

Consider retroperitoneal packing for postpartum hemorrhage

➔ For intractable bleeding, this technique, borrowed from pelvic trauma surgery, allows you to stabilize the patient until her underlying injury can be addressed

CASE

Postcesarean hemorrhage fails to respond to early maneuvers. A 25-year-old G1P0 undergoes cesarean section at our hospital for fetal distress. She has no history of coagulopathy, and no intraoperative complications are noted during the procedure. Upon her arrival in the postanesthesia care unit, however, vaginal bleeding is observed. She is given 40 U of oxytocin in 1 L of lactated Ringer solution, two intramuscular doses of 0.2 mg of methylergovanine maleate, and 1,000 µg of misoprostol to treat the postpartum bleeding. Nevertheless, she loses almost 1 L of additional blood from her vagina and is returned to the operating room for exploration and resuscitation for hypotensive shock. What are the next steps?

Management of obstetrical hemorrhage often begins with conservative measures, circumstances permitting. It is common practice to give 20–40 U of oxytocin in 1 L of lactated Ringer solution after delivery of the placenta and to perform uterine massage as part of initial management of uterine atony, along with careful evaluation and repair of any laceration or hematoma. In addition, ultrasonography (US) can help detect any retained uterine products.

Medical management usually involves the use of various uterotonics, such as methylergonovine maleate, 15-methylprostaglandin F_{2α}, dinoprostone, and misoprostol. If uterotonics fail, techniques of tamponade include uterine packing with gauze material or use of the Foley intrauterine catheter, Sengstaken–Blakemore tube, and Bakri balloon.^{1–3}

CONTINUED ON PAGE 26

IN THIS ARTICLE

Borrowing from experience in pelvic trauma surgery
page 26

Retroperitoneal technique described
page 29

When does bleeding become hemorrhage?
page 30

MAJ William R. Fulton, DO

Dr. Fulton is Chief of General Surgery at Baynes-Jones Army Community Hospital in Fort Polk, La.

MAJ James Oyekan, MD

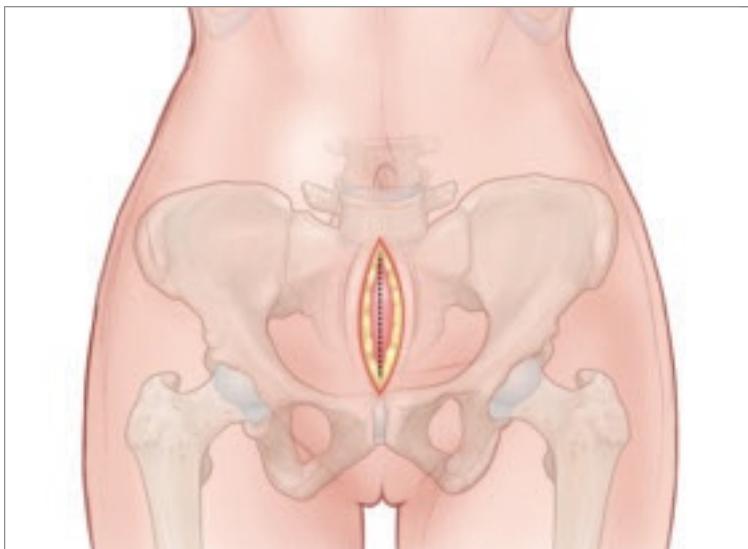
Dr. Oyekan is Chief of the Department of Gynecologic Services at Baynes-Jones Army Community Hospital in Fort Polk, La.

The authors report no financial relationships relevant to this article.

>> SHARE YOUR COMMENTS

Does this packing technique work for you? Let us know:
E-MAIL obg@dowdenhealth.com
FAX 201-391-2778

FIGURE 1 Packing begins with a 5-cm incision



Make a 5-cm incision just cephalad to the symphysis pubis, deep to the fascia, and into the space of Retzius.

ILLUSTRATIONS BY ROB FLEWELL FOR OBG MANAGEMENT

FAST TRACK

Hysterectomy should be a last resort for postpartum hemorrhage, with the knowledge that bleeding may continue after the procedure

Surgical management is often the last resort, and is limited by the clinician's experience. Some surgical methods include uterine or hypogastric artery ligation, or both. Newer techniques include a variation of uterine compression sutures such as the B-Lynch suture or multiple-square suturing. The B-Lynch provides continuous compression of the uterus, thereby decreasing blood loss.⁴ Multiple-square suturing joins the anterior and posterior walls of the uterus, also compressing the uterus.

Hysterectomy should be a last resort, with the knowledge that bleeding may continue after the procedure, in which case pelvic packing becomes an alternative. Unfortunately, pelvic packing of the intraperitoneal cavity often has little effect on endometrial hemorrhage or retroperitoneal bleeding.²⁻⁵

CASE CONTINUED

Resuscitation calls for blood products. Our resuscitation regimen includes recent clinical recommendations from military medical units in Iraq and Afghanistan and from domestic trauma centers. These guidelines propose that 1 U of fresh frozen plasma be adminis-

tered with every 1 or 2 U of packed red blood cells (RBCs) until the clinical situation stabilizes or coagulopathy is excluded. Because of massive blood loss in this case, however, fluid replacement continues throughout the procedure—totaling 6 U of packed RBCs, 6 U of fresh frozen plasma, and 5 U of cryoprecipitate with additional crystalloid.⁶⁻⁸

A decision is made to undertake surgical exploration. We open a Pfannenstiel incision and enter the peritoneal cavity, encountering scant dark red blood without gross intraperitoneal bleeding. The uterus is intact with apparent endometrial hemorrhage. Uterine vessels are not easily visualized because they are obscured by retroperitoneal blood and an engorged uterus. The uterus has increased in size severalfold during hemorrhage and occupies the entire pelvic cavity, making dissection difficult for emergent hysterectomy.

As the uterus is exteriorized, Péan clamps are placed on the cornua for retraction, and the round ligaments are transected and ligated bilaterally. Ecchymoses along the peritoneum suggest that retroperitoneal bleeding is occurring in addition to the endometrial blood loss.

What can be done about the retroperitoneal bleeding?

Although laparotomy and hysterectomy are last resorts in postpartum hemorrhage, the use of retroperitoneal packing during these procedures may hasten life-saving hemostasis. In pelvic trauma, a technique of retroperitoneal packing has significantly reduced mortality.⁹ The same technique of retroperitoneal packing is ideally suited for such devastating circumstances as life-threatening postpartum hemorrhage.

Retroperitoneal packing is a lesson gleaned from trauma surgery and has profound application in cases of severe postpartum hemorrhage.

CASE CONTINUED

Hemorrhage is stanchd. Blood loss continues, and the patient remains in hypotensive shock. Vital signs are critical:

CONTINUED ON PAGE 29

- systolic blood pressure, 40 mm Hg
- heart rate, 160 bpm
- minimal urine output
- hemoglobin level, 4 g/dL.

Hemorrhage is obvious from the appearance of the pelvis, and continuing blood loss suggests disseminated coagulopathy. Total abdominal hysterectomy cannot be safely or quickly performed.

To quickly prevent further blood loss, we pack the retroperitoneum using a technique adapted from trauma surgery and first described by Smith and colleagues.⁹ We make a 5-cm incision into the space of Retzius just cephalad to the pubic symphysis (FIGURES 1 [page 26] and 2). This incision is separate and inferior to the earlier laparotomy incision.

Four laparotomy sponges are packed along the retroperitoneal space to provide tamponade (FIGURE 3). Within seconds, the patient stabilizes, with systolic blood pressure rising to 90 mm Hg and the heart rate declining toward 100 bpm. Bleeding ceases immediately, and the hysterectomy is completed under stable conditions without further blood loss.

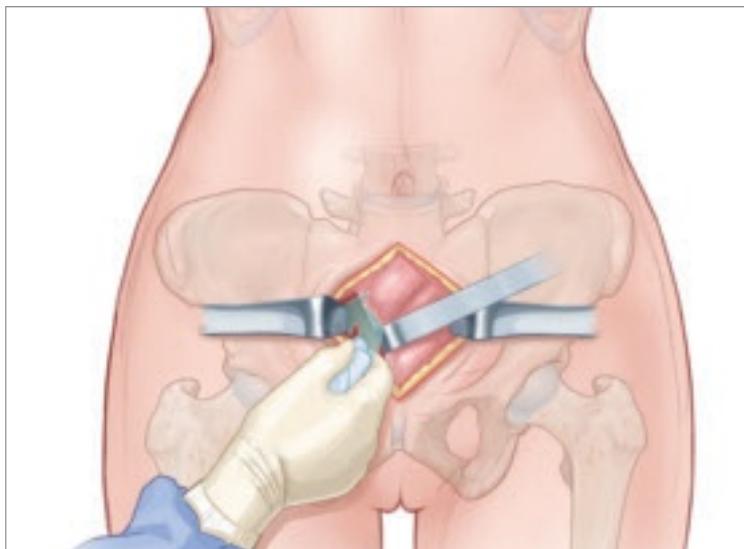
How retroperitoneal packing saves lives

Most of the pelvic packing that has been described in the literature has consistently involved intraperitoneal packing. However, packing of the peritoneal cavity is often insufficient tamponade for bleeding associated with retroperitoneal and endometrial bleeding. Direct compression in the retroperitoneal space stanches bleeding from the iliac vessels and branches. In trauma, this technique is used to provide quick relief of pelvic hemorrhage in any setting, including the emergency and operating rooms.⁹⁻¹¹

Technique

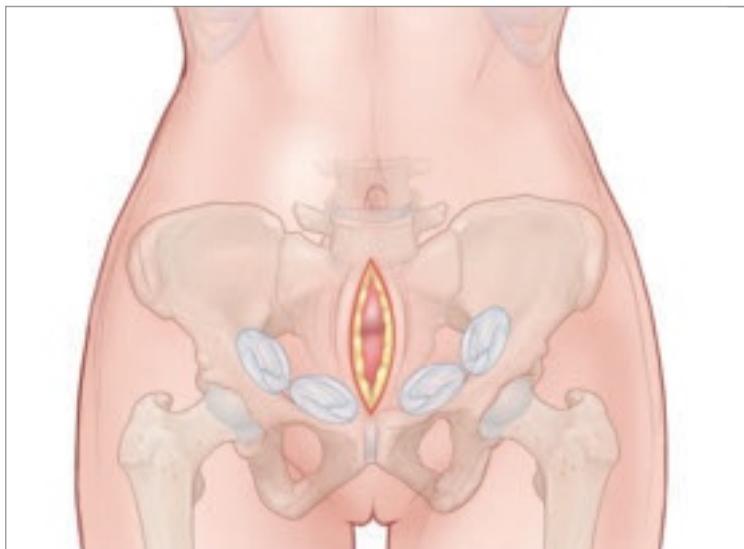
Retroperitoneal packing consists of a few basic steps and can be easily reproduced and applied in life-threatening circumstances. First, a 5-cm incision is made just cephalad to the symphysis pubis deep to the fascia and

FIGURE 2 Preparing to place sponges



Use blunt dissection in the space of Retzius before placing packing material.

FIGURE 3 Insert packing into retroperitoneal space



Packing is usually sufficient when two or three laparotomy sponges are placed at each side of the retroperitoneal pelvis.

into the space of Retzius (FIGURE 1, page 26). The buildup of blood often causes autodissection of this plane (FIGURE 4, page 30). It is often useful to keep this fascial incision separate from the laparotomy fascial incision to assist with tamponade. Next, blunt dissection is performed in the continuous space of

A devastating event has mortality approaching 4%

Pelvic hemorrhage is a devastating complication in both trauma and postpartum situations. Postpartum hemorrhage complicates 6% of cesarean deliveries and leads to hysterectomy in 0.35 of every 1,000 deliveries. Maternal mortality approaches 13.6% in developing nations and 4% in industrialized nations.¹²

When does bleeding after delivery become “hemorrhage”?

Postpartum hemorrhage is often defined as more than 500 cc of blood loss after vaginal delivery or more than 1,000 cc during a cesarean delivery.¹³ Postpartum hemorrhage can be further classified into primary or secondary, depending on the timing of occurrence. Primary hemorrhage occurs within 24 hours of delivery; secondary hemorrhage occurs from 24 hours to 12 weeks after delivery.¹⁴

Causes of postpartum hemorrhage include uterine atony, retained placental products, genital laceration, inversion of the uterus, and coagulation disorders.

FAST TRACK

The technique allows immediate stabilization of the patient until underlying injury can be addressed

Retzius and retroperitoneum to the level of the presacral space (FIGURE 2, page 29).

Tamponade is then achieved by placing laparotomy sponges into the retroperitoneal space (FIGURE 3, page 29). Packing with two or three laparotomy sponges at each side of the retroperitoneal pelvis is usually sufficient. In emergent situations, this entire procedure can be completed in an emer-

gency room or postanesthesia care unit, with a drain left in place along with the packs (FIGURE 5). In trauma, this technique allows immediate stabilization of the patient until the underlying injury can be thoroughly addressed. Careful examination of the ureters and bladder should be completed to address any injury promptly.

The success of this technique is clear from the trauma literature, but the data have yet to be widely applied in nontraumatic applications.⁹ It is especially advantageous to have a space separate from the intraperitoneal cavity to provide tamponade because the uterus itself may obstruct visualization. It is possible that, in some cases, this technique may control bleeding without the need for postpartum hysterectomy.

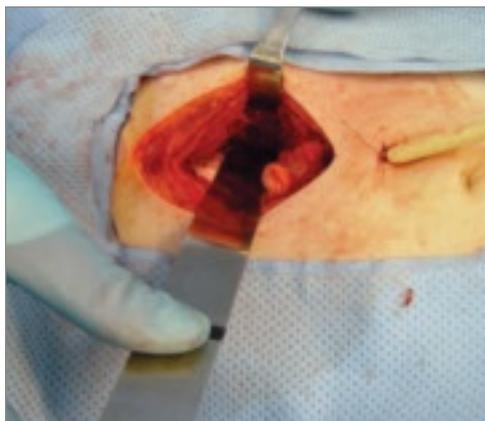
CASE RESOLVED

When the retroperitoneal packs are removed after the hysterectomy, no further bleeding occurs. However, moderate hydronephrosis is apparent along the patient's left ureter.

The wound is closed, and the patient is transferred to intensive care. She subsequently undergoes placement of a ureteral stent for the hydronephrosis and is discharged 5 days later. The stent is removed on an outpatient basis without further morbidity or the need for additional procedures. 📌

REFERENCES CONTINUE ON PAGE 32

FIGURE 4 Expect autodissection



Blood loss frequently causes autodissection of the surgical plane.

PHOTOS: ERNEST MOORE, MD; USED WITH PERMISSION

FIGURE 5 A drain may be required



Packing can be left in place until bleeding is stanchied, with a drain added for optimal recovery.

References

1. Bakri YN, Amri A, Abdul Jabbar F. Tamponade-balloon for obstetrical bleeding. *Int J Gynaecol Obstet.* 2001;74:139-142.
2. Mousa HA, Alfirevic Z. Treatment for primary postpartum haemorrhage. *Cochrane Database Syst Rev.* 2003;(1);CD003249.
3. Novello A, King JC. Health advisory: Prevention of maternal deaths through improved management of hemorrhage. Available at: www.acog.org/acog_districts/dist_notice.cfm?ecno=1&bulletin=1517. Accessed May 14, 2008.
4. Allam MS, B-Lynch C. The B-Lynch and other uterine compression suture techniques. *Int J Gynaecol Obstet.* 2005;89:236-241.
5. Cho JH, Jun HS, Lee CN. Hemostatic suturing technique for uterine bleeding during cesarean delivery. *Obstet Gynecol.* 2000;96:129-131.
6. Burtelow M, Riley E, Druzin M, Fontaine M, Viele M, Goodnough LT. How we treat: management of life-threatening primary postpartum hemorrhage with a standardized massive transfusion protocol. *Transfusion.* 2007;47:1564-1572.
7. Holcomb JB, Jenkins D, Rhee P, et al. Damage control resuscitation: directly addressing the early coagulopathy of trauma. *J Trauma.* 2007;62:307-310.
8. Ketchum L, Hess JR, Hiippala S. Indications for early fresh frozen plasma, cryoprecipitate, and platelet transfusion in trauma. *J Trauma.* 2006;60(6 Suppl):S51-S58.
9. Smith WR, Moore EE, Osborn P, et al. Retroperitoneal packing as a resuscitation technique for hemodynamically unstable patients with pelvic fractures: report of two representative cases and a description of technique. *J Trauma.* 2005;59:1510-1514.
10. Hsu S, Rodgers B, Lele A, Yeh J. Use of packing in obstetric hemorrhage of uterine origin. *J Reprod Med.* 2003;48:69-71.
11. Maier RC. Control of postpartum hemorrhage with uterine packing. *Obstet Gynecol.* 1993;169:317-323.
12. Dildy GA, Scott JR, Saffer CS, Belfort MA. An effective pressure pack for severe pelvic hemorrhage. *Obstet Gynecol.* 2006;108:1222-1226.
13. Clark SL, Yeh SY, Phelan JP, Bruce S, Paul RH. Emergency hysterectomy for obstetric hemorrhage. *Obstet Gynecol.* 1984;64:376-380.
14. American College of Obstetricians and Gynecologists. ACOG Practice Bulletin: Clinical Management Guidelines for Obstetricians-Gynecologists Number 76, October 2006: postpartum hemorrhage. *Obstet Gynecol.* 2006;108:1039-1047.

Your search is over!

Discover OBG MANAGEMENT'S



Visit www.OBGfindit.com today!

What is OBGfindit.com?

OBGfindit.com is a vertical search tool that allows you to perform customized searches of Web sites that are relevant to ObGyn specialty-specific patient care and practice management. **OBGfindit.com** can search hundreds of Web sites that contain information directly related to the practice of obstetrics and gynecology.

How do physicians benefit from OBGfindit.com?

- Precision search tool...at lightning speed
- Targeted and relevant results
- From a trusted source

How is a search done on OBGfindit.com?

OBGfindit.com features three ways to conduct a search:

- **OBG MANAGEMENT**—The user can search current and archived articles from OBG MANAGEMENT.
- **ObGyn sites**—The user can search sites that have been determined by the OBG MANAGEMENT editorial team and professional advisors to be relevant to the ObGyn physician.
- **Web**—The user can search millions of pages on the wider Web—but without distracting and unproductive results. For example, public social networking sites have been excluded.



obgmanagement.com

DID YOU SEE IT?

Control of massive hemorrhage: Lessons from Iraq reach the US labor and delivery suite

► Robert L. Barbieri, MD
JULY 2007

You can find it in our archive at www.obgmanagement.com