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Spontaneous Prelabor Fundal Uterine Rupture at the Site of a Previous B-Lynch Compression Suture: A Case Report

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Case Report

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Abstract

Background

Postpartum hemorrhage (PPH) remains the leading cause of preventable maternal mortality worldwide. While most cases respond for medical management, uterine compression sutures like B-Lynch are widely used as fertility-preserving surgical procedures for refractory atonic uterus. Although highly effective, evidence regarding long term complications, particularly spontaneous uterine rupture in subsequent pregnancies, remains limited.

Conclusion

B-Lynch suture remains an effective, fertility preserving treatment for refractory postpartum hemorrhage. Although a causal relationship cannot be established, the anatomical correspondence raises concern for localized myometrial weakening following compression uterine suturing. Women with uterine compression suture should be given appropriate counseling, close antenatal surveillance, and individualized delivery planning. Further studies are needed to clarify the long term risks associated with this life saving procedure.

Introduction

Postpartum hemorrhage (PPH) is the leading cause of maternal death which is a tragedy that is both preventable and unacceptable [1]. *The majority of cases of primary postpartum hemorrhage can initially be managed using conservative non-surgical methods including uterotonics, uterine tamponades and bimanual uterine and external aortic compressions and non-pneumatic anti-shock garment. Despite these efforts, about 1% may fail to respond for non-surgical bundle of interventions* [2]. *For this minority of cases, conservative surgical procedures should be initially attempted* [1]. *Among these procedures, compression suture like B-Lynch are well-known interventions in obstetrics. This is designed to mechanically compress the uterus so as to preserve fertility and avoid peripartum hysterectomy. This relatively simple and accessible procedure has important role in reducing maternal mortality across the globe* [3]. *Evidences about potential complication of spontaneous uterine rupture following B-lynch suture are rare.*

Case History

A 27 years old Gravida II, para I, woman with history of one previous cesarean delivery presented at 30 weeks of gestation following an episode of syncope. She was referred from MCH center with intrabdominal collection and fetal tachycardia. The indication for previous cesarean delivery was malpresentation. There was no pushing down pain or history of trauma. At admission, she was hemodynamically unstable with hypovolemic shock and tachycardia. There was paperwhite conjunctiva. There was abdominal tenderness and revealed signs suggestive of intraperitoneal fluid collection. With digital vaginal examination, cervix was closed, unaffected and station-1. On bedside ultrasound examination, there was large-volume

intraperitoneal free fluid consistent with hemoperitoneum, non-reassuring fetal biophysical profile with normal amniotic fluid. The fetal heart beat was 188 beats per minute consistent with fetal tachycardia.

*Given her previous cesarean delivery, uterine scar dehiscence or rupture was considered and emergency exploratory laparotomy was decided. Laparotomy was performed under general anesthesia. Intraoperatively, the previous lower uterine segment cesarean scar site was found to be intact. With incision over lower uterine segment, a female alive neonate weighing 1700 grams with APGAR of 4 and 5 in the first and 5th minutes was delivered. The posteriorly located placenta was removed easily with cord traction and was complete on examination. With subsequent exploration, a complete anterior fundal uterine rupture measuring approximately 5cm by 4cm was identified (*Fig. 1*). Further inspection revealed visible scarring consistent with a previous B-Lynch compression suture over the rupture site and posterior uterine wall (*Fig. 2*). Based on the operative findings, the fundal rupture was considered to be associated with previous B-Lynch suture. Considering her parity, rupture was repaired using delayed absorbable suture in three layers. Uterotonics were used along with prophylactic antibiotic and tranexamic acid. The estimated blood loss was about 4000 mL and was transfused total of seven units of blood including 5 units of packed red blood cells and 2 units of freshfrozen plasma. She was admitted to intensive care unit for 24 hours. Thromboprophylaxis was provided and discharged after six days of stay with stable condition. The neonate discharged after 21 days of NICU admission with good condition. The patient and family were counseled with the standard recommendation about her future pregnancy.*

Discussion

Uterine atony is the leading cause of postpartum hemorrhage (PPH) and is managed with stepwise conservative methods as initial step [4]. *Compression uterine sutures like B-Lynch have established role in the management of atonic uterus* [5–8]. *Despite their effectiveness, several published reports have described complications occurring after the use of compression suture* [2] .

Reports of complications following uterine compression sutures lead to some authors to question the optimal procedural technique and type of suture material[9]. *These technical and suture material preferences are difficult to assess with well-designed randomized trial partly due to rarity of uncontrollable postpartum hemorrhage leading to surgical intervention. Originally, these techniques were described using chromic catgut sutures. A later report described the use of No. 1 poliglecaprone – 25 and vicril, with all materials being absorbable sutures* [10, 11]. *Authors reported no superiority of either No. 1 or No.2 suture size or any of the absorbable suture material* [11, 12]. *However, sutures like polydioxanone (PDS) with prolonged tensile strength and delayed absorbable profile may exacerbate tissue injury* [13] .

Because compression sutures may be associated with long term complications including uterine rupture, comprehensive operative documentation is essential. This documentation is particularly important following B-Lynch suture, given the subsequent risk of uterine rupture, particularly at the site of suture application where localized weakening of the uterine wall may occur.

Spontaneous uterine rupture before onset of labor is a rare complication that can lead to both maternal and neonatal mortality and morbidity. Only small number of uterine rupture cases are reported possibly associated with B-lynch compression suture [2, 14, 15]. *One of these presented in labor at 32 weeks in labor and the other one who presented at four month of gestation was criticized as the cause of the uterine rupture may be attributed to intervention related to her previous abortions* [16]. *In previously reported cases of uterine rupture occurring during the third trimester following a B-Lynch suture, the use of polydioxanone (PDS) suture material was suggested as a possible contributing factor* [14]. *In our case, details regarding the suture material and uterine compression technique used during the previous cesarean delivery were unavailable. The only information provided by the patient was a history of excessive intraoperative bleeding during the procedure. This case also illustrates the challenges of managing patients whose previous procedures were performed at other institutions, where complete access to clinical information may be limited. Since there was no other explanation for the rupture over the fundus, a through intraoperative inspection revealed a deep vertical groove on posterior and anterior wall, which is the position of the compression suture which might have ischemic pressure necrosis or eroded the uterus thus leading to weakening of myometrium.*

This case highlights the need to balance effective control of postpartum hemorrhage with preservation of long-term uterine health. Obstetricians should be aware of the potential impact of procedures such as the B-Lynch suture on future fertility and pregnancy outcomes. Women who undergo uterine compression sutures should be counseled about possible risks in subsequent pregnancies and offered appropriate antenatal surveillance and delivery planning [17, 18].

Moreover, early preterm uterine rupture following a B-Lynch suture in this case contributes to the limited literature on the potential long-term complications of this procedure. Despite this complication, we were successful in preserving both the uterus and the patient's future fertility.

Conclusion

Although the B-Lynch uterine compression suture remains a valuable and fertility-preserving technique for the management of refractory postpartum hemorrhage, clinicians should be aware of its potential long-term complications, including the rare occurrence of uterine rupture in subsequent pregnancies. This case adds to the limited evidence suggesting a possible association between previous uterine compression sutures and spontaneous uterine rupture. Women with a history of uterine compression sutures should receive appropriate counseling, close antenatal surveillance, and individualized delivery planning. Further studies and long-term follow-up are needed to better define the incidence, risk factors, and preventive strategies for delayed complications such as uterine rupture associated with uterine compression sutures while preserving their life-saving role in the management of postpartum hemorrhage.

Declarations

Authors' Contribution:

Mequanent Tariku: data collection and management, investigation, prepared figures, methodology, writing-original draft. Mndefro Yilma: data collection and management, methodology, writing-review and editing. Mesfin Tariku: laboratory analysis, methodology, writing-review and editing. Hirut Gossaye: Management, investigation, methodology, supervision, writing-review and editing.

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The authors declare no competing interests

Ethics approval:

Written informed consent was taken from the patient for the publication of this article.

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Figures

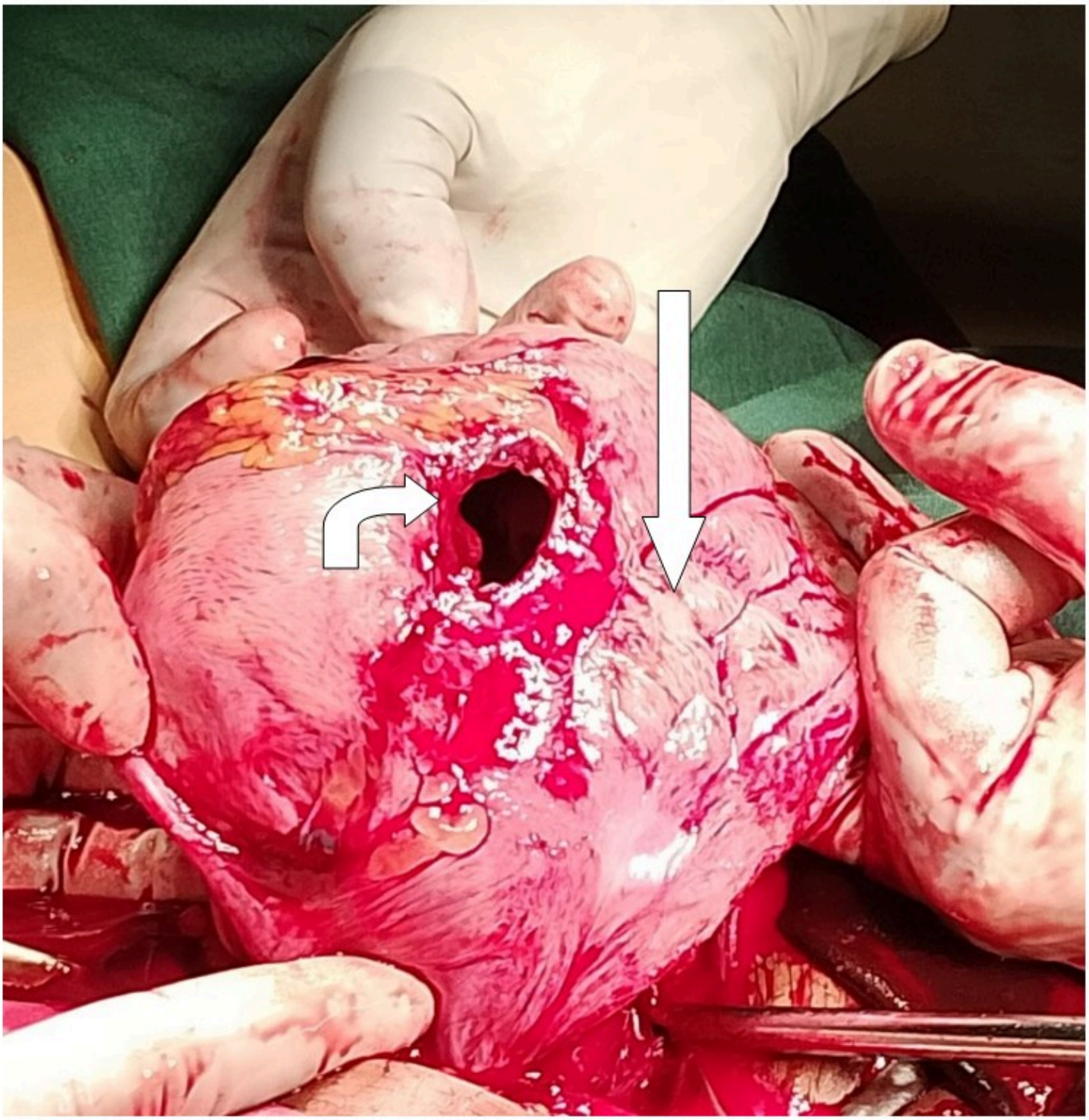


Figure 1

Fundal anterior uterine rupture (curved arrow) and anterior previous compression suture marks (straight arrow)

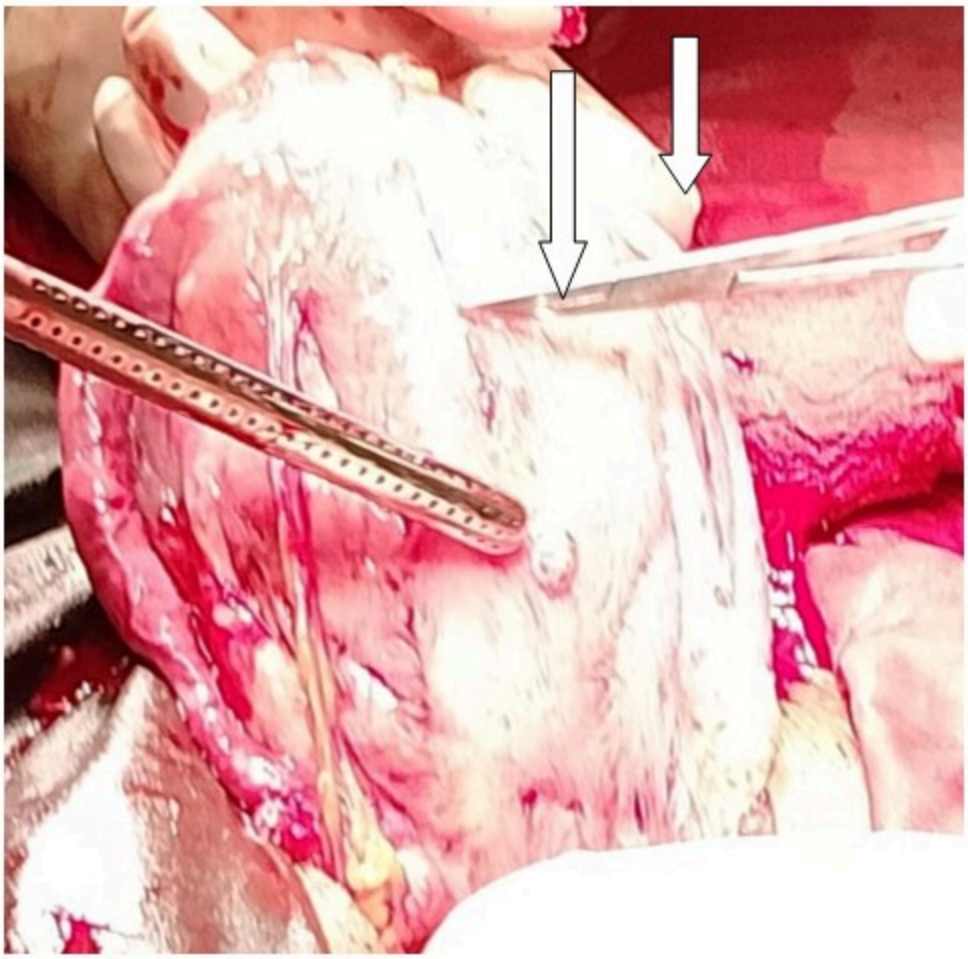


Figure 2

Previous B-Lynch compression suture marks (straight arrows)