Postpartum Haemorrhage & Maternal Injuries

Postpartum Haemorrhage

Definition

- Blood loss in excess of 500 cc in vaginal deliveries and in excess of 1,000 cc in abdominal deliveries
- Any blood loss that has the potential to produce hemodynamic instability (depend on the pre-existing condition of the woman i.e anemia and PET)

Classification

- **Primary: within 24 hours of delivery**
- **Secondary: after 24 hours of delivery**

Incidence

- About 5% of all deliveries

- **Predisposing Factors - Antepartum**
  - previous PPH or manual removal
  - abruption/previa
  - fetal demise
  - gestational hypertension
  - overdistended uterus
  - bleeding disorder

Predisposing Factors - Intrapartum

- operative delivery
- prolonged or rapid labour
- induction or augmentation
- chorioamnionitis
- shoulder dystocia
- internal podalic version
- coagulopathy

- **Postpartum Causes**
  - lacerations or episiotomy
  - retained placenta/placental abnormalities
  - uterine rupture/inversion
  - coagulopathy

- **Causes primary PPH**
  - Placental site hmg
    - Atonic PPH (Uterine inertia 90% of all cases)
      - Over distention of the uterus (Multiple pregnancy, large baby, and Polyhydramnios)
      - APH
      - Prolonged labour
      - Multiparity
      - Precipitate labour
      - Idiopathic
      - G anesthesia
    - Retention of placenta and clot
  - Extra placental (traumatic)
  - Uterine inversion
  - Bleeding tendency

- **Causes secondary PPH**
  - Retention of placental tissue
  - Uterine sub involution (failure of the uterus to return to its normal pre pregnancy size)
    - Endometritis
    - Uterine Myoma
    - Placental tissue
    - Blood clot
  - Choriocarcinoma

Etiology of Postpartum Haemorrhage

Tone - uterine atony

Tissue - retained tissue/clots

Trauma - laceration, rupture, inversion

Thrombin - coagulopathy

Clinical presentation

- Depend on pre existing maternal condition and the degree of bleeding

Blood loss	Systolic BP	S & S	Degree of shock
500-1000 ml (10-15%)	Normal	Palpitation Dizziness Tachycardia	Compensated
1000-1500 ml (10-25%)	Slight decrease	Weakness Sweating Tachycardia	Mild
1500-2000 ml (25-35%)	70-80 mm/Hg	Restlessness Pallor oliguria	Moderate
2000-3000 ml (35-45%)	50-70 mm/Hg	Collapse Air hunger Anuria	Severe

Management

- **Prevention**
  - **Antenatally identify patient at risk of PPH**
  - **Active management of labour**
    - **R/O cephalopelvic disproportion**
    - **Avoid unnecessary instrumental delivery**
  - **active management of the third stage**
    - prophylactic oxytocin
      - 10 U IM
      - 5 U IV bolus
      - 10-20 U/L N/S IV @ 100-150 ml/hr
    - early cord clamping and cutting
    - gentle cord traction with suprapubic countertraction

- **Remember**
  - blood loss is often underestimated
  - ongoing trickling can lead to significant blood loss
  - blood loss is generally well tolerated to a point

- **Diagnosis?**
  - assess the fundus
  - inspect the lower genital tract
  - explore the uterus
    - retained placental fragments
    - uterine rupture
    - uterine inversion
  - assess coagulation

Management

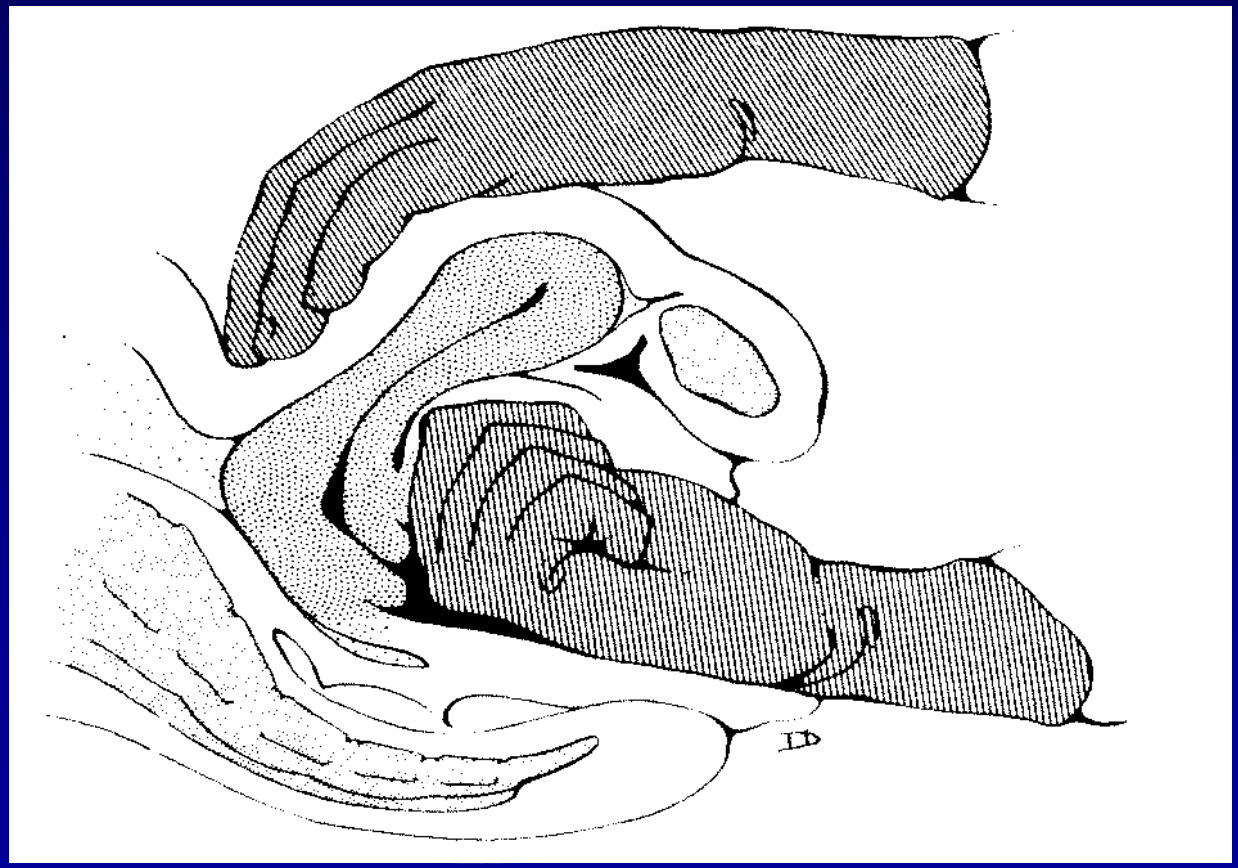
- **ABC ’s**
  - talk to and assess patient
  - get HELP!
  - large bore IV access
  - crystalloid - lots!
  - CBC/cross-match and type
  - foley catheter

Management

Assess the fundus

- simultaneous with ABC ’s
- atony is the leading cause of PPH
- Empty the bladder
- bimanual massage
  - rules out uterine inversion
  - may feel lower tract injury
  - evacuate clot from vagina and/or cervix
  - may consider manual exploration at this time

- **Management - Bimanual Massage**



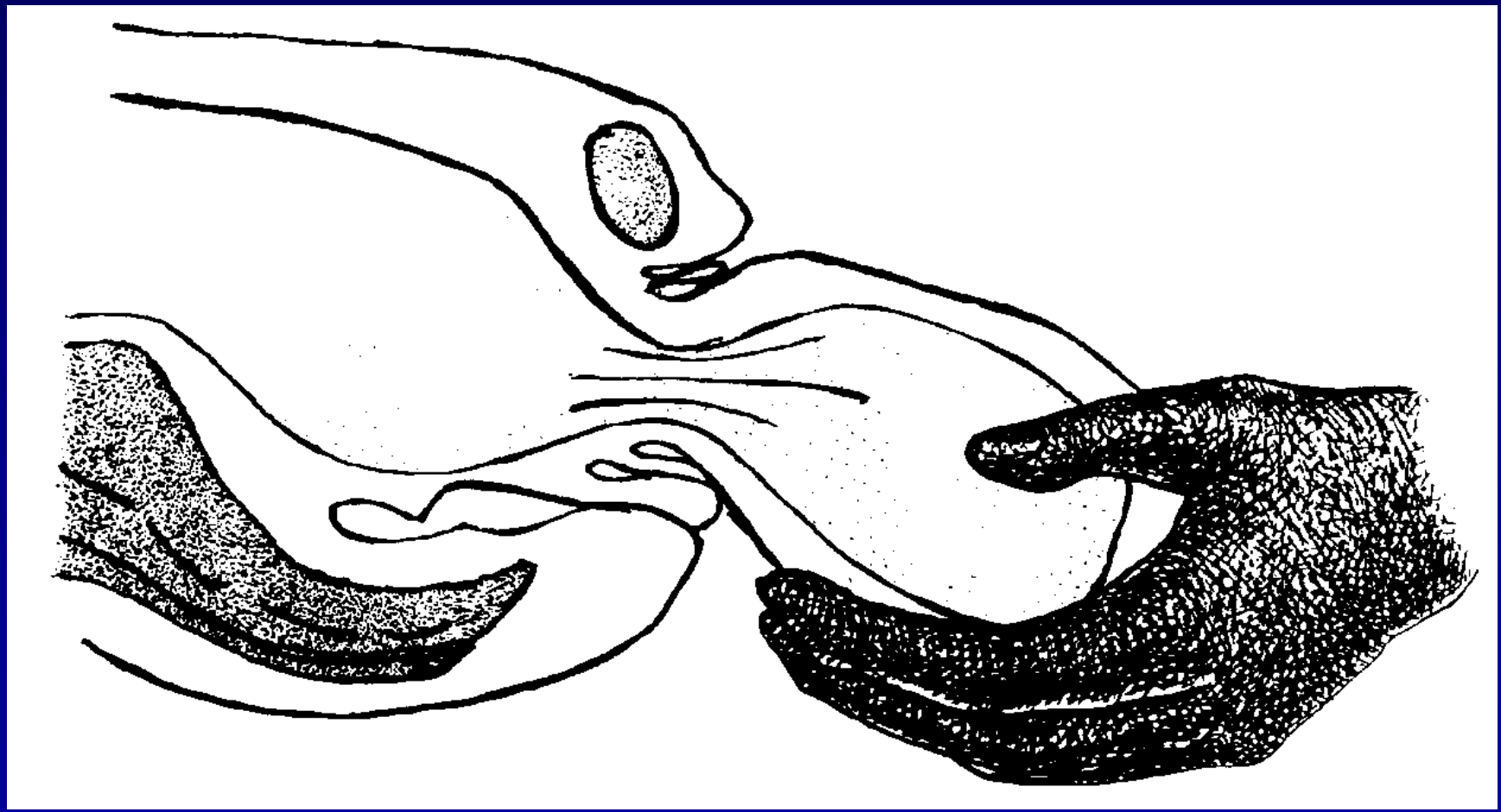
Management

- **Oxytocin**
  - 5 units IV bolus
  - 20 units per L N/S IV wide open
  - 10 units intramyometrial given transabdominally

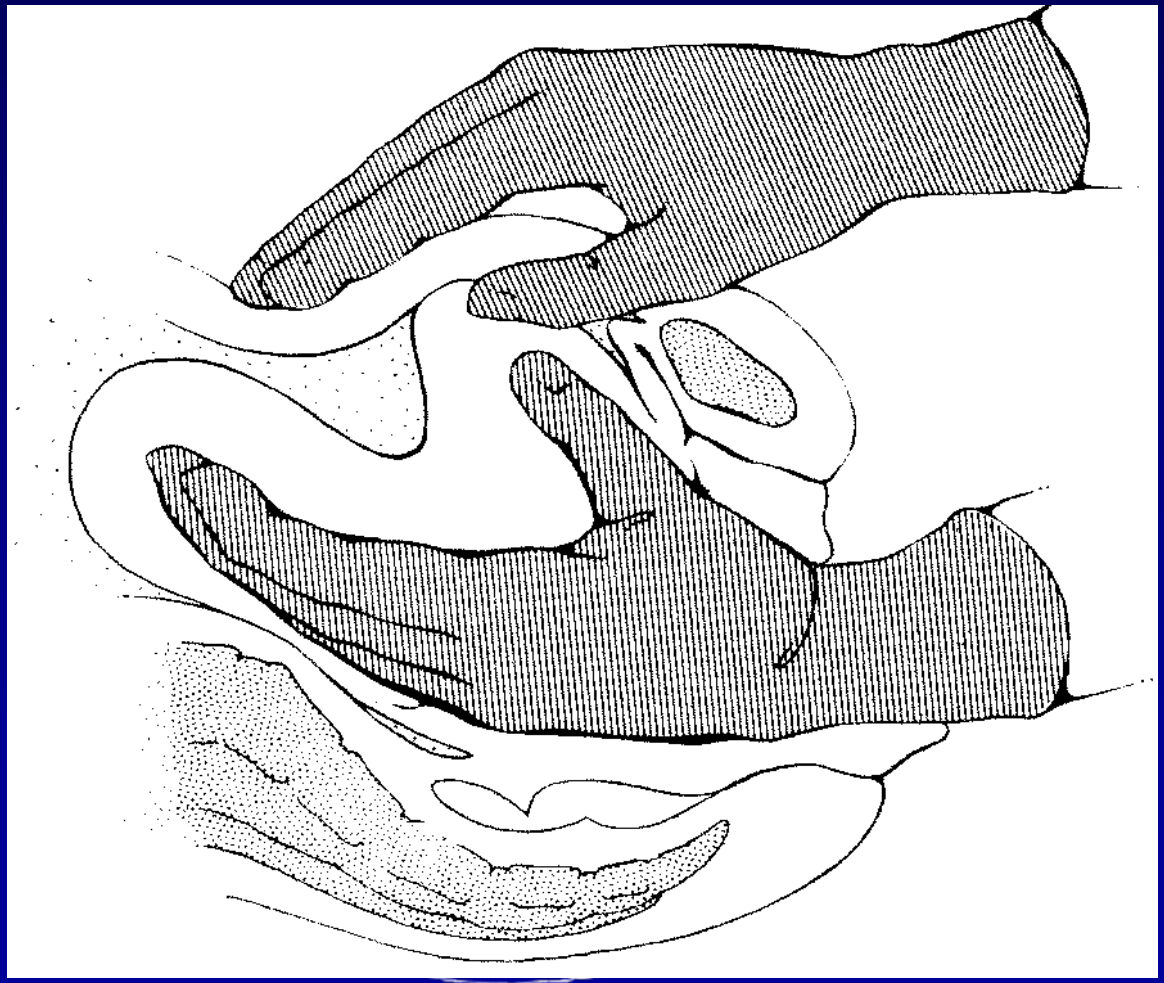
Management

- **Manual Exploration**
  - manual exploration will:
    - rule out uterine inversion
    - palpate cervical injury
    - remove retained placenta or clot from uterus
    - rule out uterine rupture or dehiscence

- **Replacement of Inverted Uterus**



Replacement of Inverted Uterus



Management

- **Additional Uterotonics**
  - Ergometrine - caution in hypertension
    - 0.25 mg IM or 0.125 mg IV
    - maximum dose 1.25 mg
  - Hemabate (carboprost / PG F2alpha) - asthma is relative contraindication
    - 15 methyl-prostaglandin F2α
    - 0.25 mg IM or intramyometrial
    - Maximum dose 2 mg
  - Cytotec (misoprostol)
    - 800-1000 mcg pr

Management

- **Bleeding with firm uterus**
  - explore the lower genital tract
  - requirements
    - appropriate analgesia
    - good exposure and lighting
  - appropriate surgical repair
    - may temporize with packing

Management

- **Continued uterine bleeding**
  - consider coagulopathy
  - correct coagulopathy
    - FFP, cryoprecipitate, platelets
  - if coagulation is normal
    - consider embolization
    - prepare for O.R.

Complication

- Increased maternal mortality and morbidity
  - Renal failure
  - Sheehan syndrome
    - Amenorrhea
    - Failure to lactate
    - hypothyroidism
  - Chronic anemia

Maternal Injuries

Episiotomy

- **Definition**
  - Incision of the perineum (skin, vagina, and perineal muscle) to increase the space available for delivery
- **Objective to reduce**:
  - ? Risk of injury to maternal soft tissue
  - Resistance of soft tissue to delivery
  - ? Risk of fetal birth injuries (pressure against fetal head)
  - ? Prevent future gynecological problems (prolapse and SI)

Episiotomy: Types

- **Midline:**
  - From the fourchette down the perineal midline raphe toward the anal verge
  - Vaginal epithelium, perineal skin, transverse perinei muscles and the medial fibers of the bulbocavernosus muscles
  - Risk: injury to anal sphincter and anal mucosa either at the time of cutting or extension at the time of delivery
  - Benefit:
    - Less bleeding , easy to heal, post-operative comfort and cosmetic

Episiotomy: Types

- **Mediolateral and :**
  - Incise the perineum at a 45-degree angle inferiorly from the midline of the fourchette
  - Incise the transversus and bulbocavernosus muscles lateral to their midline attachments
  - Benefit: more room
  - Risk: more bleeding and extension to ischiorectal fossa
- **Modified median:**
  - The incision is directed in the midline toward the rectum for the length of the perineal body then angle 20-30 degree to the right or left
  - Has the advantages of both median and mediolateral

Episiotomy: Types

Lateral

- Useless
- doesn’t increase the capacity of the outlet
- Ugly and painful scar

Episiotomy: Indication

- **Whenever feel it is indicated**
  - Instrumental delivery
  - Breech delivery
  - Premature delivery
  - ? Primgrvida
  - Macrosomia
  - Suspected shoulder dystocia

Episiotomy: Repair

- Good view and lightning
- Proper analgesia
- Inspection for extension
- Secure bleeding point
- Repair the Episiotomy in layers
  - Close the vaginal epithelium starting one stitch above the apex (to prevent hematoma) with a continuous locked suture to the level of the hymenal ring
  - Obliterate the dead space beneath the vaginal suture line and the anterior rectal wall
  - Reapproximate the muscles of the perineum
  - Closure of the perineal skin

Episiotomy: Care and complications

- **Care**
  - Ice pack to reduce tissue edema
  - Sitz bath
  - Stool softeners
- **Complications**
  - Extension and perineal tears
  - Hematoma formation
  - Infection
  - Break down
  - Dysparonia and vaginismus
  - Skin tags and granulation tissues
  - Fistula (esp. with fourth degree tears)

Perineal & Vulvar lacerations

- **Precipitating factors**
  - First delivery
  - Instrumental delivery
  - Precipitate delivery
  - Unattended delivery
  - Large babies
- **Classification:**
  - First-Degree
    - Epithelial and sub epithelial tears of the perineum and the vagina
  - Second-Degree
    - Epithelial and superficial muscle
  - Third-Degree
    - Epithelial, superficial muscle, and anal sphincter
  - Fourth-Degree
    - Epithelial, superficial muscle, anal sphincter, and rectal mucosa

Perineal & Vulvar lacerations

- **Special types**
  - Tears in the rectal mucosa above an intact anal sphincter (for repair c tear convert into fourth degree)
  - Buttonhole tears (small and high tear into rectal mucosa)
  - Long-neglected tears (allow to heal by secondary intention)
  - Neglected fourth degree lacerations (allow 3-6 months between repair and injury)
  - Perineal wound dehiscence (healing by secondary intention)

Cervical lacerations

- **Types:**
  - Multiple small tears in the epithelium (if no bleeding, don't repair)
  - Deep lateral tears
  - Complete tears that extent into the lower segment
  - Annular detachment of the cervix
- **Causes**
  - Spontaneous more common
  - Instrumental delivery before complete dilatation of the cervix
  - Precipitate delivery
- **Complications:**
  - Cervical incompetence
  - Cervical dystocia
  - Eversion of endocervical canal mucosa

Cervical lacerations

- Annular detachment of the cervix
  - Partially (anterior lip) or complete (rare)
  - **Causes**
    - Pressure necrosis as a result of the fetal head's pressing the CX against the bony pelvis
    - Inappropriate suturing of an incompetent cervix
    - Vacuum before full dilatation
    - Labour with cervical cerclage in situe
  - **Management**
    - Antibiotics
    - Healing by secondary intention
    - ? C/S and cerclage next pregnancy

Rupture uterus

- **Dehiscence** : uterine scar separation that does not penetrate the uterine serosa, does not produce hemorrhage, and does not cause a major clinical problems (2%)

- **Rupture:** open rupture into the peritoneal cavity of both the uterine wall and amniotic membranes (<1%)

- **Incidence**
  - 1/2500 - 1/3000
  - In patient with previous scar and IOL (0.7%), no IOL (0.5%)
  - In patient with classical and labour (4.7%), no labour 2.2%

Rupture uterus

- **Classification**
  - Prepartal vs. intrapartal
  - Spontaneous vs. traumatic
  - Partial vs. complete
  - Dehiscence vs. rupture : separation of the scar without rupture of the membrane.
- **Morbidity and Mortality**
  - Maternal mortality is low
  - Maternal morbidity
    - Bleeding
    - Injury to other organs (Bladder and ureter)
  - High PNM (> 50%) in cases with vertical (classical) rupture while in LLS rupture is < 3%
  - PN morbidity is increased (neurologic sequellae)

Rupture uterus

- **Predisposing factors:**
  - VBAC-TOL (50-70% of all cases)
  - Previous 2 or more uterine scar
  - Excessive amount of oxytocin
  - Dysfunctional labour (Malpresentation, Large baby)
  - Obstetric procedures (IPV)
  - Previous hystrotomy
  - Previous uterine perforation (myomectomy)
  - High parity
  - RTA

Rupture uterus

- **Diagnosis (Intrapartal rupture)**
  - Maternal anxiety
  - Vascular instability and shock
  - Vaginal bleeding
  - Fetal distress or demise
  - Pain not associated with contraction
  - Cessation of labor
  - Recession of presenting part
  - Easily palpable fetal parts through abdominal wall
  - Tenderness of the uterus
  - Signs of peritoneal irritation
  - US diagnosis

Rupture uterus

- **Management**
  - Surgical
    - Debridement and repair
    - Peripartal hysterectomy (Subtotal vs. total)
    - Internal iliac artery ligation

Uterine inversion

- Occur in 1/25,000 deliveries
- Often iatrogenic and more common in grand multips
- The placenta appears at the introitus with mass attached
- Shock secondary to increased vagal tone
- Replace the uterus immediately without removing the placenta
- Replacement is by “ last out, first in”
- If fail laparotomy

Para genital hematoma

- Perineal and Vulvar hematoma (Infralevator)
  - Bleeding inferior to pelvic diaphragm
  - Do not dissect into retro peritoneal space
  - Dissect into the ischiorectal fossa
  - Venous bleeding stops spontaneously as a result of pressure of the expanding mass
  - Painful
  - Small – Ice pack
  - Large – surgical drainage, drain and primary closure

Para genital hematoma

- Paravaginal (Supralevator)
  - Less painful initially but more dangerous
  - Bleeding from vessels above pelvic diaphragm that communicate with hypogastric and inferior hemorrhoidal, and inferior vesical arteries and veins
  - Massive blood loss
  - Broad ligament and retro peritoneal hematoma
  - Small --- observe
  - Large --- surgical drainage and packing with healing by secondary intention