins
- Pre-eclampsia
- Major current illness
- Previous history of thrombo-embolism

Emergency caesarean section is a major contributor to thrombo-embolism and should be regarded as an indication for prophylaxis

Early mobilization is advised in all cases.

Enoxaparin (Clexane) 40 mg daily or sodium heparin 10,000 iu 2x per day.

Bladder catheterization

- Current practice is to place an indwelling catheter (using sterile techniques) for caesarean sections.
- The early removal of urine catheters in the absence of the need for urine output monitoring should be considered in women delivered by caesarean section.

Pre-operative laboratory investigations

- Baseline haemoglobin (Hb) must be available. If the Hb was done in the preceding 4 weeks that should be sufficient if the patient is in a stable condition.
- Urea and electrolytes and platelets should not be done routinely in healthy women. Indications for urea and electrolyte investigations include pre-eclampsia, endocrine diseases and the presence of sepsis.
- Platelet counts essential in pre-eclamptic cases and is advisable in HIV+ women, especially in the presence of anaemia or advanced disease.
- Clinical abruptio placenta patients, at least a hand clotting time must be done prior to the procedure if coagulation tests could not be done.

Aspiration prophylaxis

The following guideline will assist to reduce acid aspiration:

- Uncomplicated labouring patients: oral intake of modest amounts of clear liquids may be allowed.
- Uncomplicated patient undergoing elective delivery may have modest amounts of clear liquids up to 2 hours before induction of anaesthesia
- Patients with additional risk factors for aspiration (e.g., morbid obesity, diabetes, difficult airway) or patients at increased risk for operative delivery (e.g., non-reassuring fetal heart rate pattern) may have further restrictions of oral intake, determined on a case-by-case basis
- Solid foods should be avoided in labouring patients
- Elective surgery – NPO 6–8 hours.
- Aspiration prophylaxis:

Scheduled caesarean delivery (not in labour)

Cimetadine 200mg po 12 hours & 2 hours pre-operatively
Metroclopramide 10mg po 2 hour prior to surgery
Sodium citrate 0.3M 30ml not > 30 minutes pre-op

Emergency caesarean delivery (in labour)

Cimetadine 200mg slowly ivi
Metroclopramide 10mg ivi
Sodium citrate 0.3M 30ml not >30 minutes pre-op

(Avoid Magnesium tricilicate even if sodium citrate is unavailable)

Informed consent

The responsible obstetrician who will be performing the procedure is responsible to provide appropriate information and obtain informed consent for performing a caesarean section.

Antenatally: provide evidence-based information about caesarean section (C/S):

- indications for CS (such as presumed fetal compromise, failure to progress in labour, breech presentation)
- what the procedure involves
- associated risks and benefits. Specifically refer to the risk of pulmonary embolism and increased risk for PPH.
- implications for future pregnancies and birth after CS

Elective C/S:

- Record all the factors that influence the decision (especially those most influential).
- Written informed consent with additional notes to be kept in the patient records.
- Women from the age of 12 can give informed consent for operative procedures, although the obstetrician should ensure that a child under 16 understand the implications.

POST OPERATIVE ISSUES

Post operative care:

- Commences at the point when the patient is signed out of the theatre.
- Careful documenting of all theatre events must be done by the surgeon, anaesthesia professional and the theatre scrub staff.
- Routine procedures for post-operative care.

With respect to caesarean delivery the following issues are of importance.

Post operative observation program

- Complications in the puerperium after caesarean delivery: Postpartum haemorrhage, deterioration of preeclampsia and metabolic problems are to be expected in the immediate post delivery period. These patients need to be regarded as high risk and should be subjected to a vigorous monitoring process in the first few hours post delivery.
- Vital information such as colour, level of consciousness, pulse rate, blood pressure, respiratory rate, vaginal blood loss, bleeding on operated site must be observed at regular intervals.
- The following is recommended:
    - Quarter hourly while in the recovery room*
    - Half hourly for a further 2 hours
    - 2 hourly for a further 4 hours
    - 4 hourly for a further 12- 16 hours.

Avoid sending a post-operative woman to a general ward where observations are difficult to perform.

NB! Any abnormality detected at any stage requires frequent observations to be done.

- If there is no dedicated recovery room the observations must be done in the theatre until the patient is stable to be transferred to the ward
- The use of colour coded early warning observation charts will assist staff to detect problems and notify the responsible medical practitioner

Post-operative pain management

- Adequate postoperative analgesia following caesarean delivery hastens ambulation, decreases maternal morbidity, improves patient outcome, and facilitates care of the newborn.
- There is unfortunately no golden standard.
- International standards include the use of intrathecal opioids, self-administering of analgesia and local infiltration to reduce the needs of morphine post operatively.
- Variety of options and this is determined by drug availability, regional and individual preferences, resource limitations and financial considerations.
- IMI morphine or pethidine remains the golden standards augmented by NSAIDs.
- Pethidine is the drug of choice with an optimal dose of 1 mg/kg every 4-6 hours for the first 24-hours. In high care settings this could be given as an intravenous infusion at a rate of 10mg/h irrespective of the weight and individual demand of the patients.
- Analgesia is oftenprovided by the anaesthetist as part of a pain relief program. If this is not possible, it is advised that intramuscular pethidine in combination with a non-steroidal analgesic be used for pain relief.

Post-operative fluids and meals

- Post-operative management can include early feeding.
- Clear fluids shows no advantage over unlimited solid fluids given within 30 min of a spinal anesthesia.
- Advantages of early post operative feeding is that IV lines can be removed earlier, earlier mobilization and earlier initiation of breast feeding.
- Patients who are not able to manage oral fluid and food intake, should remain on an IV infusion of a maintenance fluid at a rate of 3 litres per day unless there is challenges with the fluid output. General anaesthesia – allow fluids firstly then if tolerated – full meals.

Post operative wound care

The occurrence of a wound complication is the most important factor influencing post operative patient satisfaction.

- Management of the surgical wound starts with surgery.
- There is no evidence that there is any advantage in keeping the wound covered for longer than 24-48 hours.
- The wound should be opened without resulting in any further trauma.
- The wound should then be kept open and dry. If the wound is exposed to friction from the clothes, it could be covered with a dry dressing to avoid unnecessary trauma to the wound.
- Patients can clean their wound with tap water (of a standard that it is drinkable).
- Care must be taken to identify areas of local infection. The typical symptoms is increasing pain and throbbing. The wound will be swollen and red and may have some oozing of a purulent fluid.
- Other common wound complications are wound haematoma's and wound dehiscence.
- Advise the patient to have the sutures removed in 3-5 days (transverse abdominal incisions) and 6-10 days (longitudinal incisions).
- Observe the wound site for signs of separation, tenderness, discharge, localised heat or swelling, and redness around the incision line.

Baby and Feeding

- Initiate breast feeding ASAP post-delivery including skin-to-skin contact with the baby.
- Commence earlier in patients with regional anaesthesic compared to general anaesthetic.
- Sufficient pain relief will assist in getting the mother to comply with breast feeding.
- Support with initiating breast feeding is essential. It is important to reassure the women that breast feeding is a skill and needs to be learned.
- Sore nipples, painful breasts and a perceived lack of milk are similar than in those who deliver vaginally and should be attended to in the post operative period. Physiotheraspists may assist with breast USS or UV light therapy.

SAFETY AND CAESAREAN SECTIONS

Like with any surgical procedure, it remains the responsibility of the health care workers to ensure the safety of patients exposed to operative deliveries.

Basic safety checklists assist health care workers of all professions to ensure that safety is maintained.

CAESAREAN DELIVERY SAFETY CHECKLIST

Sign In

TIME OUT

BEFORE INDUCTION OF ANESTHESIA

(to be said aloud)

Patient have confirmed

- her identity
- that consent was signed
    - Caesarean section
    - Sterilization
    - Type of abdominal incision

Anaesthetics doctor
- Anaesthetic equipment is checked and operational.
- pulse oximetry on patient and I'll sex in the town patient and functional,
- Risk factors:
    - Allergy
    - Risk of bleeding/blood loss Potential difficult intubation
    - Acid prophylaxis

Obstetrician
- condition of fetus (alive/dead)
- Assistant present

Paediatrician
- Present in theatre
- Neonatal resuscitation equipment checked

Midwife
- Present in theatre
- Baby warmer on and functional

BEFORE SKIN INCISION

(to be said aloud)

Theater team

- Identify each other including roles
- Verbally confirm
    - The patient
    - Procedure

Anaesthetics doctor
- Are there any specific concerns
- Confirm that prophylactic antibiotics was given

Obstetrician
- What are critical or expected events
    - Duration of procedure
    - Anticipated blood loss

Pediatrician
- Present in theatre
- Neonatal resuscitation equipment checked

Nursing team
- Has sterility been confirmed
- Any equipment concerns
- Ready to receive baby