Management of Massive Obstetric Haemorrhage

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What do CEPOD and now ‘the WMD and Maternal Death Enquiries’ teach us about Haemorrhage?

Massive Obstetric Haemorrhage

- Blood loss from uterus or genital tract
  - >1500ml
  - Fall in Hb > 4g/dL
  - Acute transfusion > 4 units blood

Massive Obstetric Haemorrhage

- Blood loss notoriously difficult to assess in obstetric bleeds
  - May be concealed
  - Presence amniotic fluid makes accurate estimation challenging
  - Hypotension is a late sign in the parturient

Leading causes of direct deaths reported to CEMD, 2000-02

- Thromboembolism
- Haemorrhage
- Hypertension
- Sepsis
- Ectopic
- Other early pregnancy deaths
- Amniotic fluid embolism
- Other direct

Source: Confidential enquiries into maternal deaths, Figure 1.2
CVS Alterations in Pregnancy

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Change</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiac Output</td>
<td>+40%</td>
<td>7.5L/min</td>
</tr>
<tr>
<td>Heart Rate</td>
<td>+12-20%</td>
<td>85/min</td>
</tr>
<tr>
<td>Stroke Volume</td>
<td>+30%</td>
<td>90mls</td>
</tr>
<tr>
<td>Blood Volume</td>
<td>+35%</td>
<td>7 litres</td>
</tr>
</tbody>
</table>

Principles Underpinning Massive Obstetric Haemorrhage

- Gravid uterus receives up to 15% of maternal CO (from 2%)
  - >600ml/min
  - Placental haemorrhage represents >1 unit blood loss/min
- Low resistance placental circulation lacks autoregulation
- Uterine myometrial contraction primarily responsible for cessation of bleeding

ASSESSING SEVERITY

<table>
<thead>
<tr>
<th>BP</th>
<th>Appearance</th>
<th>Heart Rate</th>
<th>Resp</th>
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<tbody>
<tr>
<td>500-1000</td>
<td>Normal</td>
<td>Usually fast &gt;100</td>
<td>Tachypnoea</td>
</tr>
<tr>
<td>1000-1500</td>
<td>SAP 80-90</td>
<td>&gt;100</td>
<td>Tachypnoea</td>
</tr>
<tr>
<td>1500-2000</td>
<td>Clammy, uo&lt;30</td>
<td>&gt;110</td>
<td>Tachypnoea</td>
</tr>
<tr>
<td>2000-3000</td>
<td>SAP&lt;50 Anuria</td>
<td>Hr may be low Air hunger</td>
<td></td>
</tr>
</tbody>
</table>

Massive Haemorrhage: Causes

- Placenta praevia
- Abruptio placentae
- Uterine rupture
- Retained products
- Genital tract trauma
- Uterine inversion
- Coagulation disorder

Massive Obstetric Haemorrhage

- Blood loss may be:
  - Antepartum: after 24/40 and before delivery
    - Placenta praevia
    - Abruptio placentae
    - Uterine rupture
  - Postpartum
    - Uterine atony
    - Retained products
    - Genital tract trauma
    - Uterine inversion
    - Coagulation disorder
**PPH - The 4 “Ts”**

- Tone (uterine atony)
- Tissue (retained products)
- Trauma (cervical and genital tract damage during delivery)
- Thrombin (coagulation disorder), eg severe pre-eclampsia

**Placenta Praevia**

- Encroachment of the placenta on the cervical os
- 1 in 200 pregnancies
- Risks
  - Previous C/S
  - Multiparity
  - Multiple pregnancies

**Placenta Praevia**

- Diagnosed with ultrasound
- Often presents as small painless bleed PV
- Is vaginal delivery possible?
- Does placenta cover anterior lower segment?
- Prem labour, excessive bleeding or fetal distress may necessitate emergency C/S

**Placenta Accreta**

- Abnormal implantation placenta through endometrium to myometrium
- Placenta fails to separate from uterus after delivery
- Life-threatening haemorrhage may ensue
Placenta Accreta
- Incidence rising as increasing number of C sections are being performed
- Much more common when placenta implants over a previous scar
- 5% women with PP and no previous scar
- 50% women with PP and 2 previous scars
  - 2/3 of these will require caesarean hysterectomy

Placental Abruption
- Premature separation of placenta from uterine wall with retroplacental bleeding
- 1 - 2% pregnancies
- Often presents with pain and PV bleed
- Fetal compromise common
- Urgent C/S required in significant abruption

Placental Abruption

Uterine Rupture
- 1 in 1000 full-term pregnancies
- Previous uterine scars (1:100)
- Rapid spontaneous delivery
- Excessive oxytocin stimulation
- Multiple parity with CPD
- Unrecognized transverse presentation

Uterine Rupture
- Severe abdominal pain
- Often referred to shoulder
- Hypotension
- Loss of consciousness
- Disappearance fetal heart tones

Shock Cascade in Haemorrhage
- Decreased intravascular blood volume
- Decreased cardiac output
- Inadequate O₂ supply in shock organs

Multiple Organ Failure (MOF)
MOF represents the main cause of death in shock surviving patients
Approach to Severe Haemorrhage

- Anticipate
- Prepare
- Recognize
- Mobilise assistance
- Communicate
- Delegate
- Diagnose

Simultaneously….

- Effective resuscitation
- Appropriate monitoring of mother and fetus
- Control of haemorrhage: treat cause and resultant complications
- Maintain communication with other team members

But Remember….

- Blood loss can be difficult to assess accurately and is easy to underestimate
- Pregnant women tolerate blood loss very well
  - Classical signs of hypovolaemia develop late
- Coagulopathy may produce as well as result from MOH

Resuscitation

- High inspired oxygen
- Left lateral tilt if antepartum
- Adequate venous access
  - Rapid infuser conversion kit
- Level One or pressure bags
- Crystalloid or colloid until blood available
- Replace blood 1:1 if using colloid, 3:1 for crystalloid
- Vasopressors to maintain BP until circulating blood volume restored
- Metaraminol 0.5 mg at a time
Monitoring

- Arterial line very handy, but practicalities of insertion should not detract from resuscitation
- Delegate this task to someone else if possible
- Central lines not initially very useful, especially for rapid blood transfusion, and may waste valuable time
- Patients in this condition do not require a tension pneumothorax or other potential CVC complication

Call for Help….

- Medical emergency buzzer
- When and if people turn up, give them each a specific job to do (delegate tasks)
- Have colleagues rung at home and ask them to come in to help
- Communicate with surgeon
  - Encourage them to seek assistance early from their colleagues