

Uterine Wall Partial Thickness Necrosis Following Combined B-Lynch and Cho Square Sutures for the Treatment of Primary Postpartum Hemorrhage

To the Editor:

I read with great interest the paper by Akoury and Sherman,¹ describing the case of a woman with primary postpartum hemorrhage (PPH) arising from uterine atony that was controlled using a combination of the B-Lynch and Cho compression suture techniques and who was subsequently found to have partial necrosis of the myometrium at elective Caesarean section (CS).

I agree with the authors that the suture material used does not play a significant role in causing uterine necrosis, as the damage caused by the pressure suture would occur in the immediate postoperative period and would be related to the degree of tension and ischemia that the suture exerts on the myometrium. Also, it is good idea to establish a national registry of women who undergo placement of compression sutures, in order to document the efficacy and the long-term and short-term complications of this procedure.

It is surprising to note that in the authors' case, pregnancy went to term with the huge defect in the myometrium. Had this patient gone into labour it would have definitely ruptured. However certain issues need discussion.

The authors mention using medical management for PPH but they did not use misoprostol. Many authorities now recommend the use of rectal misoprostol 800 µg to 1000 µg² before resorting to any operative intervention.

The authors did not mention the size of the delayed absorbable suture material they used for compression suturing. Most series on compression suturing used number 2 Vicryl for the same purpose,³ as with the use of number 1 Vicryl there is a risk of the suture cutting through uterine tissue.

Vertically placed compression sutures in the uterus using the B-Lynch⁴ and Hayman⁵ techniques may obstruct uterine arcuate blood vessels which run transversely, leading to uterine necrosis. Various authors⁶⁻⁸ have also reported cases of uterine necrosis with use of the B-Lynch suture.

Occlusion of the cervical lumen is a potential complication when transverse compression sutures are placed. It is noteworthy that two cases of occlusion of the uterine cavity, one

with concomitant pyometra, were reported by Ochoa et al.⁹ following multiple square sutures. Joshi and Shrivastava⁶ reported cutting through of the B-Lynch suture and embedding in the uterine wall in one of their cases.

As in the authors' case, Baskett¹⁰ observed the presence of grooves over the uterine fundus at the site of the previous B-Lynch suture in three of seven patients who had a subsequent CS. This is definitely related to the degree of tension and ischemia that the suture exerts on the myometrium.

Because of the above mentioned complications, I do not agree with the authors' statement that compression suture techniques appear to have no serious associated complications and require little operating time. Other procedures like internal iliac artery ligation (IIAL) or uterine artery ligation can also be used for the treatment of primary PPH, and these procedures also do not take much time.

Data on efficacy and safety of these compression suturing techniques are mainly limited to the small case series reported by the proponents themselves, and long-term follow-up information is still lacking. A randomized trial evaluating and comparing the efficacy of the procedures which can be used for the treatment of primary PPH is clearly required.

I suggest IIAL should be used for control of PPH by those who are confident or experienced, and the Hayman compression suture technique by those who are not experienced with IIAL, thereby avoiding transversely placed sutures causing occlusion of the cervical lumen. Since the Hayman technique⁵ involves crossing the uterine cavity to appose the anterior and posterior uterine wall above the bladder reflection, concerns have been raised about the potential risks of cavity occlusion (as the uterus is transfixed from front to back to place the suture) and infection.

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In Response

To the Editor:

We would like to thank Dr Mahajan for his comments and are pleased to address his concerns with regard to the use of misoprostol, suture size, and treatment procedures.

We agree that some authorities recommend the use of rectal misoprostol 800 µg to 1000 µg as part of the treatment of postpartum hemorrhage. Misoprostol is a well established agent for induction of labour and currently is the preferred drug for the first, second, and early third trimester termination of pregnancy. Misoprostol has two further advantages: it is stable at room temperature, requiring no special storage, and it is inexpensive. However, neither its efficiency as the primary agent for the treatment of postpartum hemorrhage (PPH) nor its order of use in combination with other uterotonic agents is well established. We examined an updated review by Mousa and Alfirevic in the Cochrane Database¹ referenced in Dr Mahajan's letter. After reviewing two placebo-controlled randomized controlled trials including 462 subjects, the authors concluded that the use of misoprostol in doses 600 µg to 1000 µg did not show a decrease in maternal mortality, hysterectomy, evacuation of retained products, or blood transfusion. In our centre, once PPH secondary to uterine atony is diagnosed, after excluding retained placental, inverted uterus or genital laceration, our protocol calls for, amongst other interventions, the start of a high dose oxytocin infusion, followed by sequential intramuscular or intramyometrial injection of ergometrine and carboprost tromethamine respectively. The use of rectal misoprostol is optional.

We do not think suture size would play a large role in cutting through the uterine wall. Some tissue may be better suited for a smaller suture; others may need a larger size. Suture size is probably best left to the individual surgeon's

judgement during the surgery. In our case, we used mainly number 2, and a few number 1, delayed absorbable sutures.

Our objective in reporting this case was to raise the concern, as other authors have done, about the potentially serious, albeit infrequent, complication with the use of compression sutures. All types of compression sutures were implicated in various degrees of myometrial necrosis. On balance, compression sutures have been used with variable success, ranging from 72% to 91.4%.^{2–4} These women would otherwise have needed a hysterectomy.

We are pleased that Dr Mahajan supports our suggestion of a national registry as an appropriate first step in quantifying the short- and long-term outcomes of the use of compression sutures. Although a randomized controlled trial evaluating the effectiveness of surgical procedures for the treatment of primary PPH would appropriately answer the question as to whether the use of compression sutures or internal iliac artery ligation is superior in controlling PPH, such a trial would be methodologically challenging and expensive to conduct. In managing a patient with PPH, obstetricians usually employ various interventions sequentially or concomitantly, based on the clinical presentation of each case.

In choosing the type of surgical intervention, Dr Mahajan suggests that ligation of the internal iliac or uterine artery does not take much time to perform. In our view, uterine artery ligation is a simpler procedure than internal iliac artery ligation, the latter taking considerably more time and requiring more experience to execute safely. The reported success rate of the internal iliac artery ligation for the treatment of primary PPH secondary to uterine atony is 25% to 60%.^{5–8} Although internal iliac artery ligation procedures have infrequent complications, they are, in our view, more serious than the complications associated with compression sutures. Reported associated complications include the erroneous ligation of the external iliac artery and ureteric, venous, and nerve injuries. The internal artery ligation should be performed by a surgeon experienced in the procedure and the anatomy of the retroperitoneal region. Obstetrics and gynaecology residents graduating from North American residency programs are not well trained to perform internal iliac artery ligation in emergency conditions. In dealing with serious PPH, the obstetrician should not be forced to choose between internal iliac artery ligation or compression sutures on the basis of experience alone. The obstetrician should adapt his or her surgical skills and other interventions, such as uterine artery embolization or hysterectomy, to the specific clinical findings presenting during a case of PPH. The crux of the management of PPH is timely intervention and a multidisciplinary approach that can respond quickly to the changing needs of a particular case. This approach may require the services of staff from

anaesthesia, the blood bank, transfusion therapy, the intensive care unit, interventional radiology, gynaecologic oncology, urology, and vascular surgery.

Thank you, once again, for allowing us to respond to these legitimate concerns in the care of postpartum hemorrhage.

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