



الجمعية اللبنانية للتوليد والأمراض النسائية
Lebanese Society of **Obstetrics & Gynecology**
Société Libanaise d'**Obstétrique & de Gynécologie**



Lebanese Society of Obstetrics & Gynecology **Protocol for the prevention and management of** **POST PARTUM HEMORRHAGE**

Postpartum hemorrhage was the cause of at least 65% of the 60 maternal deaths that occurred in Lebanon between 2010 and mid-2015

Postpartum hemorrhage (PPH) occurs in about 5 percent of all deliveries, and it is life-threatening in 3-4 per thousand deliveries.¹⁻³

DEFINITION of PPH

Postpartum hemorrhage is present when:

- there is cumulative blood loss of at least 1000 mL (includes intrapartum loss), or
- blood loss is accompanied by signs/symptoms of hypovolemia within 24 hours of the birth process

It is life-threatening when:

- the estimated blood loss exceeds 2.5 liters, or
- the patient needs more than 5 units of blood products, or
- the patient develops a coagulopathy

For practical purposes, PPH may also be defined as ***any amount of bleeding that threatens hemodynamic stability***.³⁻⁵

The first signs of hemodynamic instability are:

- Maternal tachycardia, with a pulse rate >100 per minute, or
- **Shock Index (SI)** value above 0.9 . The Shock Index is calculated by dividing the heart rate (bpm) by the systolic blood pressure (mm Hg). **An SI>1.7 is ominous**¹

These signs *precede* the development of overt hemodynamic instability and necessitate immediate evaluation of the patient by the obstetrical team.

RISK FACTORS for PPH

The majority of women who experience PPH do not have any known risk factors, but those at highest risk include women with:

- Suspected or proven placental abruption
- Known placenta previa
- Multiple pregnancy
- Preeclampsia
- Uterine overdistension (polyhydramnios, macrosomia)
- Grand multiparity
- Anticoagulation
- Blood disorders

It is advised that women with these risk factors deliver in a hospital that has a 24-hour blood banking capability and a fully functioning intensive care unit.

Women at risk of abnormal placentation such as those with previous cesarean delivery or previous placenta previa should have a definitive assessment of placental localization by the end of the second trimester.

PREVENTION of PPH

Because 80% or more of cases of postpartum hemorrhage are caused by uterine atony, active management of the third stage of labor traditionally involves the use of uterotonics.

Oxytocin is the **first-line** uterotonic of choice for prevention of PPH due to uterine atony,²⁻⁵ and should be given as:

- 10 units (1 mL) by intramuscular injection, or
- 5-10 units by *slow* intravenous injection over one minute

The injection should be given immediately after delivery of the fetus, or may be given following delivery of the placenta.

Alternatively, carbetocin (**Pabal**) may be used; it is given as 100 micrograms (1 mL) by intramuscular injection, or by *slow* intravenous injection over one minute.⁶

Intramuscular Methergine is not recommended for routine use and is contraindicated in case of maternal hypertension.

RESUSCITATION

A multidisciplinary approach with strong communication with anesthesia is recommended for fluid management and indications for blood products.

If excessive blood loss is ongoing, the following general supportive measures need to be instituted:

- Ample intravenous access, with insertion of a second large-bore intravenous line

- Rapid crystalloid infusion (normal saline or Ringer's lactate)
- Blood bank notification that blood products may be necessary
- Prompt communication with the anesthesiologist
- Blood collection for baseline laboratory determinations (CBC, PT, PTT, fibrinogen, creatinine, SGOT, SGPT)
- Insertion of an indwelling catheter to empty the bladder and monitor urine output

TREATMENT

- Identify the cause of hemorrhage
 - uterine atony?
 - genital tract laceration?
 - adherent placenta?
- Perform bimanual compression of the uterus to expel blood and clots and allow time for other measures to be implemented.
- Rule out other etiologies besides atony.
- Obtain adequate anesthesia and operative assistance for the identification and proper repair of lacerations. Satisfactory repair may require transfer to a well-equipped operating room.
- Transfuse blood products if needed to replace coagulation factors and red cells, not for volume replacement.
- Avoid dilutional coagulopathy; concurrent replacement with coagulation factors and platelets may be necessary in cases of severe hemorrhage.
- Massive transfusion may be needed in some cases and should be conducted in close consultation with an anesthesiologist.

❖ Medical management of PPH

Ongoing blood loss in the setting of decreased uterine tone requires the administration of additional uterotonics as the first-line treatment for hemorrhage:

- **Oxytocin** 10-40 units in one liter normal saline or lactated Ringer's in a free-running intravenous drip

Plus

- Carboprost (**Prostin 15M**) one ampoule IM; this may be repeated every 15-90 minutes, up to a maximum of 8 doses (to be avoided in asthmatic patients) ^{3,4}
- **or** Misoprostol (**Cytotec**) 4 or 5 tablets rectally ²⁻⁴

Additionally, tranexamic acid (**Exacyl**) may be given soon after the onset of bleeding; the dose is one gram *slowly* intravenously over 10 minutes. Tranexamic acid has been shown to reduce death due to bleeding in women with postpartum hemorrhage, with no adverse effects ^{4,7,8}

When the above fail to cause sustained uterine contractions and satisfactory control of hemorrhage after vaginal delivery, tamponade of the uterus with the SOS Bakri tamponade balloon can be effective in decreasing hemorrhage secondary to uterine atony.⁹

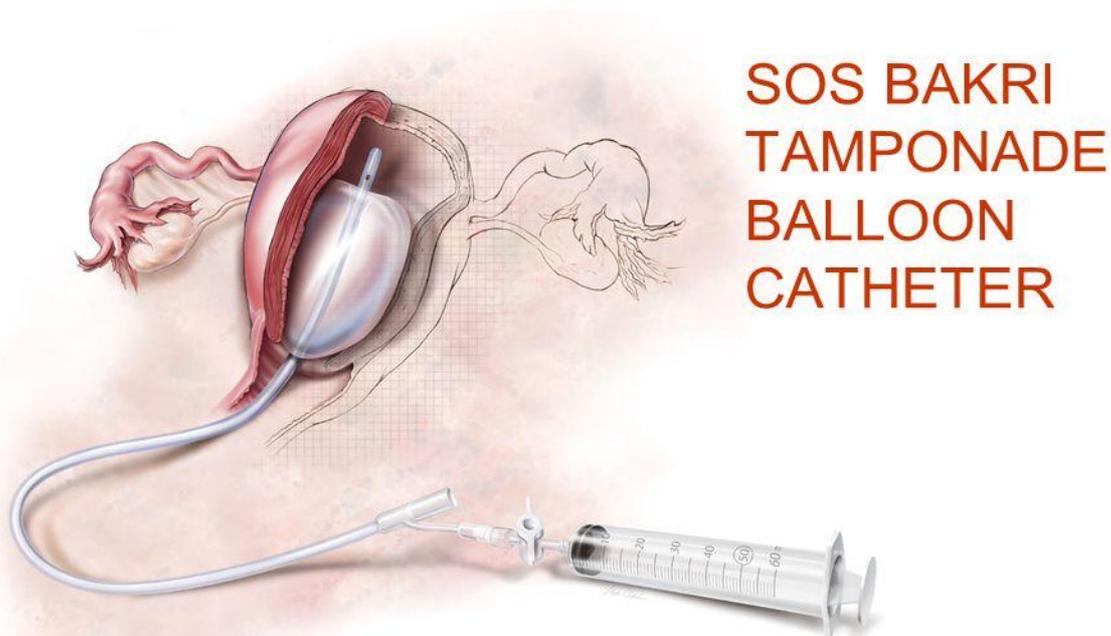


Illustration by Lisa Clark

The Simple Solution for
Postpartum Hemorrhage

diagram reproduced from <http://manqal.hellenes.co/bakri-balloon/>

In case of continuing bleeding, arterial embolization of the uterine arteries *may* be considered if the vital signs are stable and the rate of blood loss not excessive, *and* if rapid access to interventional radiology is available.²⁻⁵

❖ **Surgical management of PPH**

When all the above measures fail to control bleeding in a patient who has delivered vaginally, laparotomy with a vertical midline abdominal incision is indicated for bilateral ligation of the uterine arteries.

Hypogastric artery ligation has been found to be considerably less successful than originally thought,⁴ and is potentially dangerous because of the excessive vascularity of the surrounding space in late pregnancy; it should not even be attempted by general obstetricians.

If hemorrhage due to uterine atony persists after either vaginal or cesarean delivery in spite of all the above measures, a **brace suture (B-Lynch compression suture)** of the uterus may be helpful in controlling the bleeding.¹⁰

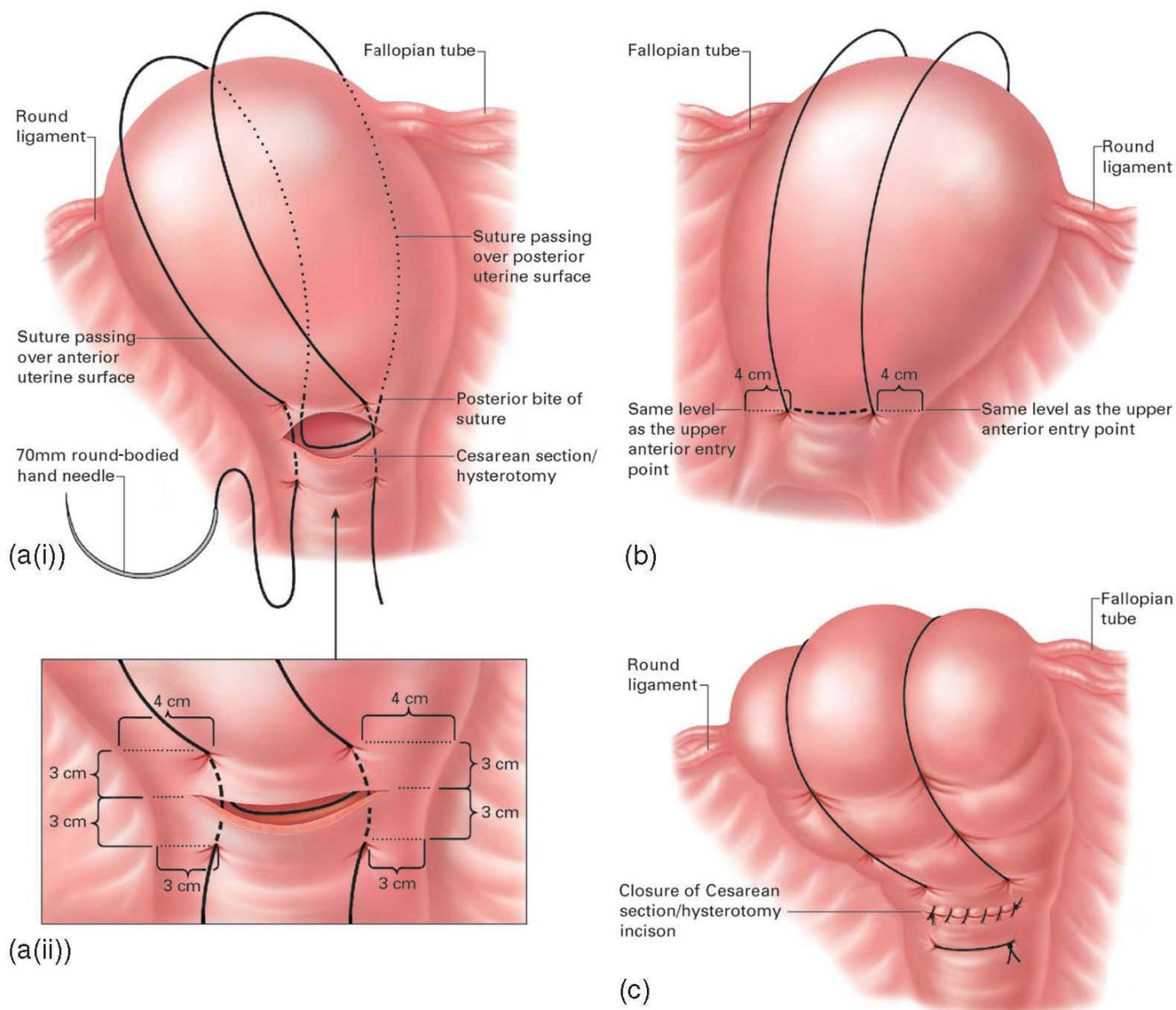


diagram reproduced from http://www.cblynch.co.uk/surgical-management-of-intractable-pelvic-hemorrhage/pph_2a-c/

An alternative is to perform hemostatic multiple square suturing of the uterus; this procedure eliminates space in the uterine cavity by suturing both anterior and posterior uterine walls, and may even be helpful in some cases of placenta previa or accreta.¹¹

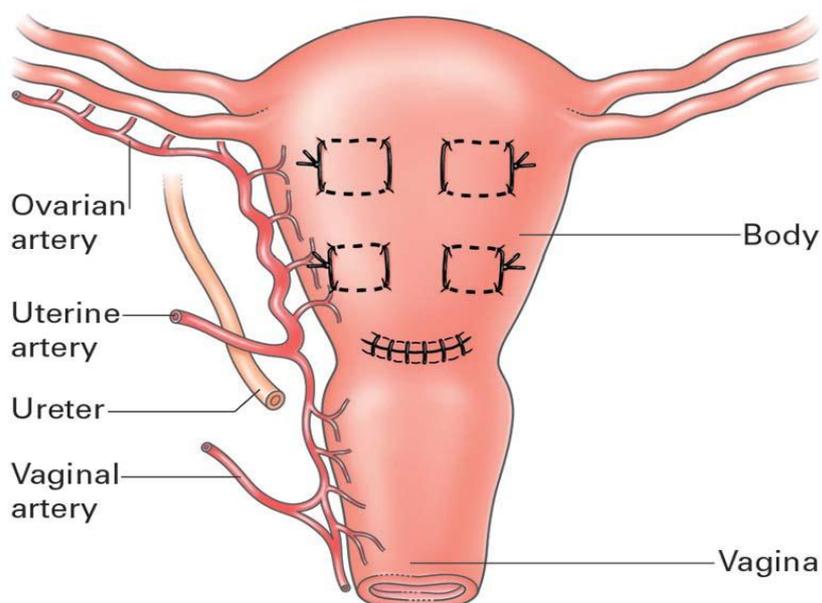


diagram downloaded from <http://dx.doi.org/10.5772/61295>

Hysterectomy may have to be performed as a life saver when all else fails.

Special Considerations for Suspected Placenta Accreta

Appropriate planning of delivery from timing to location, with transfer to a tertiary hospital is paramount.

The major risk factor for placenta accreta is placenta previa, with or without previous uterine surgery.

The risk of placenta accreta increases from 0.3% in women with one previous cesarean to 7.7% in those with 5 previous cesareans.¹²

In patients with placenta previa in the current pregnancy, the risk of accreta increases rapidly from 3% to 67% for those undergoing their first through their fifth cesarean deliveries, respectively.¹²

In case of previous cesarean delivery (or previous myomectomy), the obstetrician must have a clear idea about the placental location by the end of the second trimester.

Ultrasonography (with or without MRI) may be helpful in establishing the diagnosis of accreta in the antepartum period.

Despite advances in imaging modalities, no diagnostic technique affords the clinician complete assurance of the presence or absence of placenta accreta.

If a strong suspicion of accreta is attained before delivery, a number of measures should be taken:

- The patient should be counseled about the likelihood of hysterectomy
- Blood products and clotting factors should be available
- The appropriate location and timing for delivery should be considered to allow access to adequate surgical personnel and equipment

Uterine Rupture

Abnormal labor, operative delivery, and placenta accreta can lead to rupture of the uterus and intra-abdominal hemorrhage.

Surgical repair is often possible when the rupture is confined to the scar of a previous cesarean delivery, but hysterectomy may be required in a life-threatening situation, regardless of the patient's wishes for preservation of future fertility.

Uterine Inversion

Uterine inversion is associated with marked hemorrhage.

Manual replacement of the uterus with the fingertips exerting upward pressure circumferentially, with or without uterine relaxation, is usually successful.

If the inversion occurs *before* placental separation, detachment of the placenta should *not* be undertaken as it will lead to additional hemorrhage.

CONCLUSIONS

- ❖ Uterotonic agents should be the first-line treatment for postpartum hemorrhage due to uterine atony.
- ❖ Management may vary greatly among patients, depending on etiology and available treatment options, and often a multidisciplinary approach is required.
- ❖ When uterotonics, tranexamic acid, and uterine tamponade fail following vaginal delivery, exploratory laparotomy is the next step.
- ❖ In the presence of conditions known to be associated with placenta accreta, the obstetrician must have a high index of suspicion and take appropriate precautions.

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Prepared by Dr Joe Suidan