POSTPARTUM HEMORRHAGE

JONATHAN TAYLOR

LEARNING OBJECTIVES

-Define PPH

-Identify risk factors during the antepartum, intrapartum, and postpartum periods.

-Outline etiology for PPH

-Discuss management

CASE

33year G1P0, 40w2d

Uncomplicated pregnancy, followed by midwives

RH: A+

GBS: neg

EFW 54%ile, no GDM, no gHTN

PMHx: depression

Surgeries: tonsillectomy, wisdom teeth extraction

Meds: Pre-natal vitamins

Allergies: Penicillin (rash as a kid)

LABS

WBC 26.6 (38.1 temp once but normalized with Tylenol – no infectious symptoms)

Hg 130

Plt 221

LABOUR AND DELIVERY FLOOR

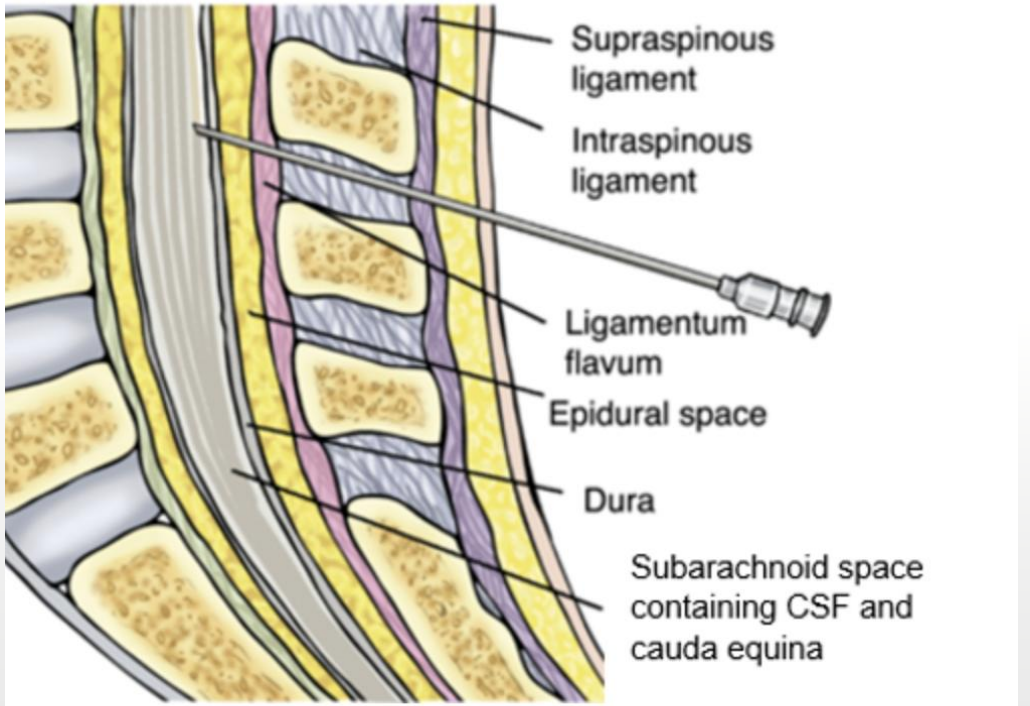
- 0830: SROM (clear fluid)
- 1030: epidural placed
- 1300-1500 fully dilated/ began to start pushing
- 1600: FP-OB consulted for poor progression in 2nd stage of labour

VARIABLE DECELERATIONS -> 1630 C-SECTION CALLED (CATEGORY 2)


SURGEON
H
HOSPITAL

OPERATING ROOM

- Patchy epidural – topped up – got pulled out 1.5cm from insertion
- FHR reassuring –> spinal
- Phenylephrine infusion started



Tintinalli's Emergency Medicine: A Comprehensive Study Guide

OPERATING ROOM

- Head quite impacted so was removed with difficulties (OP head) (1-2min of pulling)
- Delayed cord clamping
- Placenta removed without difficulty
- Duratocin 100mcg IV given

OPERATING ROOM

- APGARS 8, 9 -> baby fine
- Boggy left side of uterus with expansion
- Uterus exteriorized and pressure applied
- Continued bogginess and significant vaginal bleeding – second surgeon called


SURGEON
72
BPM
HEALING
SAVING
HERO

OPERATING ROOM

HR 90 -> 130s

MAP low 60s (phenylephrine infusion increased)

Vaginal bleeding on the floor

Patient starting to feel pain (90min post spinal)

Intubated – less risks than if intubating intrapartum

OPERATING ROOM

- No significant intra-abdominal bleeding
- Orillia OB said don't reopen – bleeding site may be retracted.
- ?Bakri balloon wasn't inserted as bleeding was improving and EMS arrived and cervix was completely dilated so less likely to be effective
- Vaginal packs applied

OPERATING ROOM

Hemabate 250mcg (0.25mg) IM x4	Ergot 200mcg (0.2mg) IM x 1	TXA 1g IV x 2	3 units pRBCs	4g fibrinogen
Duratocin 100mcg IV x1	Misoprostol 400mcg (0.4mg) SL x1	Phenylephrine infusion	2L RL	EBL 2L

REPEAT LABS

WBC 24.4

Hg 130

Plt 199

INR 1

Fibrinogen 4.5

COURSE AT RVH

- Left uterine artery embolization
- DIC labs -> came back normal
- At RVH had hemabate, TXA, oxytocin, misoprostol
- 2u pRBC (Hg 69 at RVH) and 2 doses of IV venofer
- Breastfeeding challenging in PPH (fluids loss) -> supplemented with formula
- SDU for 2 days, then ob floor for 2 days
- Sent home 4 days later with rx for dilaudid and po iron

PPH DEFINITION

CA **Canadian definition (SOGC)**

≥500 mL after vaginal delivery OR ≥1000 mL after c-section,

OR any blood loss that causes hemodynamic instability

US **American definition (ACOG) (2017)**

≥1000 mL cumulative blood loss within 24 hours,

OR any blood loss with signs/symptoms of hypovolemia

PPH ETIOLOGY

Primary PPH (within 24 hours):

- Uterine atony (TONE) (70%)
- Lacerations (TRAUMA)
- Retained/abnormally adherent placenta (TISSUE)
- Coagulation defects (THROMBIN) (e.g., DIC from amniotic fluid embolism, placental abruption, severe preeclampsia)
- Uterine inversion

PPH ETIOLOGY/RISK FACTORS

Secondary PPH (24 hours to 12 weeks):

- Retained products of conception
- Infection
- Inherited coagulation defects (e.g., von Willebrand disease)

PPH ANTEPARTUM RISK FACTORS

- **Prior PPH** — one of the strongest predictors
- Placenta previa/ accreta
- No antenatal care
- Uterine fibroids and polyhydramnios (contributes to uterine overdistention)
- Advanced maternal age (>35 years) and extremes of parity (nulliparity or grand multiparity >4)
- Preeclampsia
- Obesity

PPH INTRAPARTUM RISK FACTORS

- **Cesarean delivery — strongest intrapartum association**
- Fetal macrosomia
- Prolonged or augmented labor and labor induction
- Precipitous delivery
- Operative vaginal delivery (forceps/vacuum)
- Episiotomy
- Shoulder dystocia

MANAGEMENT (DRUGS)

CARBETOCIN VS. OXYTOCIN

OXYTOCIN

-Classically given after placental delivery then infusion

-half life 5min

CARBETOCIN

(duratocin = brand name)

-analog of oxytocin binds to oxytocin receptors on uterine smooth muscle

- 40min half life

-in the OR, usually one dose only needed

CARBETOCIN VS. OXYTOCIN – WHICH IS BETTER

"little or no difference in mean blood loss"

HEMABATE

Carboprost tromethamine (15-methyl PGF2α)

-works on prostaglandin receptors on uterine smooth muscle cells causing contraction

-also triggers smooth receptor cells elsewhere

- GI: nausea/vomiting/diarrhea
- bronchial smooth muscle (hence **asthma contraindication**)
- vascular smooth muscle (hence contraindication for pulmonary HTN/RV failure)

-250 µg IM every 15–90 min (max 8 doses)

ERGOT

ERGOT

- **Methylergonovine maleate**
- derived from the fungus *Claviceps purpurea*
- Binds at serotoninergic, dopaminergic, and α1-adrenergic receptors in the uterus.
- 0.2 mg IM every 2–4 hours
- contraindicated in HTN and cardiovascular disease because of effects on BP
- **-wait 12hrs after last dose before using breastmilk as it may get into breastmilk**

MISOPROSTOL

- **Misoprostol** — sublingual (preferred– most rapid absorption), oral, or rectal 600–1000 µg single dose
- **synthetic prostaglandin E1 (PGE1) analogue**

The NEW ENGLAND JOURNAL of MEDICINE

REVIEW ARTICLE

Postpartum Hemorrhage

Authors: Jessica L. Bienstock, M.D., M.P.H. , Ahizechukwu C. Eke, M.D., Ph.D. , and Nancy A. Hueppchen, M.D. Author Info & Affiliations

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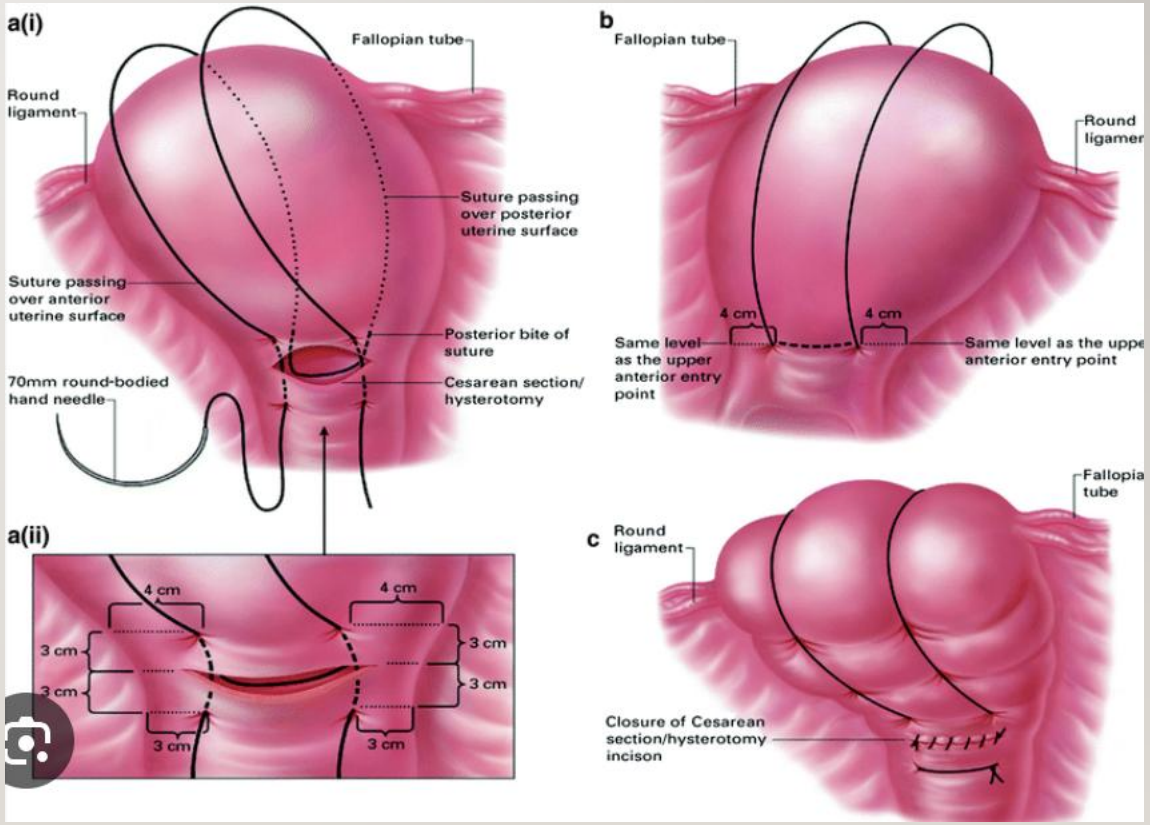
“[misoprostol] treatment of uncertain usefulness"

TXA

- IV 1 g over 10 minutes
- a second dose may be given if bleeding persists after 30 minutes or recurs within 24 hours

MANAGEMENT (NON-DRUG OPTIONS)

- Bakri balloon – inserted vaginally
- Packing
- B-Lynch sutures
- Uterine massage
- Arterial ligation
- Hysterectomy
- Artery Embolization (pack gelatin sponge)



CAN OUR PATIENT STILL GET PREGNANT?

- No real guidelines after UAE or PPH
- a prior PPH confers a **3- to 4-fold increased risk** of PPH in a subsequent pregnancy


SURGEON
H


OBSTETRICIAN.
ADVOCATE.
SUPERHERO.
COMPASSION.
EXPERTISE.
EVERY BIRTH.
EVERY TIME.


SURGEON
72
BPM
HEALING
SAVING
HERO


QUESTIONS?