

รายงานผู้ป่วย

Case Report

Fertility after Successful Use of the B-Lynch Uterine Compression Suture in Atonic Postpartum Hemorrhage during Cesarean Delivery

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Abstract The present study described the patient with acute postpartum hemorrhage (PPH) due to the uterine atony during the cesarean section. The author presented the success of the next pregnancy after compression suture the uterus with the B-Lynch technique. Acute PPH caused by the uterine atony, which happened both times in the same patient, was monitored for quick diagnosis and proper treatment to prevent the adverse event. The uterine compression suture should be an attempt to preservative uterus. The B-Lynch suture's advantage was applied too quickly, safely, and preserved reproductive health status. This procedure should be trained for general obstetricians.

Keywords: postpartum hemorrhage; uterine atony; uterine compression suture

Introduction

In 1997, Christopher B-Lynch⁽¹⁾ reported an attempt to the uterine compression suture technique using dissolved silk to keep the uterus in mothers with the happening of massive postpartum hemorrhage (PPH) and treatment with unsuccessful uterotonic drugs. Following this report of the B-Lynch suture, many obstetricians agreed with the B-Lynch procedure. They studied an attempt at B-Lynch techniques that were more comfortable and productive.⁽²⁻⁶⁾ Postpartum hemorrhage is the leading cause of maternal death after birth.⁽⁷⁻⁹⁾ According to the World Health Organization statistics (WHO)⁽¹⁰⁾ described that approxi-

mately 2% of postpartum hemorrhages were found in the childbirth. One in four maternal deaths worldwide was found to be more common in undeveloped countries due to a shortage of care resources. PPH occurring immediately after the childbirth is always dangerous and usually a fatal complication.⁽⁷⁻¹⁰⁾

Postpartum hemorrhage had many potential causes, and the most common was uterine atony due to the failure of the uterus to contract and retract after delivery of the fetus. PPH in a previous pregnancy was a significant risk factor, and every effort should be made to determine its severity and cause⁽⁸⁾. Uterine atony could lead to rapid and severe bleeding and

hypovolemic shock. Overdistension of the uterus, either absolute or relative, was a significant risk factor for atony. It could be caused by polyhydramnios, multifetal gestation, fetal macrosomia, fetal abnormal lie or presentation, and a uterine structural abnormality.^(8,9) All general hospitals should have emergency obstetric skills (including PPH training) for dealing with obstetric hemorrhage.⁽¹⁰⁾ Maternal mortality prevention and reduction were required to review maternal causes of mortality to plan the development of pregnant women and postpartum care systems to be more effective in the context of the area. The cause of maternal death was found that obstetric hemorrhages had always been the number one cause of death, especially uterine atony. Focus on proper management, especially obstetric risk, were used for screening system. The author presented the first reported case of fertility after successfully using the B-Lynch uterine compression suture in acute postpartum hemorrhage during cesarean delivery, occurring twice pregnancies in the same woman. This case report described the best practice for early detection and prompt treatment of PPH with the B-Lynch suture procedure in low resource hospital settings and with no apparent adverse clinical outcomes.⁽¹¹⁾ Post the B-Lynch suture technique of uterine compression sutures, fertility outcomes for this patient were reported. However, data was limited by small numbers and significant variation. Results were focused on patients who desired a subsequent pregnancy, with considerable follow-up gaps for patients who wanted pregnancy later. The B-Lynch procedure was used worldwide to treat various PPH causes, especially in developing countries like Africa and Asia, where the incidence of PPH had been high. Because the procedure was faster and simpler than

hysterectomy and internal iliac artery ligation, and it produced excellent outcomes, most obstetricians were very keen to learn and practice this innovative suture technique to improve their maternity care skills. There were numerous reviews in publications worldwide extolling the merits of this technique and declaring its successful outcomes.⁽⁵⁻¹¹⁾ In Thailand and some other countries in Southeast Asia, there were few reports of this uterine compression suture, even though there might have been numerous case series in each country.^(5,6) The advantages of the procedure were that it was technically simple, rapid, effective, and relatively safe, with satisfactory hemostasis immediately after insertion. Furthermore, it could preserve the uterus and maintained reproductive health status. The uterine compression suture should be applied within 1 to 2 hours to avoid the need for hysterectomy.

Case Report

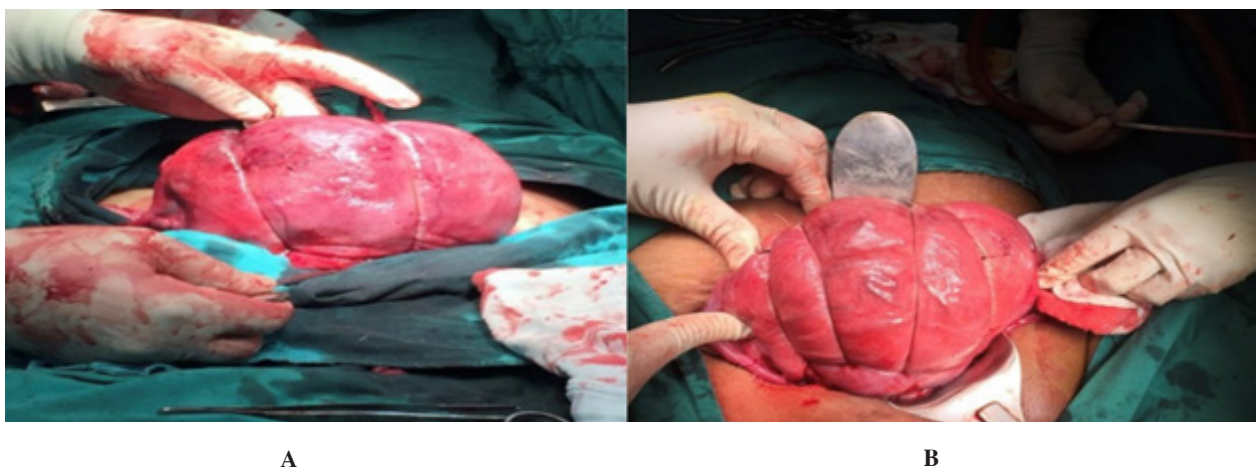
In 2011, a 36-year-old nulliparous pregnant woman was diagnosed with elderly gravidarum and polyhydramnios. Her antenatal course was uneventful. She was admitted to the labor room with symptoms and signs of labor pain. The physical examination showed typical vital signs, fundal height was 40 cm, heart and lung were within the standard limit, and 2+ pitting edema. Ultrasonography estimated a large amount of amniotic fluid with a large pocket 15 cm. Cephalic presentation was observed. The route of delivery was decided by obstetric indication. She and her husband were planning to have two children, and agreed for cesarean delivery due to elderly primigravida, which had difficult delivery by polyhydramnios. The risks and benefits of the operation were carefully explained to the couple before started the

operation. During operation, spinal anesthesia was performed by an anesthesiologist. The pregnant woman was placed in the supine position. Pfannenstiel's incision was used. The male fetus was delivered from the uterus, the amniotic fluid amounted 1,500 ml, and cord traction was performed. Massive postpartum hemorrhage happened after placental delivery. Uterine massage, bimanual uterine compression, and uterotonic drugs were rapidly administered, but the patient's condition did not improve. A B-Lynch procedure uterine compression suture was performed. Estimated blood loss was 1,100 ml in five minutes, and blood hematocrit dropped from 36% to 28%, one unit of PRC was used. Postoperative care was carefully administered. The length of stay was four days. Contraception was suggested for three or five years. She was used condom technique contraception. The patient and her husband followed the doctor's recommendations well.

Four years later, the patient had a second pregnancy at the age of 40, with good antenatal care until term pregnancy. She was returned to the labor

room with labor pain, previous cesarean section, elderly gravidarum, and transverse fetal lie with right acromiodorso-anterior position. Careful preoperative counseling was given because of the high risk of recurrent PPH. During the operation, a Pfannenstiel's incision was performed. The male fetus was delivered from the uterus, the amniotic fluid amount was 800 ml.; and cord traction was performed. Massive postpartum hemorrhage occurred after placental delivery, similar to the previous cesarean section. Uterine massage, bimanual compression, and uterotonic drugs were rapidly administered, and uterine compression suture was immediately performed by the B-Lynch and Hayman procedure (Figure 1). In this operation, tubal sterilization was performed as well. Total blood loss was about 1,200 ml. Two units of PRCs were used in this operation. The length of stay was four days. At the postpartum clinic, she started breastfeeding and returned normal menstruation after two months. Sexual health status was explained to her and her husband.

Figure 1 The B-Lynch procedure applied uterine compression suture in 2011 (A), and the second event, the uterine compression sutures were by the B-Lynch and Hayman procedure in 2015 (B)



At present, she is 45 years old. She has regular menstruation, successful occupation, and functional sexual health status. In those two emergency events for repeated uterine atony with preservation uterus, she has a good impression of the plan of PPH management.

Discussion

Postpartum hemorrhage (PPH) occurred in approximately 4% of vaginal and 6% of cesarean deliveries.⁽¹²⁾ A new PPH top guideline adopts a practical approach, whereby a perceived loss of 500–1000 mL prompts necessary measures of monitoring and readiness for resuscitation. In contrast, a perceived loss of >1000 mL or smaller, associated with clinical signs of shock, prompts a full protocol of measures to resuscitate, monitor and arrest bleeding.⁽¹³⁾ The prevalence of severe PPH was estimated at 6.7 per 1000 deliveries,⁽¹⁴⁾ while PPH deaths occur in approximately 1 per 1000 deliveries⁽¹²⁾. The uterine compression sutures had been described to control PPH. Christopher B-Lynch reported a new approach for surgical management: a so-called B-Lynch uterine compression suture. This suture material was run through the full thickness of both the anterior and posterior uterine walls.^(1,13) This report described a technique that uses a continuous suture to apply vertical compression to an atonic uterus to avoid hysterectomy. This technique was used in an emergent situation. The patient was supine position. The suture material was chosen as a chromic catgut (C163B) absorbable suture, 75 cm blunt point 3/8 circle 63 mm. The uterus was exteriorized and rechecked to identify for stopping any bleeding point. The procedure was performed uterine compression sutures with the B-Lynch suture tech-

nique⁽¹⁾ (Figure 1). When applied correctly, this suturing technique has been highly successful without any problems or apparent complications.⁽⁵⁾ Various modifications of the B-Lynch suture have come into practice, and there have been numerous reports of its success in controlling PPH. Because the procedure is faster and easier than a hysterectomy and internal iliac artery ligation, and it produces excellent outcomes, most obstetricians are very keen to learn and practice this innovative suture technique to improve their maternity care skills. Many types of researches supported uterine preservation.

Kaoiean S⁽⁵⁾ concluded that the B-Lynch suture was an effective and safe surgical option for intractable hemorrhage treatment with no apparent adverse outcomes.

Tadakawa M, et al.⁽¹⁵⁾ studied the B-Lynch sutures for PPH did not result in jeopardizing fecundity. Ghezzi F, et al.⁽¹⁶⁾ presented the uterine compression sutures to treat hemorrhage (PPH). The Hayman suture offered the potential advantages that could be applied faster and more comfortably, avoiding the performance of a lower segment hysterotomy when PPH follows a vaginal delivery.

Moreover, this case report showed the author's experience in the use of the Hayman suture technique⁽¹⁶⁾ for the conservative surgical management of massive PPH. The procedure was performed according to the method initially described that, after the uterus was exteriorized, bimanual compression was applied to check whether this stopped the bleeding before the suture was applied. A chromic catgut (C163B) absorbable suture, 75 cm blunt point 3/8 circle 63 mm. was used to transfix the uterus from front to back, just above the reflection of the bladder, and was then tied above the fundus of the uterus, while an assistant applied bimanual compression. The procedure could be performed if one suture on each side of the uter-

us, or, if the surface between the two lateral sutures appeared to require further compression, then side-to-side ties were inserted between the first sutures. If only two sutures were needed, a three-throw technique was used to tie the knots to avoid the sutures sliding off the uterus's side. In cases of PPH occurring after a cesarean delivery, the lower transverse uterine incision was closed in one layer. Before closing the abdomen, the surgeon ensured that vaginal bleeding was normal (Figure1).

Price N and B-Lynch C⁽¹⁷⁾ suggested that the B-Lynch suturing technique was particularly useful because of its simplicity of application, life-saving potential, relative safety, and capacity for preserving the uterus and subsequent fertility. The adequacy of hemostasis could be assessed both before and immediately after applying the suture only if it failed to need other, more radical surgical methods to be the recommendation.

Abdrabbo SA⁽¹⁸⁾ presented the stepwise uterine devascularization was an effective and safe alternative to hysterectomy for the management of uncontrollable hemorrhage. Furthermore, Senturk MB, et al.⁽¹⁹⁾ concluded that the peripartum hysterectomy caused postpartum depression.

Major risk factors for uterine atony with both pregnancies of the patient were overdistension of the uterus (polyhydramnios in the first pregnancy, transverse fetal lie with right acromiodorso-anterior position in the second pregnancy). Ineffective uterine contraction, either focally or diffusely, was additionally associated with elderly gravidarum and previous cesarean section. Identification of risks allows for the planning and availability of resources that might be needed, including personnel, medication, equipment, adequate intravenous access, and blood products. Part of the preparation should be developing a plan that

allows delivery at a facility with an appropriate level of care for these patients' needs. In the second event, repeated uterine compression suture by both the B-Lynch and Hayman procedures was performed to increase security (Figure1). According to some reports, other possible causes of B-Lynch suture failure are a lack of tightness or improper suture application.^(16,17)

Obstetricians should make an early diagnosis of massive PPH and make an early decision to put the B-Lynch suture in place, as delaying could severely compromise the patient's condition. In real life, obstetricians are likely to treat massive PPH based on their own experience, usually choosing to perform a peripartum hysterectomy. Unfortunately, pregnant women who receive an emergency obstetric hysterectomy become primigravid, for whom the fertility ending nature of the procedure can be devastating. Therefore, particularly among this group of women, obstetricians should be familiar with and be prepared to perform alternative procedures to control the bleeding. B-Lynch sutures for PPH did not appear to jeopardize fecundity.^(5,7) An older age was a risk factor for achieving subsequent pregnancies.^(7,10) The author's experience provided an approach to the best practice for the prevention and treatment of PPH in low resource settings with B-Lynch procedure in treating massive PPH and no apparent adverse clinical outcomes. The advantages of this procedure were that it was technically easy and quick to perform, relatively inexpensive, low mortality, preserves fertility and had reproductive health status with satisfactory hemostasis immediately after compression suture. A modified B-Lynch suture, especially the Hayman technique (Figure1), could be effectively applied in cases of atonic bleeding after closure of uterine incision or

massive PPH after vaginal birth. This procedure had the advantage of being more comfortable and faster than the original B-Lynch suture.⁽¹⁶⁾ Among the hemostatic surgical techniques, the B-Lynch suture gained significant popularity, mainly because many practitioners were less confident with more complicated surgical procedures, such as bilateral hypogastric artery ligation, and prefer to proceed with a more comfortable, quicker, and effective B-Lynch suture. Obstetricians might know how to manage this condition in all stages of labor. Early detection, prompt treatment, adequate procedure, and obstetricians' skills could be prevented maternal death and improve excellent outcomes.^(5,6) Uterine compression suture should be standard guidelines for the treatment of the choice of atonic postpartum hemorrhage during the cesarean section. Doumouchtsis SK, et al.⁽²⁰⁾ described that the uterine-sparing radiological and surgical techniques for severe PPH management did not appear to affect the menstrual and fertility outcomes in most women adversely. However, the number of studies and the quality of the available evidence was of concern.

In conclusion, the B-Lynch suture's advantage was applied too quickly, safely, and preserved reproductive health status. This procedure should be trained for general obstetricians.

What is already known on this topic?

Method of preservation uterus, the uterine compression suture was performed in the patients, which was postpartum hemorrhage. The B-Lynch suturing technique may be particularly useful because of its simplicity of application, life-saving potential, relative safety, and capacity to preserve the uterus and, thus, fertility. Satisfactory hemostasis can be assessed im-

mediately after the procedure.

What this study adds?

Successful pregnancy after B-Lynch suturing technique in case of severe atonic PPH was demonstrated and recurrent the same event with the successful use of after B-Lynch suturing technique.

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บทคัดย่อ: ความสำเร็จของภาวะเจริญพันธุ์ หลังเย็บรัดมดลูกด้วยเทคนิค B-Lynch ในการรักษาภาวะตกเลือดหลังคลอดจากมดลูกไม่แข็งตัวระหว่างผ่าท้องทำคลอด

สุนทร อินทพิบูลย์, พ.บ.

กลุ่มงานสูติกรรม โรงพยาบาลศรีสังวรสุโขทัย อำเภอศรีสำโรง จังหวัดสุโขทัย

วารสารวิชาการสาธารณสุข 2563;29 (5):931-8.

รายงานการศึกษาผู้ป่วยที่เกิดภาวะตกเลือดเฉียบพลันเนื่องจากมดลูกไม่แข็งตัวระหว่างผ่าท้องทำคลอด โดยแสดงถึงความสำเร็จของการตั้งครรภ์ครั้งต่อไปหลังเย็บรัดมดลูกด้วยเทคนิคของ B-Lynch ภาวะตกเลือดเฉียบพลันระหว่างผ่าท้องทำคลอดเนื่องจากมดลูกไม่แข็งตัวที่เกิดขึ้นทั้งสองครั้งในผู้ป่วยรายเดียวกันได้รับการวินิจฉัยได้อย่างรวดเร็วและการรักษาอย่างเหมาะสม เพื่อป้องกันเหตุการณ์ไม่พึงประสงค์ วิธีการเย็บรัดมดลูกควรพยายามใช้เพื่อรักษามดลูกไว้ประโยชน์ของการเย็บรัดมดลูกด้วยเทคนิคของ B-Lynch คือ สามารถปฏิบัติได้อย่างง่ายดาย รวดเร็ว ปลอดภัยและรักษาสถานะสุขภาพเจริญพันธุ์ และควรแนะนำให้มีการฝึกฝนสำหรับสูติแพทย์ทั่วไป

คำสำคัญ: ภาวะตกเลือดหลังคลอด; ภาวะมดลูกไม่แข็งตัว; การเย็บรัดมดลูก