Uterine Tamponade

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Dept of O&G
HoSHAS, Temerloh

PPH SEMINAR
POSTPARTUM HEMORRHAGE
PREDICT. PREPARE. HANDLE.

10TH OCTOBER 2015
8.00AM - 5.00PM
AUDITORIUM,
HOSPITAL SULTAN HAJI
AHMAD SHAH
TEMERLOH PAHANG
Obstetric Hemorrhage

25% of maternal deaths – leading cause worldwide

140,000 deaths every year

34% of maternal deaths in Africa

31% of maternal deaths in Asia

21% of maternal deaths in Latin America & Caribbean

Khan et al, 2006
PPH in HoSHAS

PPH (blood loss > 500ml)
2014: 6.62%
2015 (up to September): 6.48%

Massive PPH (blood loss > 1500ml)
2014: 0.52%
2015 (up to September): 0.51%

Since 2014: About 7% of deliveries were PPH.
And 7% of PPH were Massive PPH.
Postpartum Haemorrhage

Management strategies include:

- Medical Treatment
- Uterine Tamponade
- Surgical Treatment
Uterine Tamponade

The ‘next step’ when uterotonics fail to arrest PPH

External compression:
External uterine compression
Bimanual uterine compression

Internal compression:
Uterine packing
Uterine balloon tamponade

Non uterine-specified
Foley’s catheter
Rusch catheter
Sangstaken-Blackmore Tube
Condom catheter
Glove

Uterine-specified
Bakri balloon
BT-Cath balloon
EBB balloon
PATH-UBT
External Uterine Compression
External Uterine Compression

“Check it every few hours. If you start to bleed, or your womb feels soft, rub here until it gets hard.”
Bimanual Uterine Compression
Uterine Packing

First described in 1800s
Roller gauze or abdominal pack
Concealed bleeding
Infection
Traumatic insertion & removal
Non Uterine-specified Catheters

Goldrath first described use of Foley Catheter for uterine tamponade in 1983.

Other catheters have been tried too:

• Rusch catheter
• Sangstaken-Blackmore Esophageal Tube
• Condom Catheter (Sayeba’s Method)

Goldrath, 1983
Balloons

- Dilation balloon
- Gas balloon
- Oval balloon
- Foley
- Bakri
- Sengstaken-Blakemore
- Rusch
- Condom-catheter
Balloon Tamponade - non uterine-specified devices: SBT

Figure 1  Sangstaken-Blackmore Tube
Balloon Tamponade - non uterine-specified devices: Rusch Catheter
Balloon Tamponade with Foleys Catheter: An Effective Method of Controlling Post Partum Haemorrhage (PPH)

Yaqub U., 1 Hanif A. 2

Address for Correspondence: Associate Professor: Department of Obstetrics and Gynaecology Unit – I, Lady Willingdon Hospital, King Edward Medical University (KEMU) / Mayo Hospital, Lahore.
Balloon Tamponade – non uterine-specified devices: Condom Catheter
Condom

It can expand to 20L! To stop bleeding one does not need to inflate it beyond 1L.
Even a glove can be used too!
Uterine Balloons

- Bakri postpartum Balloon
- BT-Cath balloon
- EBB balloon (Belfort-Dildy Complete Tamponade System)
- PATH-UBT
Uterine Balloon Tamponade

EBB Balloon

BT Cath Balloon
Bakri Postpartum Balloon

Bakri et al, 2001
PATH - UBT
Program for Appropriate Technology in Health

DOI: 10.1111/j.1471-0528.2012.03454.x
www.bjog.org

Systematic review

Uterine balloon tamponade for the treatment of postpartum haemorrhage in resource-poor settings: a systematic review

K Tindell, a,b R Garfinkel, c,d E Abu-Haydar, c R Ahn, a,b TF Burke, a,b,e K Conn, a M Eckardt a,f
Brace sutures
Kipling Method

I keep six honest serving-men,
They taught me all I knew;
Their names are What and Why and When And How and Where and Who.

“The Elephant’s Child”, Rudyard Kipling,
How does uterine tamponade work?

1. Direct pressure on placental bed to stop bleeding
2. Pressure of balloon >arterial pressure to stop bleeding & promote clot formation
3. Presence of balloon in uterine cavity may stimulate uterine contraction

Balloon tamponade in atonic bleeding induces uterine contraction: attempt to quantify uterine stiffness using acoustic radiation force impulse elastography before and after balloon tamponade.

Takashi Yorifuji et al 2011
For what cases?

- Uterine atony not responding to uterotonics
- Lower segment bleeding eg post-LSCS for placenta previa
- Bleeding from placenta site after removal (including placenta accreta)
Contraindications

• Arterial bleeding requiring surgical exploration/hysterectomy
• Cervical cancer
• Purulent infections in the vagina, cervix or uterus
• Untreated uterine anomaly
• Retained placenta / POC
• ? DIVC - use with caution
By **Whom & Where**

Doctors - including juniors (house officers & medical officers)

Paramedics - nurses and medical assistants

* With the aid of ultrasound machine

- Labour room
- OT
- Emergency Department
- Ward
When do we use uterine tamponade?

Initially - after approaching massive PPH

Now - to prevent massive PPH, a natural second method of choice

Tip: place the Bakri balloon early in the PPH treatment algorithm
How to apply?

- Insertion routes
  - Transvaginal
  - Transabdominal

- Monitoring

- Removal
Insertion Technique: Transvaginal

- Uterus must be clear of any retained placental fragments, arterial bleeding, or lacerations.
- Lithotomy, Sims speculum, forceps, 2-3 assistants
- Insert the balloon portion of the catheter in the uterus.
- Pass the entire balloon beyond the cervical canal, under ultrasound guidance (preferable).
- Apply Tamponade Test to ascertain volume of liquid required to insufflate the balloon.
Tamponade Test

Insufflate until the bleeding ceases in the drainage tubing

→ POSITIVE ‘Tamponade Test’
Insertion Technique: Transvaginal

- Connect drainage tubing to urine bag for quantification
- Pack the vaginal canal with vaginal gauze to ensure it stays in place.
- May apply tension by tapping the catheter to patient’s thigh (optional).
- Insert Foley’s catheter for CBD (if not already done so).
Insertion Technique: Transabdominal

- Uterus must be clear of any retained placental fragments, arterial bleeding, or lacerations.

- From above (via access of the Cesarean incision), pass the inflation port first, through the uterus and cervix.

- Have an assistant pull the shaft of the balloon through the vaginal canal, until the deflated balloon base comes in contact with the internal cervical os.
Insertion Technique: Transabdominal

- Close the incision per normal procedure, taking care to avoid puncturing the balloon while suturing.
- Pack the vaginal canal with vaginal gauze to ensure it stays in place.
Monitoring

- Patient should be monitored continuously for signs of increased bleeding, uterine cramping, or a deteriorating condition.
- Patient monitoring should include, but not be limited to: Blood pressure, pulse, urine output, cramping, pallor, and active bleeding
- Drain chart to be monitored - either hourly / 4-hourly / per-shift depending on speed of drainage.
Important

• Always pack vagina to prevent slippage of balloon
• Make sure uterotonic infusion and antibiotic is on board
• Do not keep >24hr
• Signs of deteriorating or non-improving conditions should indicate more aggressive treatment and management of patient uterine bleeding.
Balloon Removal

- Remove any vaginal packing
- Deflate the balloon
- Gently retract the balloon from the uterus and vaginal canal and discard.
- Continue to monitor the patient for signs of uterine bleeding
Other uses

- Mid-trimester miscarriage
- Morbidly adherent placenta
- Cervical ectopic pregnancy
- Uterine inversion
- Pelvic flood bleeding (post hysterectomy)
Effective use of the Bakri postpartum balloon for posthysterectomy pelvic floor hemorrhage

Kittipat Charoenkwan, MD
Division of Gynecologic Oncology, Department of Obstetrics and Gynecology, Faculty of Medicine, Chiang Mai University, Chiang Mai, Thailand
Published Online: April 03, 2014
Complications

Uterine rupture
/perforation

Scar rupture

Migration of balloon following perforation*

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Migration of Bakri balloon through an unsuspected uterine perforation during the treatment of secondary postpartum hemorrhage

Soizic Leparco, MD; Alexandre Viot, MD; Alexandra Benachi, MD, PhD; Xavier Deffieux, MD, PhD

*Leparco et al, 2013
How successful?

- Effectiveness >80%
- Control of PPH without additional procedures

Doumouchtsis et al, 2008
Vitthala et al, 2009
Gronvall et al, 2012
<table>
<thead>
<tr>
<th>Year</th>
<th>Deliveries</th>
<th>Massive PPH (n; %)</th>
<th>Hysterectomy / Massive PPH</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>14854</td>
<td>86 (0.56%)</td>
<td>21 (24.4%)</td>
</tr>
<tr>
<td>2011</td>
<td>15608</td>
<td>88 (0.56%)</td>
<td>12 (13.6%)*</td>
</tr>
<tr>
<td>2012</td>
<td>16298</td>
<td>107 (0.66%)</td>
<td>7 (6.5%)</td>
</tr>
<tr>
<td>2013</td>
<td>16602</td>
<td>121 (0.73%)</td>
<td>8 (6.6%)</td>
</tr>
<tr>
<td>2014</td>
<td>16540</td>
<td>141 (0.85%)</td>
<td>11 (7.8%)</td>
</tr>
</tbody>
</table>

*Started using Bakri postpartum balloon since April 2011*
<table>
<thead>
<tr>
<th>Year</th>
<th>Deliveries</th>
<th>Massive PPH (n; %)</th>
<th>Hysterectomy / Massive PPH</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>8030</td>
<td>34 (0.42%)</td>
<td>7 (20.6%)</td>
</tr>
<tr>
<td>2013</td>
<td>7701</td>
<td>26 (0.34%)</td>
<td>3 (11.5%)*</td>
</tr>
<tr>
<td>2014</td>
<td>8408</td>
<td>44 (0.52%)</td>
<td>3 (6.7%)**</td>
</tr>
</tbody>
</table>

*Started using Bakri postpartum balloon since April 2013
**All 3 were MAP cases
## Maternal Mortality in Sabah

<table>
<thead>
<tr>
<th>Year</th>
<th>Total maternal mortality</th>
<th>PPH Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>42</td>
<td>20 (50%)</td>
</tr>
<tr>
<td>2012</td>
<td>33</td>
<td>9  (27.3%)</td>
</tr>
</tbody>
</table>

Uterine tamponade is the only new introduction to PPH management in the state in 2011.

Uterine tamponade reduces obstetric morbidity & mortality.
Bakri Balloon usage in HoSHAS

<table>
<thead>
<tr>
<th>Year</th>
<th>For PPH</th>
<th>For M-PPH</th>
<th>Total used</th>
<th>Failure</th>
<th>Success %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013* (8mth)</td>
<td>5</td>
<td>5</td>
<td>10</td>
<td>1</td>
<td>90.0%</td>
</tr>
<tr>
<td>2014</td>
<td>8</td>
<td>3</td>
<td>11</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>2015 (till 9/15)</td>
<td>7</td>
<td>7</td>
<td>14</td>
<td>2</td>
<td>85.7%</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>15</td>
<td>35</td>
<td>3</td>
<td>91.4%</td>
</tr>
</tbody>
</table>

*started using Bakri balloon in April 2013
## Bakri Balloon usage in HoSHAS

<table>
<thead>
<tr>
<th>Year</th>
<th>Atony</th>
<th>Retained placenta</th>
<th>Placenta previa</th>
<th>MAP</th>
<th>Abruptio</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013*</td>
<td>5</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>(8mth)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>8</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>7</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>(till 9/15)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>20</td>
<td>8</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>(57.1%)</td>
<td>(22.9%)</td>
<td>(11.4%)</td>
<td>(5.7%)</td>
<td>(2.9%)</td>
</tr>
</tbody>
</table>

*started using Bakri balloon in April 2013
Pointers (1)

Correct indication - uterine atony, placental bed bleeding

Timely manner - resort to it sooner than later

May insert under ultrasound guidance

Apply tamponade test - insufflation until bleeding ceases (ie no more bleeding in catheter tubing)

→ Tamponade Test Positive
Pointers (2)

Vaginal packing to prevent hour-glass slippage of balloon through the Os – hold on to the catheter during packing

Antibiotic coverage

Continuous uterotonics

Transfer of patient to tertiary hospital after insertion for further management

Do not keep balloon for >24hr
Pointers (3)

• Guidelines
• Practice / drills / training
• Clinical audit
• Database / patient registry

→ FAMILIARITY is the key!
WHO recommendations for the prevention and treatment of postpartum haemorrhage

Queensland Clinical Guidelines
Translating evidence into best clinical practice

Management of Postpartum Haemorrhage (PPH)

Primary postpartum haemorrhage

South Australian Perinatal Practice Balloon Tamponade and Uterine Packing for Management of Postpartum Hemorrhage
Conclusions

• Uterine tamponade - easy, relatively cheap, effective method to control PPH

• Practice makes perfect - familiarize oneself with the device & technique

• Life saving device - make available in every Labour Room, OT, ED, and in Obstetric Retrieval Team
Thank You

Think balloon !!

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