Anesthesia for Gynecology and Obstetric

Specific consideration

 Many patients are apprehensive, even for relatively minor surgery.

 PONV is a particular problem. With high-risk patients, use appropriate techniques; avoid N2O, and give prophylactic antiemetic.

 Pelvic surgery is associated with DVT—ensures that adequate prophylactic measures have been taken.

 Prophylactic antibiotics reduce post-operative wound infection rates for certain operations—check your hospital protocol.

 Vagal stimulation may occur during cervical dilatation, traction on the pelvic organs or the mesentery, or during laparoscopic procedures.

 Take care during patient positioning: Patients are often moved up or down the table, when airway devices can be dislodged and disconnections can occur. Pre-existing back or joint pain may be worsened in the lithotomy position, and, if the legs are supported in stirrups, there is a potential for common peroneal nerve injury.

 During laparotomies, ensure that patients are kept warm.

 During major gynecological surgery, considerable blood loss may occur, and surgery may be prolonged.

 Many gynecological operations formerly done through an open approach (e.g., hysterectomy, tubal pregnancy repair) are now done primarily using laparoscopic techniques.

Specific gynecological operations

- **Hysteroscopy:** Telescopic equipment enables the gynecologist to inspect the uterine cavity and explore it with accuracy for diagnosis and treatment of intrauterine disease. Before hysteroscopy the cervix is dilated, and this carries the risk of stimulating an autonomic response.

The anesthetic for a hysteroscopy includes induction and maintenance with a selection of drugs relevant today – case surgery (e.g., propofol for the passage

of a laryngeal mask airway, and either total intravenous or inhalational anesthesia).

Complications include uterine perforation and bleeding, so facilities to manage these risks should be available. Depending on the type of anesthetic (e.g., opioid) used, prophylactic antiemetic may be indicated.

- **Laparoscopic surgeries**: Many gynecological operations may be performed laparoscopically, such as; female sterilization, ovarian cystectomy, emergency surgery for ectopic pregnancy, and vaginal hysterectomy. Most of these procedures require longer operating and anesthetic times than open versions of the same procedures, but are less painful after surgery, require a shorter duration of stay in hospital and lead to earlier return to normal activities. A pneumoperitoneum is created, most commonly by insufflating the peritoneal cavity with carbon dioxide

Physiological changes due to pneumoperitoneum:

1) Increased intra – abdominal pressure, reduced both chest wall and lung compliance and also functional residual capacity. These effects are more marked for patients undergoing surgery in the lithotomy posture.

2) Hypoventilation and increased intrapulmonary shunt.

3) Decreased venous return and cardiac output.

4) Increased the ventilation/ perfusion ratio and alveolar dead space.

5) Bradycardia is a common occurrence after peritoneal insufflations, and occasionally asystole occurs.

Hysterectomy

A. **Abdominal hysterectomy:** Procedure removal of uterus through abdominal incision (may also include ovaries as bilateral salpingo-oophorectomy**)** Time 1hr, often longer Pain +++ Position: supine, head-down Blood loss 250–500mL, Practical techniques GA, ETT, IPPV.
B. **Vaginal hysterectomy:** Procedure removal of the uterus through the vagina Time 50min Pain ++ Position: Lithotomy Blood loss Variable, usually <500mL Practical techniques GA or regional: LMA, SV, caudal. Spinal.

Preparation for anesthesia begins with:

1) A policy of nil by mouth for at least 4 hours.

2) Reduction in gastric acid production (e.g. oral ranitidine 150 mg twice daily started the night before anesthesia, or I.V ranitidine 50 mg slowly 2 hours before anesthesia).

3) Neutralization of any acid produced (e.g. clear alkaline solution such as 0.3 mmol/ L sodium citrate 30 ml given just before anesthesia).

4) Increasing lower esophageal sphincter tone. (E.g. metoclopramide 10mg I.V).

Analgesia for Labor & Vaginal Delivery:

- **Meperidine** (Pethidine), a commonly used opioid, can be given in doses of 10–25 mg intravenously or Intravenous **fentanyl**, 25–100 mcg/h, has also been used for labor.

- **Morphine** is **not** used because it appears to cause greater respiratory depression in the fetus than meperidine.

- Low-dose intravenous **ketamine** is a powerful analgesic. In doses of 10–15 mg intravenously, good analgesia can be obtained in 2–5 min without loss of consciousness.

Regional Anesthetic Techniques

 Epidural or intrathecal techniques (**spinal**), alone or in combination, are currently the most popular methods of pain relief during labor and delivery. They can provide excellent analgesia while allowing the mother to be awake and cooperative during labor.

➢Anesthesia for Caesarean section

Regional anesthesia for Caesarean section was initially driven by maternal preference. It was subsequently found that regional anesthesia is also safer than GA.

Advantages of regional anesthesia: -

- Both mother and partner can be present at the delivery.
- Minimal risk of aspiration and lower risk of anaphylaxis.
- The neonate is more alert, which promotes early bonding and breastfeeding.
- Fewer drugs are administered.
- Better post-operative analgesia and earlier mobilization.

❖ ***Spinal anesthesia*** Is the most commonly used technique for elective Caesarean sections. It is rapid in onset, produces a dense block, and, with intrathecal opioids, can produce long-acting post-operative analgesia. However, hypotension is much commoner than with epidural anesthesia.

Technique: ✓ History/examination/explanation and consent. ✓ Ensure that antacid prophylaxis has been given. ✓ Establish 16G or larger IV access. ✓ Start crystalloid co-load. ✓ Position the patient.

A sitting position usually makes finding the midline easier, which may be helpful with obese patients, and may be associated with a faster onset, although the height of block is less predictable. A lateral position is associated with a slower onset of block, particularly if a full lateral position is maintained until the block has fully developed.

✓ Perform spinal anesthetic at ***L3/4*** interspace, using a 25G or smaller pencil point needle. After injection of the solution, move the woman to a supine position with a left lateral tilt or wedge. If supine hypotension occurs, increase the tilt, or, if severe, temporarily move the woman to a full lateral position.

- ***General anesthesia*** Elective GA is now uncommon, limiting opportunities for training. The majority of complications relate to the airway. Failed intubation is much more frequent in obstetric than non-obstetric anesthesia. All obstetric theatres should have equipment to help with the difficult airway.

Indications for GA include:

- Maternal request.
- Urgent surgery.
- Regional anesthesia contraindicated (e.g. coagulopathy, maternal hypovolemia).
- Failed regional anesthesia.
- Additional surgery planned at the same time as a Caesarean section.

Technique:

• Position supine with a left lateral tilt or wedge.

• Preoxygenate for 3–5min or, in an emergency, with 4–8 VC breaths with a high flow through the circuit. Ensure a seal with the face mask.

• Perform ***RSI*** with an adequate dose of induction agent (e.g. 5–7mg/ kg of thiopental).

• A 7.0mm ETT is adequate for ventilation and may make intubation easier.

• Propofol has also been used for Caesarean section, without any major reported complications, although, at present, thiopental is still the most commonly used agent in the UK.

• Ventilate with 50% O2 in N2O. If severe fetal distress is suspected, then 75% O2 or higher may be appropriate. Maintain ETCO2 at 4.0–4.5kPa (30–34 mmHg).

• Use _overpressure 'of the inhalational agent to rapidly increase the end-tidal concentration of the anesthetic agent to at least 0.75 MAC (e.g. 2% isoflurane for 5min, then reduce to 1.5% for a further 5min).

• At delivery: Give 2–5IU of oxytocin IV bolus. If tachycardia must be avoided, then an IV infusion of 30–50IU of oxytocin in 500mL of crystalloid, infused over 4hr, is effective Administer opioid (e.g. 10–15mg of morphine ± 100 micrograms of fentanyl), IV paracetamol, and IV diclofenac (unless contraindicated).

• If a woman has eaten shortly before surgery, consider passing a large-bore orogastric tube to empty the stomach before extubation.

• Extubate awake. Be aware that extubation is a high-risk time.

• Give additional IV analgesia, as required.

Recovery: Be aware that recovery units are potentially dangerous places for mothers after GAs, particularly if the recovery is staffed by midwives who may be less familiar with airway care. The same standard of recovery staff should be available to women on labour wards as in a normal theatre recovery unit.