Management of Major Obstetric Haemorrhage

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Bristol
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Avoiding Major Obstetric Haemorrhage

Identify those at risk

Antenatal
Labour
Post partum

Intervene before life threatening

Management of Major Obstetric Haemorrhage

Causes Maternal Death UK

Life threatening haemorrhage

An anaemic woman had a caesarean section after a very prolonged labour. She was of small stature and lost almost 1000mls at surgery. No blood was ordered. Three hours later when she then bled 2500mls vaginally from an atomic uterus she was initially resuscitated with fluid, receiving 8 litres of crystalloids and 2 litres of colloid before blood was available for her. She developed pulmonary oedema and was intubated ventilated and transferred to ITU where she died from ARDS, sepsis and multi-organ failure a month later.

Maternal Mortality Rate 2013 (per 100,000 live births)

80% of near miss morbidity
6 per 1000 maternities

Haemorrhage deaths

Life threatening haemorrhage

Table 4: Direct deaths by type of obstetric haemorrhage 1994-2010

<table>
<thead>
<tr>
<th>Year</th>
<th>Antenatal</th>
<th>Labour</th>
<th>Post partum</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994-95</td>
<td>10</td>
<td>5</td>
<td>2</td>
<td>17</td>
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<tr>
<td>1995-96</td>
<td>9</td>
<td>4</td>
<td>1</td>
<td>14</td>
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<tr>
<td>1996-97</td>
<td>3</td>
<td>3</td>
<td>6</td>
<td>12</td>
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<tr>
<td>1997-98</td>
<td>5</td>
<td>0</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>1998-99</td>
<td>6</td>
<td>2</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>1999-00</td>
<td>7</td>
<td>1</td>
<td>1</td>
<td>9</td>
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<td>2000-01</td>
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<td>7</td>
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<td>2001-02</td>
<td>6</td>
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</tr>
<tr>
<td>2002-03</td>
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<td>2003-04</td>
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<td>2006-07</td>
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<td>2007-08</td>
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<td>9</td>
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<tr>
<td>2008-09</td>
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<tr>
<td>2009-10</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>7</td>
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</table>

Note: Calculated from various sources and published authors depending on data availability.

Haemorrhage 3rd leading cause

Causes Maternal Death UK
An anaemic woman had a caesarean section after a very prolonged labour. She was of small stature and lost almost 1000ml of blood. No blood was ordered. Three hours later when she then bed 2500mls vaginally from an 32 week gestation was intubated ventilated and transferred to ITU where she died from ARDS, sepsis and multi-organ failure a month later.

Preparation for delivery

- Avoid fluids that don’t clot or carry oxygen!

Delivery

- Uterine contraction
- Arterioles constricting
- Clot formation

Uterine Contraction

Haemorrhage causes

<table>
<thead>
<tr>
<th>Cause</th>
<th>Example</th>
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</thead>
<tbody>
<tr>
<td>APH</td>
<td>Placenta praevia</td>
</tr>
<tr>
<td>Tone</td>
<td>Uterine atony (75-90%)</td>
</tr>
<tr>
<td>Tissue</td>
<td>Retained products</td>
</tr>
<tr>
<td>Trauma</td>
<td>Vaginal/cervical lacerations,</td>
</tr>
<tr>
<td></td>
<td>Ruptured uterus, broad</td>
</tr>
<tr>
<td></td>
<td>Ligament haematoma</td>
</tr>
<tr>
<td>Thrombin</td>
<td>Coagulopathies</td>
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</tbody>
</table>

Definitions

Obstetric haemorrhage continuum

- Minor > 500 - 1000ml
- Moderate > 1000 - 1500ml
- Major > 1500 - 2000ml
- Massive > 2000ml

Intervene before life threatening

Massive obstetric haemorrhage

Blood loss of >2000mls or > 1500 ml with ongoing loss and/or signs of circulatory collapse:
- Tachycardia (pulse <62)
- Hypotension (systolic <90mmHg)
- Tachypnoea (>30 breaths per minute)
- Coagulopathy

If signs circulatory collapse present MOH irrespective of measured blood loss

Diagnosis

- Assessing blood loss
  - Underestimation most likely
    - Compensation can lead to late diagnosis
      - Tachycardia
      - Hypotension
      - Poor peripheral perfusion
      - Altered conscious state
      - Unexplained metabolic acidosis
Management of Major Obstetric Haemorrhage

Communicate  
Assess  
Replace  
Arrest

Massive Obstetric Haemorrhage

Blood loss > 1500ml with ongoing haemorrhage and /or signs of circulatory collapse

Call for help

2222 call for Obstetric emergency team  
2222 Major Haemorrhage call

Assess and monitor

Vital signs: Pulse, bp, perfusion
Identify cause: Tonnage, thrombin, trauma
Estimate blood loss
Order blood and blood products (Obtaining Blood Urgently)

FBC, coagulation and fibrinogen, U&Es, LFTs
Cross match Haemacue HB
HDU chart
Consider central/art line

Arrest bleeding

Bimanual compression
Empty bladder – insert foley
Syntocinon 5iu /Ergometrine 0.5mg
Max 2 doses
(PETs synto 5iu s...
ion (30 iu in 500ml N Saline at 125ml/hr)
Misoprostol 400 mcg
Sublingual/rectal - repeat after 20 mins if necessary

Replace + Resuscitate

ABC
Oxygen mask 15litres
IV access 14g cannula x 2
Crystalloid 2000ml
Blood (one bag/electronic issue/group specific/cross matched/cells salvaged)
Blood products (FFP, Plt, Cryo)
Keep warm (rapid infuser/warming

Surgical interventions

consider early
EUA
Intra uterine balloon
B Lynch suture
Internal iliac ligation
Hysterectomy

On going communication

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Massive Obstetric Haemorrhage
Blood loss > 1500ml with ongoing haemorrhage and/or signs of circulatory collapse

Assess and monitor Vital signs: Pulse, bp, perfusion Identify cause: tone, thrombin, trauma Estimate blood loss Order blood and blood products (Obtaining Blood Urgently)

FBC, coagulation and fibrinogen, U&Es, LFTs Cross match Haemacue HB HDU chart Consider central/art line

Arrest bleeding Bimanual compression Empty bladder – insert foley
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Replace + Resuscitate

ABC
Oxygen mask 15 litres IV access 14g cannula x 2
Crystalloid/colloid 2000ml Blood (oneg/ electronic issue/group specific/cross matched) Blood products (FFP, Plt, Cryo)

Keep warm (rapid infuser/warming blanket)

Call for help
2222 call for Obstetric emergency team 2222 Major Haemorrhage call

Massive Obstetric Haemorrhage Theatre

Lessons from the battlefield
early aggressive use blood components haemostatic resuscitation massive transfusion protocol

Translation for trauma: lessons from the battlefield

Coagulopathy

Dilutional DIC* Abruptio Sepsis AFE

DIC = Disseminated intravascular coagulopathy

Management of Major Obstetric Haemorrhage

Assess

Lessons from the battlefield
early aggressive use blood components haemostatic resuscitation massive transfusion protocol

Coagulopathy

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Abruptio Sepsis AFE

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Assessment and monitoring

Lab tests
- FBC
- aPTT
- PT
- ESR

POC tests
What's new

After the acute event
Risk of thrombosis
Level 2 care

Fibrinogen

levels increase in pregnancy 4-6g/l
low levels at presentation early predictor

Charlet B et al. The decrease of fibrinogen is as an early predictor of the severity of postpartum haemorrhage. J Thromb Haemost 2011; 9: 508-72

Fibrinogen

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Mallaiah et al. Fibrinogen levels increase in pregnancy 4-6g/l

Charlet B et al. The decrease of fibrinogen is as an early predictor of the severity of postpartum haemorrhage. J Thromb Haemost 2011; 9: 508-72

To raise fibrinogen by 1g for 70kg woman
1000ml FFP
260 ml cryoprecipitate
100ml fibrinogen concentrate

Use of ROTEM in major obstetric haemorrhage (reply). S. Milatich et al. Anaesthesia 2015; 70: 50-41

260 ml cryoprecipitate
100ml fibrinogen concentrate

Use of ROTEM in major obstetric haemorrhage (reply). S. Milatich et al. Anaesthesia 2015; 70: 50-41
Haemorrhage Top Tips

identify those at risk
treat anaemia pre labour
avoid fluids that don’t carry oxygen or clot
avoid hypothermia
keep everyone up to speed
give tranexamic acid
think fibrinogen

Haemorrhage References

MBRRACE-UK Saving Mothers Lives 2014 Report
https://www.npeu.ox.ac.uk/mbrrace-uk/reports

SCASMM
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Haemostatic management of obstetric haemorrhage
R. E. Collis and P. W. Collins 2015, 70 (Suppl. 1), 78-86.

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