Postpartum Hemorrhage
Objectives

• Definition
• Etiology
• Risk Factors
• Prevention
• Management
Postpartum Haemorrhage

Traditional Definition
- blood loss of > 500 mL following vaginal delivery
- blood loss of > 1000 mL following cesarean delivery

Functional Definition
- any blood loss that has the potential to produce or produces hemodynamic instability

Incidence
- about 5% of all deliveries
## Etiology of Postpartum Hemorrhage

<table>
<thead>
<tr>
<th>T-</th>
<th>Tone</th>
<th>- uterine atony</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-</td>
<td>Tissue</td>
<td>- retained tissue/clots</td>
</tr>
<tr>
<td>T-</td>
<td>Trauma</td>
<td>- laceration, rupture, inversion</td>
</tr>
<tr>
<td>T-</td>
<td>Thrombin</td>
<td>- coagulopathy</td>
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</tbody>
</table>
Risk Factors for PPH - Antepartum

- previous PPH or manual removal
- placental abruption, especially if concealed
- intrauterine fetal demise
- placenta previa
- gestational hypertension with proteinuria
- overdistended uterus (e.g. twins, polyhydramnios)
- pre-existing maternal bleeding disorder (e.g. ITP)
Risk Factors for PPH - Intrapartum

- operative delivery - cesarean or assisted vaginal
- prolonged labour
- rapid labour
- induction or augmentation
- chorioamnionitis
- shoulder dystocia
- internal podalic version and extraction of second twin
- acquired coagulopathy (e.g. HELLP, DIC)
Risk Factors for PPH - Postpartum

- lacerations or episiotomy
- retained placenta/placental abnormalities
- uterine rupture
- uterine inversion
- acquired coagulopathy (e.g. DIC)
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Prevention

• be prepared

• active management of the third stage
  – prophylactic oxytocin with delivery or anterior shoulder
    – 10 U IM or 5 U IV bolus
    – 20 U/L N/S IV run rapidly
  – early cord clamping and cutting
  – gentle cord traction with suprapubic countertraction
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Active vs Expectant Third Stage Management

Outcome (subjects)
- PPH > 500 mL (n=4636)
- PPH > 1000 mL (n=4636)
- Maternal Hb < 91 (n=4256)
- Blood transfusion (n=4829)
- Therapeutic oxytocin (n=4829)
- Nausea (n=3407)
- Manual removal (n=4829)

Odds Ratio (95% Confidence Interval)

Cochrane Library
Issue 1, 2000
Diagnosis - Is this a PPH?

- consider risk factors
- observe vaginal loss
- express blood from vagina following C/S

**REMEMBER**
- blood loss is consistently underestimated
- ongoing trickling can lead to significant blood loss
- blood loss is generally well tolerated to a point
Diagnosis - What is the cause?

• assess the fundus
• inspect the lower genital tract
• explore the uterus
  – retained placental fragments
  – uterine rupture
  – uterine inversion
• assess coagulation
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A = airway
B = breathing
C = circulation
Management - ABC’s

• talk to and observe patient
• large bore IV access ($\geq 16$ gauge)
• crystalloid - lots!
• CBC
• cross-match and type
• get HELP!
Management - Assess the fundus

- simultaneous with ABC’s
- atony is the leading cause of PPH
- if boggy → 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

- if no response to bimanual massage and oxytocin then proceed to exploration
- manual exploration will:
  - rule out uterine inversion
  - palpate cervical injury
  - remove retained placenta or clot from uterus
  - rule out uterine rupture or dehiscence
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Replacement of Inverted Uterus
Postpartum Haemorrhage

Replacement of Inverted Uterus
Management - Additional Uterotonics

- **Ergotamine** - caution in hypertension
  - 0.25 mg IM or 0.125 mg IV
  - Maximum dose 1.25 mg

- **Hemabate (carboprost)** - asthma is relative contraindication
  - 15 methyl-prostaglandin F2α
  - 0.25 mg IM or intramyometrial
  - Maximum dose 2 mg

- **Cytotec (misoprostil)** - caution in asthma
  - 400 mg pr or po
  - Experimental at present
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

• possible coagulopathy - INR, PTT, TCT, fibrinogen
• if coagulation is abnormal:
  – correct with FFP, cryoprecipitate, platelets
• if coagulation is normal:
  – prepare for O.R. (may consider embolization)
  – rule out uterine rupture, inadequate incision repair
  – consider uterine/hypogastric ligation, hysterectomy
ENSURE that you are always ahead with your resuscitation!!!!

- consider need for Foley catheter, CVP, arterial line, etc
- consider need for more expert help
Conclusions

• be prepared
• practice prevention
• assess the loss
• assess maternal status
• resuscitate vigorously and appropriately
• diagnose the cause
• treat the cause
Management - Evolution

Panic Panic Panic Hysterectomy

Pitocin Prostaglandins Happiness