PREVENTION AND MANAGEMENT OF POSTPARTUM HAEMORRHAGE

Classified of post partum hemorrhage

- **Primerry (first 24 h)**
  - Uterine atony
  - Retained placenta
  - Defect in coagulation
  - Uterine invertion
- **Secondary (between 24 h until 12week)**
  - Sub involution
  - Retained product
  - Infection
  - Inherited coagulation defect

Prediction and prevention

- Most cases of PPH have no identifiable risk factors
  - abnormalities of one or more of four basic processes (‘the four T’s’: tone, trauma, tissue, thrombin).

Risk factors for PPH

Antenatally

a) suspected or proven placental abruption
b) Known placenta preavia
c) Multiple pregnancy
d) gestational hypertension

antenatally and associated with a significant

a) previous PPH.
b) Asian ethnicity
c) Obesity (BMI >35)
d) Anaemia (<9 g/dl) –

during labour and delivery; these factors should prompt extra vigilance:

a) Delivery by emergency caesarean section
b) Delivery by elective caesarean section
c) Induction of labour
d) Retained placenta
e) Mediolateral episiotomy
f) Operative vaginal delivery
g) Prolonged labour (> 12 hours)
h) Big baby (> 4 kg)

- All medical units involved in the care of pregnant women must have a protocol for the management of severe obstetric hemorrhage.

- PPH can:
  - minor (500–1000 ml)
  - moderate (1000–2000 ml)
  - severe (more than 2000 ml).
  - total blood volume at term is approximately 100cc/kg
  - loss of more than 40% of total blood volume

"life threatening"

How should PPH be managed?

Once PPH has been identified,
management involves four components,
all of which must be undertaken
SIMULTANEOUSLY:

1)communication,
2)resuscitation,
3)monitoring and investigation,
4)arresting the bleeding

The most common cause of primary PPH is uterine atony.

However, clinical examination must be undertaken to exclude other or additional causes:

- retained products (placenta, membranes, clots)
- vaginal/cervical lacerations or haematoma/ ruptured uterus
- broad ligament haematoma
- extragenital bleeding (for example, subcapsular liver rupture)
- uterine inversion.

Basic measures for MINOR PPH (blood loss 500–1000 ml, no clinical shock):

Consider venepuncture (20 ml) for:

- group and screen
- full blood count
- coagulation screen including fibrinogen
- Urea and electrolyte
- Cross match 4 unite packed cell
- pulse and blood pressure recording every 15 min
- Intravenous access(14-gauge cannula*1)
- Commence crystaloid infusion

- **Full protocol for MAJOR PPH (blood loss > 1000 ml and continuing to bleed OR clinical shock):**
- Assess airway.
- Assess breathing.
- Evaluate circulation
- Oxygen by mask at 10–15 litres/minute.
- Intravenous access (14-gauge cannula x 2, orange cannulae).
- Position flat.
- Keep the woman warm using appropriate available measures.
- Transfuse blood as soon as possible.
- Until blood is available, infuse up to 3.5 litres of warmed crystalloid
- and/or colloid (1–2 litres) as rapidly as required.
- The best equipment available should be used to achieve RAPID WARMED infusion of fluids.
- Special blood filters should NOT be used, as they slow infusions.
- Recombinant factor VIIa therapy should be based on the results of coagulation

- **Consider venepuncture (20 ml) for:**
  - ✓ crossmatch (4 units minimum)
  - ✓ full blood count
  - ✓ coagulation screen including fibrinogen
  - ✓ renal and liver function for baseline**.**
- **Monitor temperature every 15 minutes.**
- **Continuous pulse, blood pressure recording and respiratory rate**
  - ✓ (using oximeter, electrocardiogram and automated blood pressure recording).
- **Foley catheter to monitor urine output.**
- **Two peripheral cannulae, 14- or 16-gauge.**
- **Consider arterial line monitoring**
- **Consider transfer to intensive therapy unit once the bleeding is controlled or monitoring at high**
- **Documentation of fluid balance, blood, blood products and procedures.**

When uterine **atony** is perceived to be a cause of the bleeding, the following mechanical
and pharmacological measures should be instituted, in turn, until the bleeding stops:

- **Bimanual uterine compression (rubbing up the fundus)**
- **Ensure bladder is empty (Foley catheter, leave in place).**

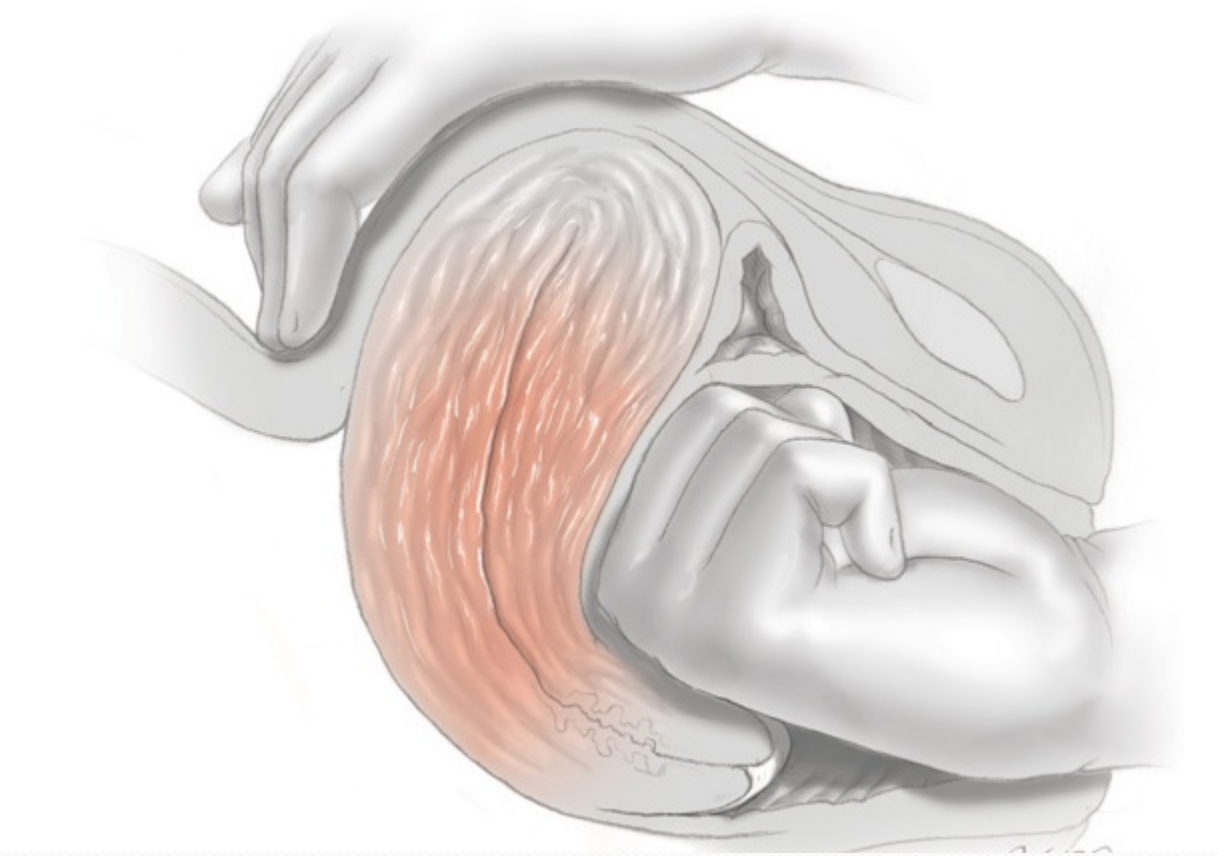


Table 1. Medical Management of Postpartum Hemorrhage

Drug*	Dose/Route	Frequency	Comment
Oxytocin (Pitocin)	IV: 10–40 units in 1 liter normal saline or lactated Ringer's solution IM: 10 units	Continuous	Avoid undiluted rapid IV infusion, which causes hypotension.
Methylergonovine (Methergine)	IM: 0.2 mg	Every 2–4 h	Avoid if patient is hypertensive.
15-methyl $PGF_{2\alpha}$ (Carboprost) (Hemabate)	IM: 0.25 mg	Every 15–90 min, 8 doses maximum	Avoid in asthmatic patients; relative contraindication if hepatic, renal, and cardiac disease. Diarrhea, fever, tachycardia can occur.
Dinoprostone (Prostin E_2)	Suppository: vaginal or rectal 20 mg	Every 2 h	Avoid if patient is hypotensive. Fever is common. Stored frozen, it must be thawed to room temperature.
Misoprostol (Cytotec, PGE_1)	800–1,000 mcg rectally		

Abbreviations: IV, intravenously; IM, intramuscularly; PG, prostaglandin.

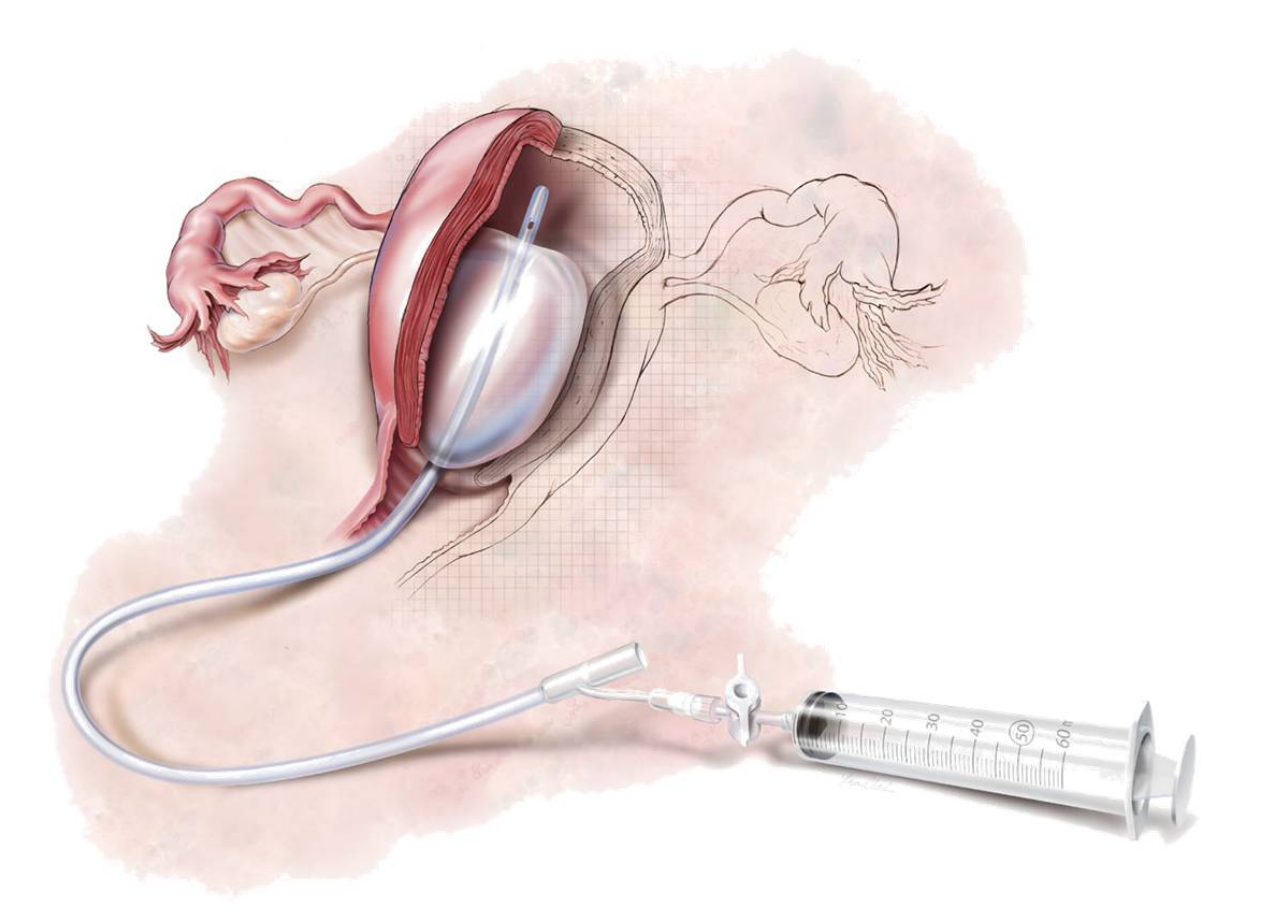
*All agents can cause nausea and vomiting.

Modified from Dildy GA, Clark SL. Postpartum hemorrhage. Contemp Ob/Gyn 1993;38(8):21–9.

Table 2. Tamponade Techniques for Postpartum Hemorrhage

Technique	Comment
Uterine tamponade	
—Packing	—4-inch gauze; can soak with 5,000 units of thrombin in 5 mL of sterile saline
—Foley catheter	—Insert one or more bulbs; instill 60–80 mL of saline
—Sengstaken–Blakemore tube	
—SOS Bakri tamponade balloon	—Insert balloon; instill 300–500 mL of saline

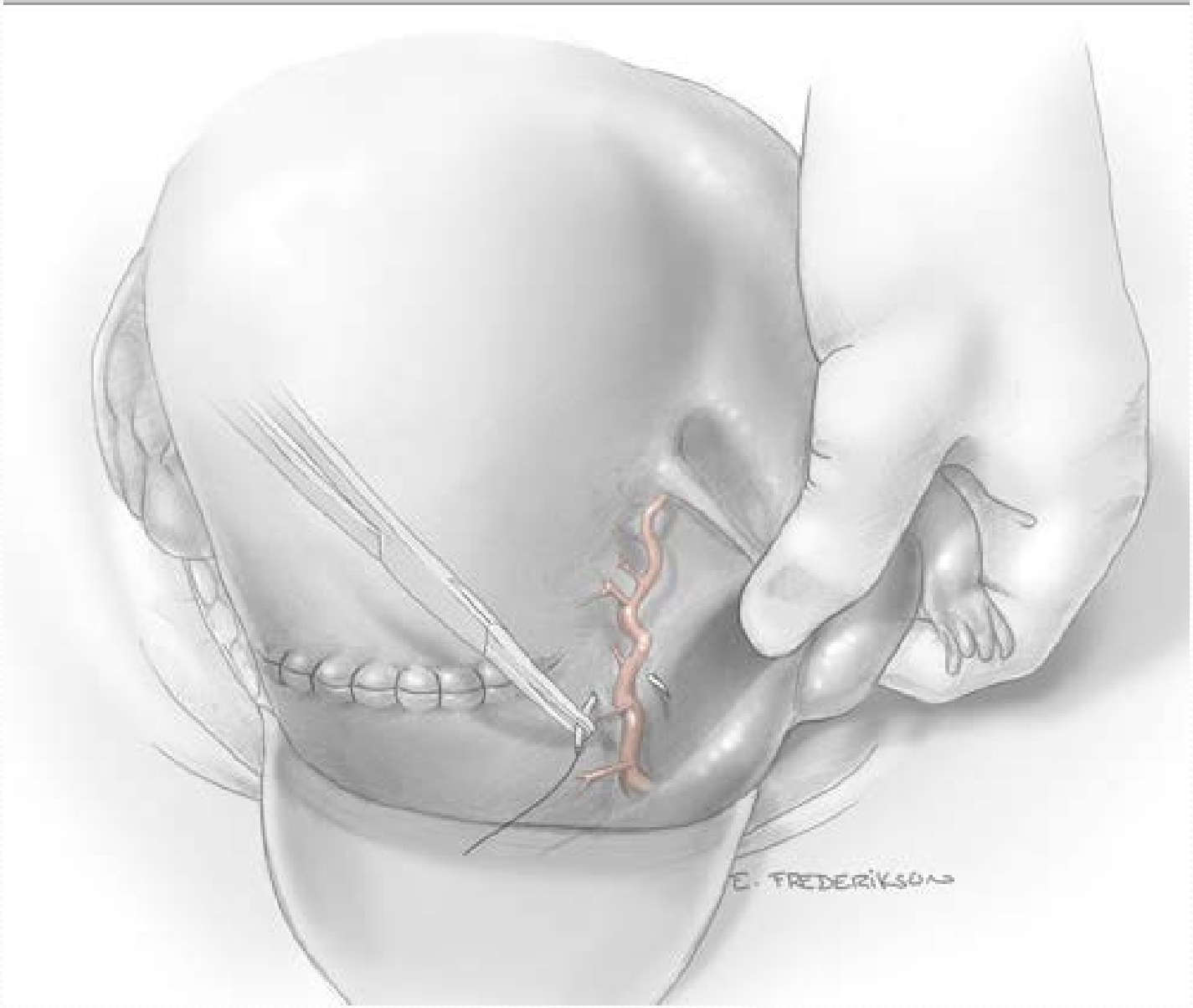
Bakri Balloon is a tamponade technique that can be used for PPH.



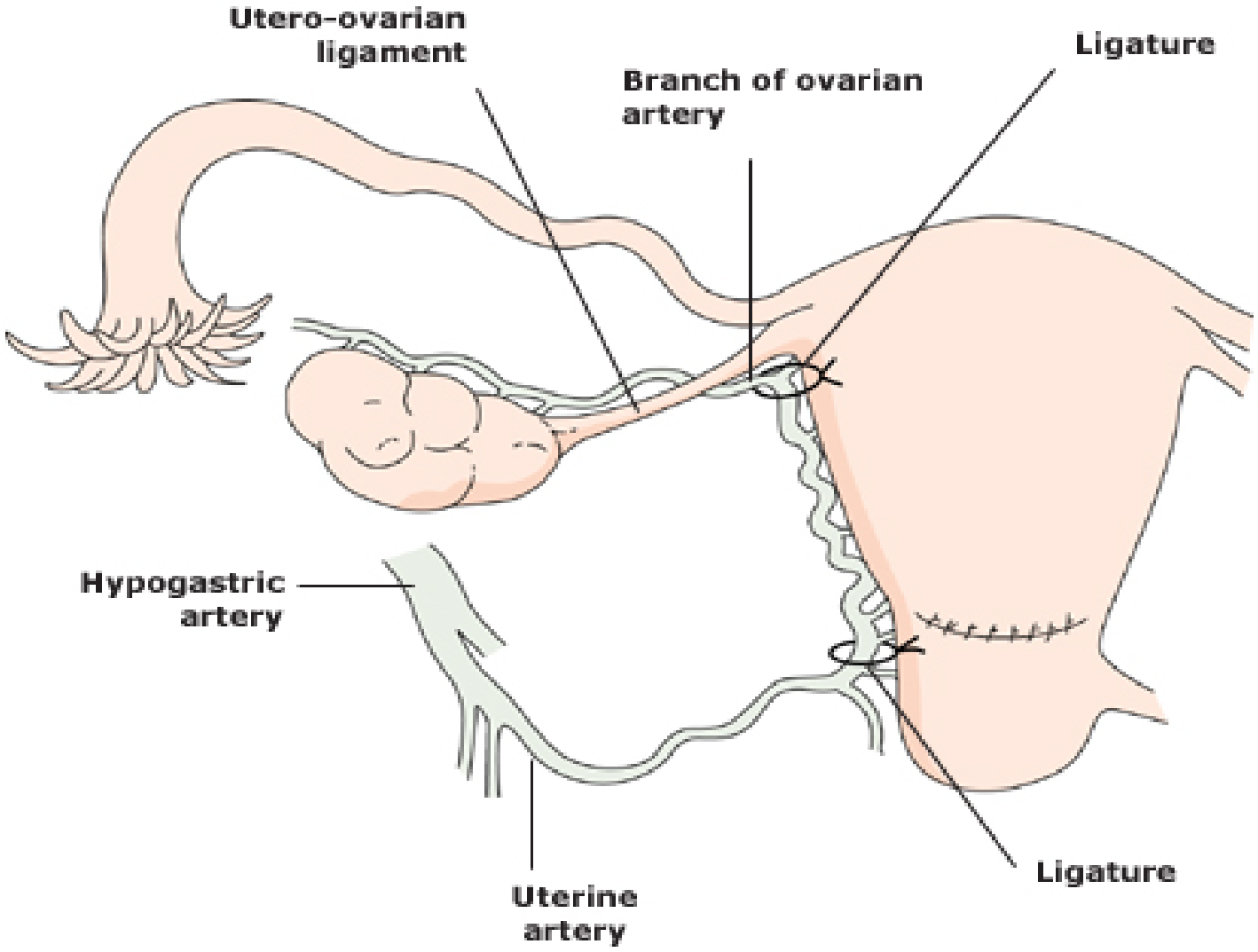
When are surgical techniques used to control uterine bleeding ?

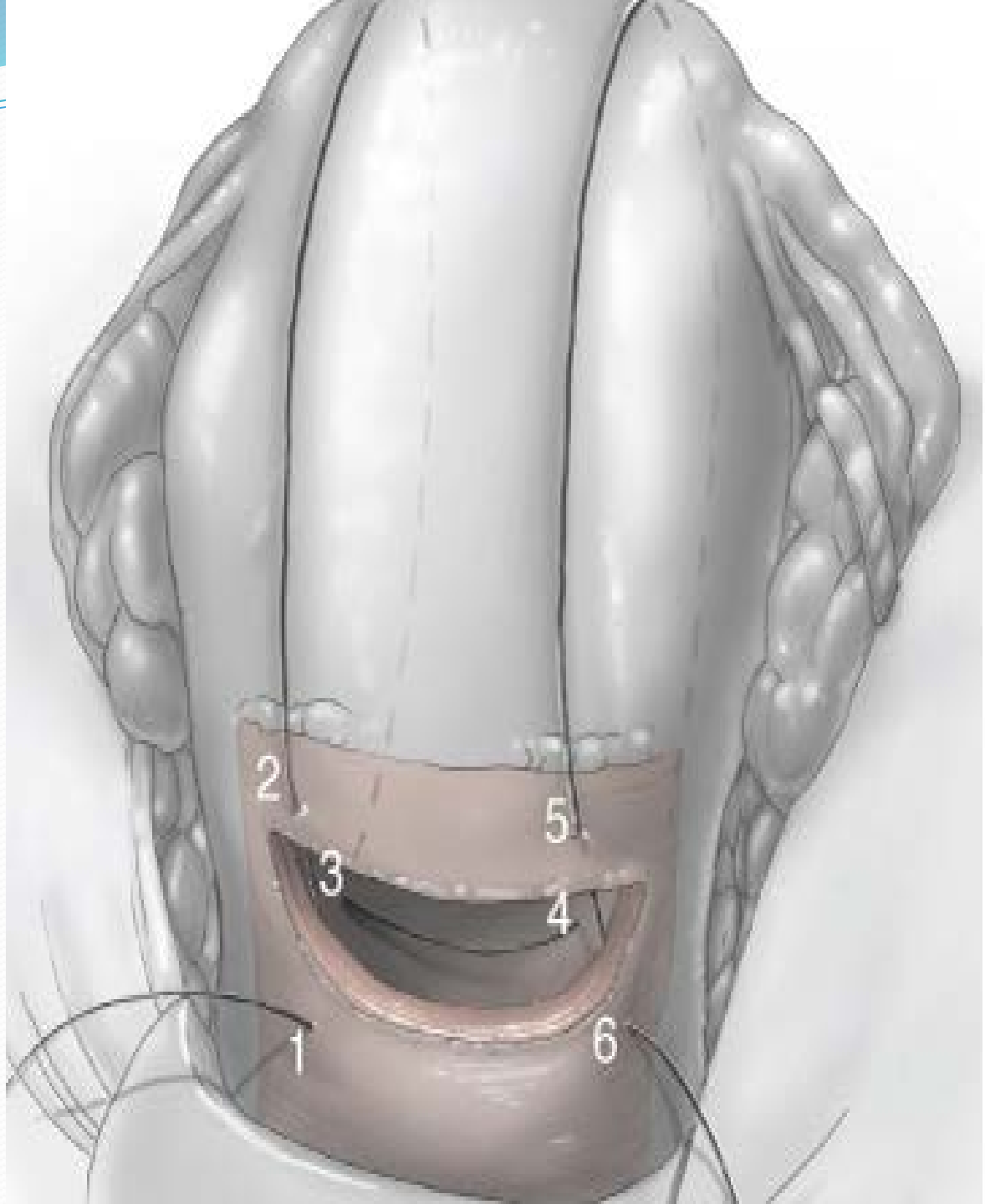
Table 3. Surgical Management of Postpartum Hemorrhage

Technique	Comment
Uterine curettage	
Uterine artery ligation	Bilateral; also can ligate uteroovarian vessels
B-Lynch suture	
Hypogastric artery ligation	Less successful than earlier thought; difficult technique; generally reserved for practitioners experienced in the procedure
Repair of rupture	
Hysterectomy	


E. FREDERICKSON

Vessel Ligation

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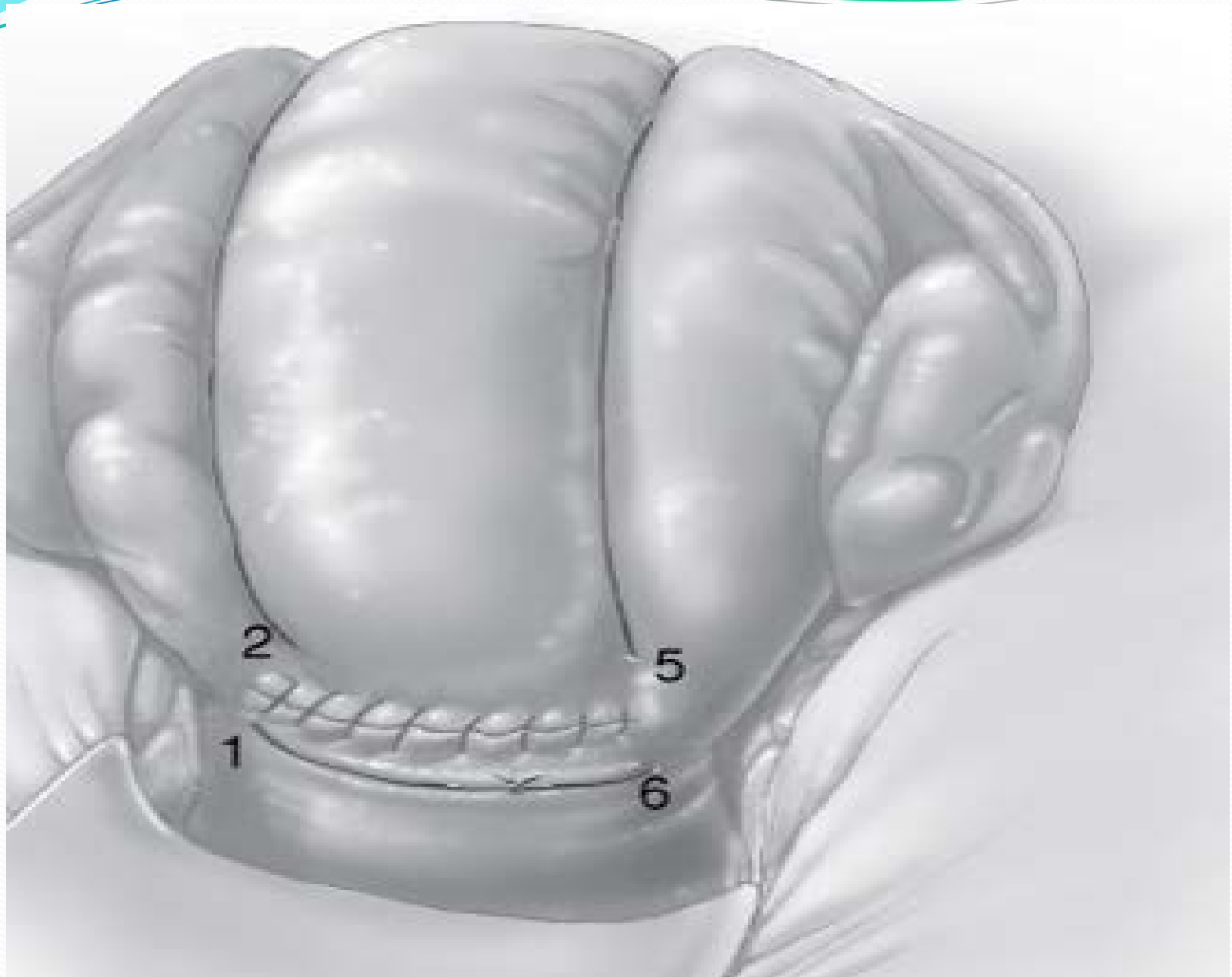
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What fluids can be used for volume resuscitation

- Crystaloid :3 /1 ie 3liters crystalloid for each 1liter of blood loss
- Trans fusion of 2 unit packed RBC(before lab test avialable)
- There is no consensus on the optimal ratio of blood product replacement
  - 2unit P RBC : 1unit of FFP
  - Massive transfusion protocol:
    - 6 unit RBC /4unit FFP/1PLT unit

Table 4. Blood Component Therapy

Product	Volume (mL)	Contents	Effect (per unit)
Packed red cells	240	Red blood cells, white blood cells, plasma	Increase hematocrit 3 percentage points, hemoglobin by 1 g/dL
Platelets	50	Platelets, red blood cells, white blood cells, plasma	Increase platelet count 5,000–10,000/mm^3 per unit
Fresh frozen plasma	250	Fibrinogen, antithrombin III, factors V and VIII	Increase fibrinogen by 10 mg/dL
Cryoprecipitate	40	Fibrinogen, factors VIII and XIII, von Willebrand factor	Increase fibrinogen by 10 mg/dL

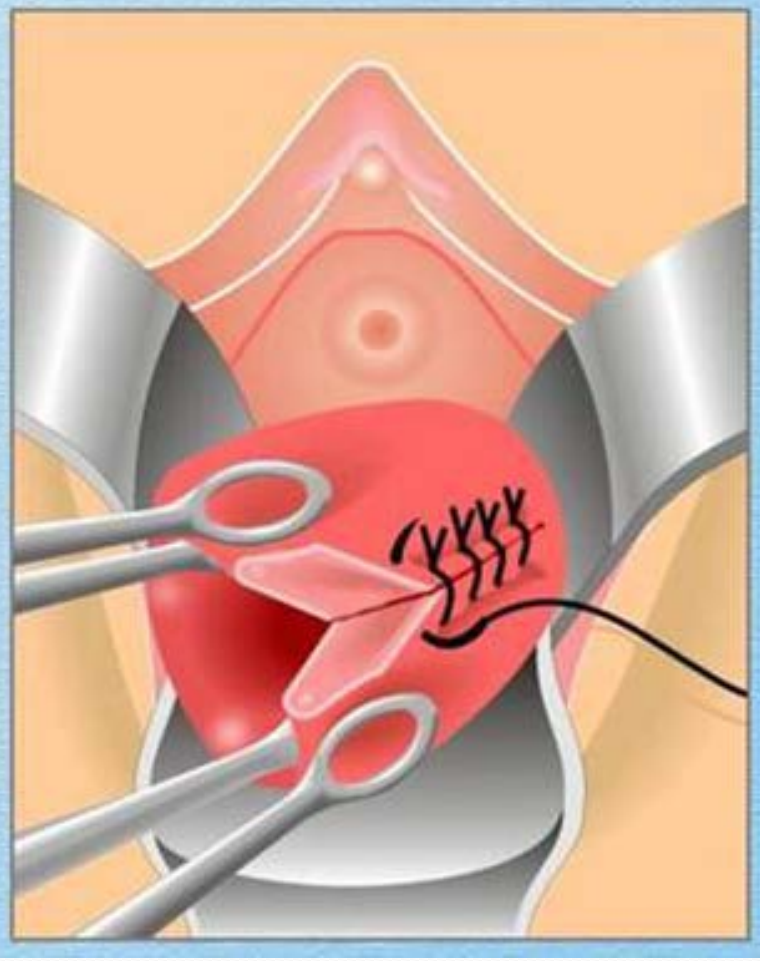
the main therapeutic goals of management of massive blood loss is to maintain:

- haemoglobin > 8g/dl
- platelet count > 75 x 1000/dl
- prothrombin < 1.5 x mean control
- activated prothrombin times < 1.5 x mean control
- fibrinogen > 100mg/dl.

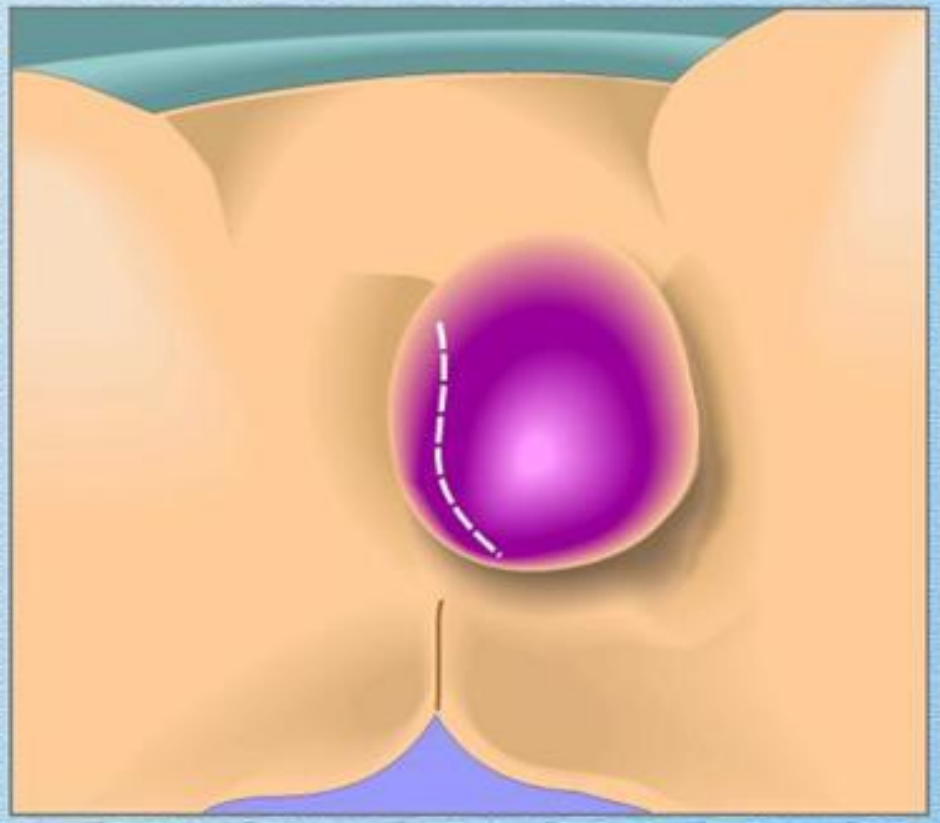
Recombinant Activated Factor VIIa

- Tx of bleeding disorders
- Dose up to50-100mcg/kg q2h until hemostasis Promising but needs more studies
- $10,000/mg
- Risk thromboembolism

Cervical Laceration



Vulvar Hematoma



SUMMARY OF MANAGEMENT OPTIONS

Retained Placenta

Management Options	Evidence Quality and Recommendation	References
Retained placenta should be diagnosed if it is not delivered within 30–60 min.	III/B	14,32,33
Trapped Placenta		
• Perform ultrasound to confirm separation.	III/B	12
• Use controlled cord traction with a short-acting tocolytic such as glyceryl (trinitrate).	III/B	36
Adherent Placenta		
• If there is active bleeding, manual removal is necessary.	—/GPP	—
• If there is no active bleeding, consider intraumbilical uterotonic agents before resorting to manual removal.	III/B	37–39

ADHERENT PLACENTA (PLACENTA ACCRETA, INCRETA, PERCRETA)

The reported incidence of placenta accreta has increased from 1:2510 in the 1980s, to 1:533 in 2002, to I :210 in 2006, and this is most likely related to increasing cesarean delivery rates.

Management of Unexpected Placenta (Accreta/Percreta) at the Time of Delivery

- In a vaginal delivery (often with a history of prior uterine surgery)
- stable patient with a retained placenta, it is always advisable to rule out the potential for accreta before proceeding with manual removal.
- In those cases in which there is a risk of accreta, it would be wise to delay any action that could potentially result in sudden onset of massive hemorrhage
- until all preparations have been made to deal with such an eventuality.

Secondary PPH

- Defined as excessive bleeding 24 hrs to 12 weeks postpartum.
- Incidence is about 1 percent of women.
- Theory is that thought to be atony or subinvolution of placental site from retained products or infection.

Management of Secondary PPH

- Evaluate for underlying disorders (coagulopathies).
- For atony give uterotonics.
- If large amount of bleeding, fever uterine tenderness, or foul smelling discharge treat for endometritis.
- Consider suction currettage.

Post TAH bleeding:

- Taponade pelvic
- embolization

Thank you for your attention