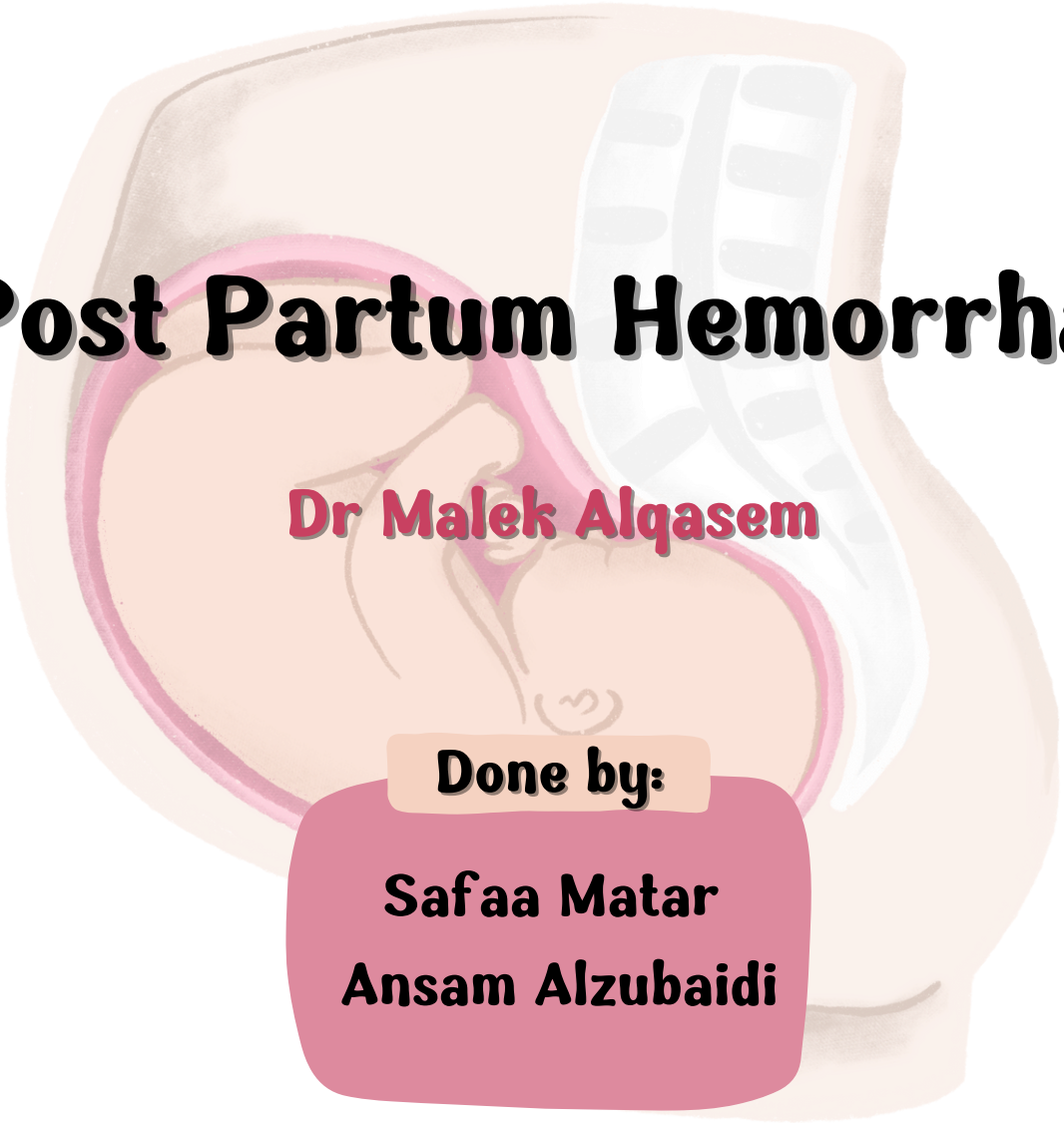
Obstetrics & Gynecology

Doctor 2019 - نبض - Medicine - MU



Post Partum Hemorrhage

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This sheet contains:

- lecture slides
- Doctors notes
- additional notes and pictures from OBS & GYN books

Introduction

-Postpartum haemorrhage is a major cause of maternal morbidity and mortality accounting for 25% of maternal deaths worldwide

Definitions depends on the mode of delivery & the complications

-PPH is defined as:

Blood loss ≥500cc after normal vaginal delivery

>1000cc blood loss after cesarean section

>1500cc blood loss after elective CS hysterectomy

3000-3500cc for emergent Cesarean hysterectomy

-ACOG 10% drop in hematocrit value between admission & PP period, or a need for blood transfusion

Classification of PPH

Primary: Blood loss within 1st 24 hours of delivery. (EARLY)

Secondary: Blood loss from 24 hours to 12 weeks postpartum. (LATE)

The commonest cause of secondary postpartum haemorrhage is Endometritis

Causes of Primary PPH

Uterine (90 %)

- Uterine atony (70-80%)
- Abnormal placental separation: Retained placental product, Abnormal placentation
- Uterine rupture
- Uterine inversion

may lead to hemorrhagic shock & neurogenic shock

Non-uterine (10%)

- Lower genital tract lacerations
- Pelvic hematomas
- Coagulation disorders

examination of the uterus after delivery:

- should be firm (contracted muscles) to compress the BV to prevent PPH
- at the level of umbilicus or below

What are the mechanisms of and risk factors for postpartum haemorrhage?

4Ts

Tone	Uterine atony 70%
Tissue	Retained tissue/clots (9%)
Trauma	laceration, rupture, inversion 20%
Thrombin	Coagulopathy 1%

case scenario of a patient with PPH, what is the first question you should ask?

ask about the placenta & membranes if they have been delivered completely or there are a missing parts

Atonic postpartum haemorrhage

-Prolonged labor: more lactic acid in the uterine muscle
-Over distended uterus: Multiple pregnancy, Polyhydramnios, or Large fetus
-Obesity
-Pyrexia during labor
-Previous PPH or manual removal of placenta
-Abruption/Previa
-Fetal demise
-Gestational hypertension
-Bleeding disorder

Predisposing Factors

Antepartum:

Previous PPH or manual removal of placenta
Abruption/previa
Fetal demise
Gestational hypertension
Over distended uterus
Bleeding disorder

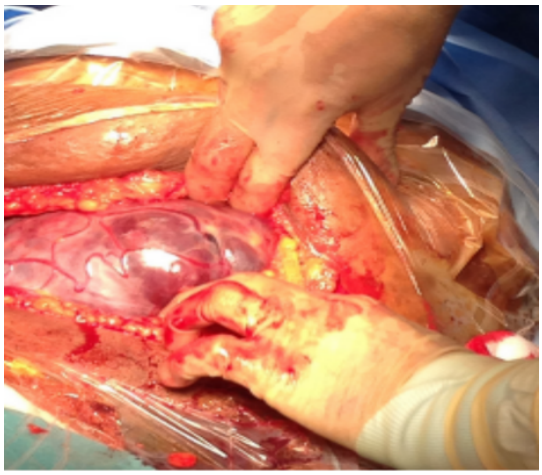
Intrapartum:

Operative delivery
Prolonged or rapid labour
Induction or agumentation
Choriomnionitis
Shoulder dystocia
Internal podalic version
Coagulopathy

Postpartum cause

Lacerations or episiotomy
Retained placental/ placental abnormalities
Uterine rupture / inversion
Coagulopathy

Rare causes of primary postpartum hemorrhage include :
uterine inversion, placenta percreta, as well as extra-genital bleeding



hypervascularity of the uterus > indication of placenta accreta

The blood flow to the uterus at term >37 weeks is approximately 1000 mL of blood every minute

A fetus at term receives about 200 mL/kg/minute from the placenta

secondary PPH (after 24 hrs of delivery)
the causes are mainly infection
Endometritis is the most common cause of 2ry PPH
How to treat?

- antibiotics
- THEN remove the retained tissue if present

Obstetric shock index

Pulse rate divided by systolic blood pressure
PR/SBP

PR/SBP >1 is associated with substantial postpartum hemorrhage and the need for intensive resuscitation and blood transfusion (what is the next step if >1 ?)

Prevention

-Be prepared
- Active management of the third stage (uterine massage/ controlled cord traction & give her meta-syntometrine)
-Prophylactic oxytocin: 10 U IM, 5 U IV bolus, 10-20 U/L N/S IV @ 100-150 ml/h
-Gentle cord traction with surapubic presser (to prevent uterine inversion)

Diagnosis

-Assess the fundus
-Inspect the lower genital tract (vaginal wall- or sphincter tear or cervical tear)
-Explore the uterus
-Retained placental fragments
-Uterine rupture
-Uterine inversion
-Assess coagulation

Management Of PPH

Step 2 Directed Therapy			
"Tone" - massage - compress - drugs * See Table III	*"Tissue"* - manual removal - curettage	*"Trauma"* - correct inversion - repair laceration - identify rupture	*"Thrombin"* - reverse - antiacoagulation - replace factors

Management algorithm

HAEMO-STASIS

H—Ask for help and hands-on uterus (uterine massage)
,A—Assess (that is, ABC) and resuscitate (that is, intravenous fluids crystalloid, send CBC X mach, Coagulation screen
E—Establish etiology, ensure availability of blood, and ecbolic (drugs that induce (contractions of the uterus, oxytocin or ergometrine
M—Massage the uterus
O—Oxytocin infusion (10 U/hour) or intramuscular prostaglandins (250 µg)
S—Shift to theatre, with aortic compression, bimanual compression, or anti-shock garment (for low resource settings before transfer to a tertiary center) as appropriate

T—Tamponade by balloon or uterine packing after exclusion of retained tissue and trauma. Administer intravenous tranexamic acid (1 g)
A—Apply compression sutures on the uterus (B-Lynch or modified technique)
S—Systematic pelvic revascularization (uterine, ovarian, quadruple. or internal iliac)
I—Interventional radiology and, if appropriate, uterine artery embolization
S—Subtotal or total abdominal hysterectomy

Bimanual compression of the uterus

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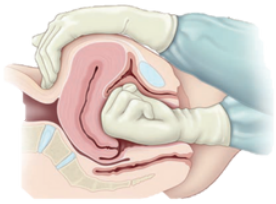
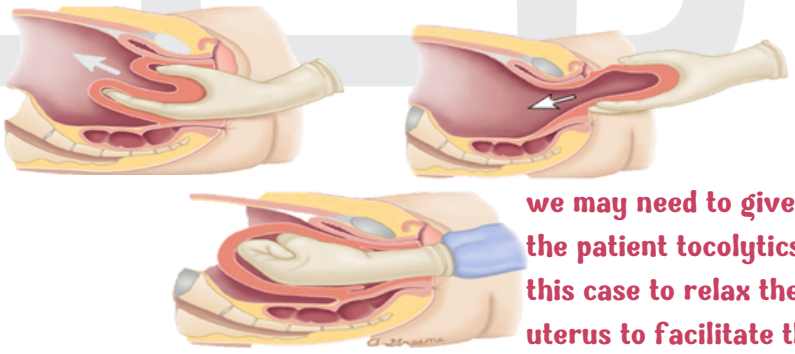


Replacement of Inverted Uterus



we may need to give the patient tocolytics in this case to relax the uterus to facilitate the uterine replacement, once you replace it, stop the tocolytics & start oxytocin

Uterine balloon temponade

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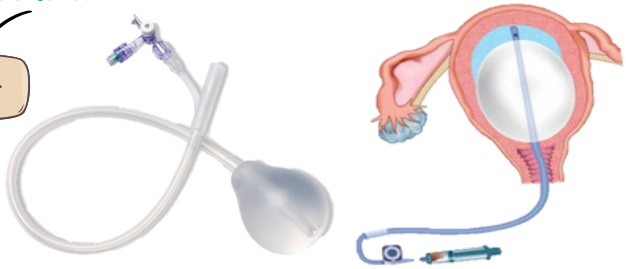
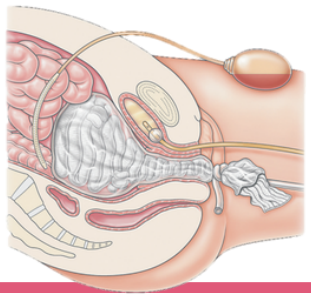


Uterine Packing



Drugs used in treatment of PPH

First line drugs

Oxytocin: which is secreted by the supraoptic and paraventricular nuclei of the (hypothalamus and is stored in the posterior pituitary gland

Mode of action—Myometrial contraction and retraction; increases basal uterine tone

Side effects—Nausea, vomiting, headache

Ergometrine (ergot alkaloid)

First-line drug in developing countries

Mode of action—Arterial vasoconstriction and myometrial contraction

,Side effects—Vomiting, headache, hypertension, chest pain, palpitations, bradycardia Raynaud's syndrome, pulmonary edema

contraindicated in PET, because it rises the BP

Second-line drugs :

Tranexamic acid

Mode of action—Anti-fibrinolytic which prevents the breakdown of preformed blood clot and therefore stabilizes the clot

Side effects—Hypotension, diarrhea, thromboembolic events

A recent Cochrane review of 10 randomized controlled trials (RCTs) reported that blood losses >400 mL or >500 mL and >1000 mL were less common in women who received tranexamic acid compared with placebo or no intervention (risk ratios 0.52 (95% confidence interval 0.42 to 0.63) and 0.40 (0.23 to 0.71), respectively

Misoprostol

(prostaglandin analogue)

Mode of action—Myometrial contraction

Side effects—Diarrhoea, rash, dizziness, vomiting

Not found to be effective after administration of oxytocin and may increase adverse effects

Prostaglandins F2α

Mode of action—Myometrial contraction

,Side effects—Bronchospasm, cardiovascular system collapse, dyspnoea, hypertension vomiting, pulmonary oedema

No robust evidence of effectiveness

Carbetocin : (synthetic oxytocin analogue) (long-acting oxytocin)

Mode of action—Myometrial contraction

Side effects—Diarrhoea, hypotension

Cochrane review of 11 RCTs concluded that the use of carbetocin statistically significantly reduced the need for therapeutic uterotonics (risk ratio 0.62 (0.44 to 0.88) compared with oxytocin for women who underwent caesarean section but not for vaginal delivery There was no robust evidence to suggest that carbetocin was better than oxytocin in .reducing postpartum haemorrhage, and its cost-effectiveness remains unclear

Syntometrine :

(combination of 5 units of oxytocin and 0.5 mg of ergometrine)

Mode of action—Myometrial contraction

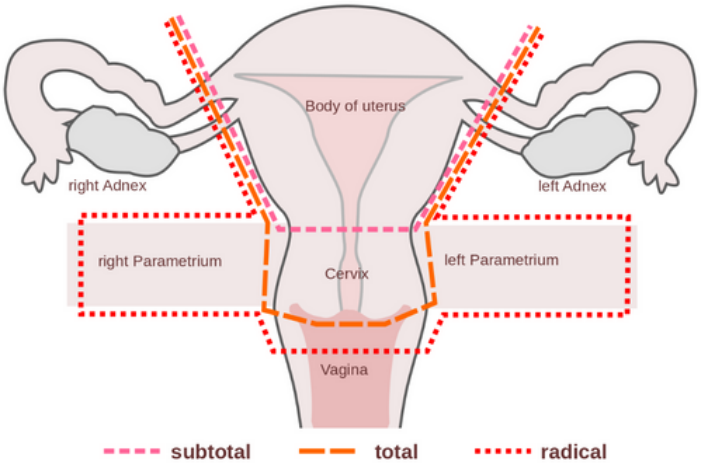
Side effects—Nausea, vomiting, diarrhea

Cochrane review of 4 RCTs that compared carbetocin and syntometrine showed a lower mean blood loss in women who received carbetocin(mean difference -48.84 mL (95% CI -94.82 to -2.85 mL

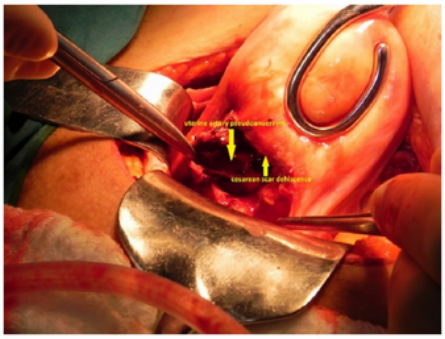
Stepwise Uterine Devascularization Technique

. Unilateral uterine vessel ligation
. Bilateral uterine vessel ligation
. Bilateral low uterine vessel ligation
. Unilateral ovarian vessel ligation
. Bilateral ovarian vessel ligation
• Internal Iliac Artery Ligation

If patient doesn't want to preserve fertility: Hysterectomy is done

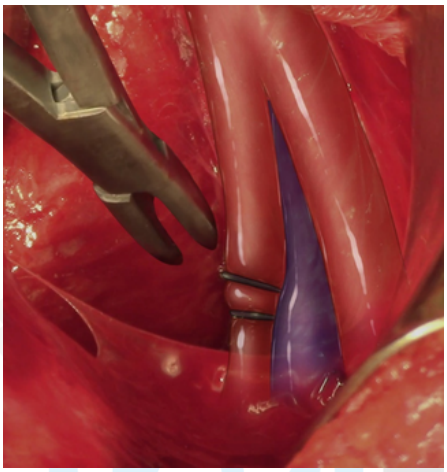


1-Uterine artery ligation



-It's a fertility preserving procedure.
-It is hemostatic by reducing pulse pressure to uterus as
-of its blood supply is from uterine vessels 90%
-Collateral circulation & recanalization of uterine vessels
-will be established within 6-8 wks
- It has a success rate of 95%

2-Internal iliac artery ligation



-Bilateral ligation of the artery reduces the pelvic arterial blood flow by 49% and pulse pressure by 85%. After bilateral ligation of IIA in the long term period, the collateral circulation will maintain the re-functioning of the IIA
-success rate 40-60%
-Currently has fallen out of favor because of difficult techniques, instead, a stepwise progression of uterine-ovarian vessel ligation should be rapidly performed

3-Angiographic Selective Embolization

-90-100 % Success.
ASE seems to be indicated in patients with birth canal trauma uterine atony or DIC*
Done in centers with interventional radiologists

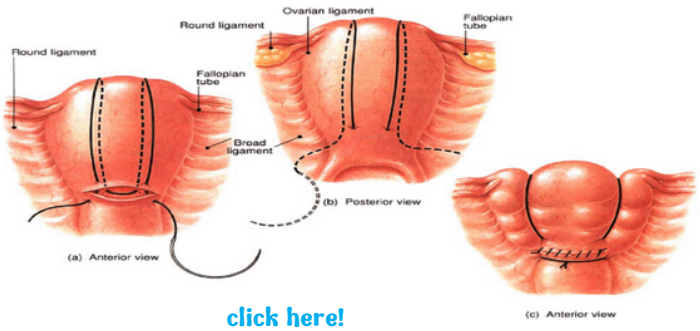
Complications :

buttock claudication Fever pelvic infection contrast media nephrotoxicity
-They are rare only reported in 6-7% of the cases

4-B-Lynch Suture

B-Lynch is a uterine compression suture that apposes the anterior and posterior wall through a pair of vertical brace sutures around the uterus.

* It helps us effectively avoid the need for hysterectomy in patients in whom medical treatment has failed to stop intractable PPH due to uterine atony.



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Maternal morbidity

-Transient or permanent renal damage
-Acute respiratory dysfunction
-Abscess formation 2ry to infection of pelvic hematomas
-Frequent need for additional surgical procedures
-Transfusion related hepatitis & AIDS
-Long term sequel: Sheehan's Syndrome

Conclusions

Postpartum haemorrhage remains the second leading direct cause of maternal deaths in northern Europe and the leading cause of maternal mortality in the world
Poor uterine tone accounts for about 70–80% of all cases of primary postpartum haemorrhage, whereas endometritis is the commonest cause of secondary postpartum haemorrhage presenting up to 12 weeks after delivery
Tranexamic acid is recommended for all women with atonic and traumatic postpartum haemorrhage as well as for ongoing haemorrhage during a caesarean section
Refer women with secondary postpartum haemorrhage after birth for ultrasonography to exclude retained products of conception or endometritis
Start broad-spectrum antibiotics in women with secondary postpartum haemorrhage due to endometritis

Check the woman's temperature and exclude uterine tenderness, offensive vaginal discharge, or failure of uterine involution (2ry PPH)

If a woman presents with vaginal bleeding up to 12 weeks after delivery, do you ?palpate her abdomen for uterine size, tone, and tenderness

The uterus should not be palpable per abdomen by day 14 a palpable uterus at this stage should make you suspect endometritis or retained products of conception