

Case Report

Fertility after “only B-Lynch” suture: A case report and literature review

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Abstract

Objective: A new fertility assessment after a B-Lynch suture without a concomitant uterine devascularization is proposed.

Case Report: The case of a 37-year-old woman who experienced postpartum hemorrhage due to uterine atony during cesarean delivery of the previous pregnancy is reported. A B-Lynch brace suturing technique, not associated to any other hemostatic surgical procedure, was carried out. One year later and after an uncomplicated pregnancy of 39 weeks, the patient delivered a healthy infant by an elective cesarean section. Only omental adhesions were found on the anterior surface of the uterus as a consequence of the previous B-Lynch suture.

Conclusion: The B-Lynch hemostatic surgical procedure, alone, does not seem to have a negative impact on fertility. Additional clinical evidences in a greater case-series of patients are needed to assess the value of the method for fertility preservation.

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Keywords: B-Lynch suture; fertility; postpartum hemorrhage; pregnancy; uterine atony

Introduction

All over the world, obstetric hemorrhage is still the major cause of maternal mortality, although about 90% of deaths after postpartum hemorrhage (PPH) are preventable [1]. No significant changes in the definitions, over the past 50 years, have been evidenced, but a classification has been recently proposed by Coker et al wherein the volume loss is assessed in conjunction with clinical signs and symptoms [2]. The factors most significantly associated with hemorrhage include advanced maternal age, prolonged labor, preeclampsia, obesity, multiple pregnancies, birth weight >4000 g, and previous postpartum hemorrhage. Early identification and prompt treatment are key factors for an adequate management of PPH.

The B-Lynch surgical technique has been used successfully since 1989 in cases where bleeding was secondary to uterine atony, with failed conservative, pharmacological management [3]. It allows the conservation of the uterus for subsequent menstrual function and pregnancies. The B-Lynch technique is

far less complicated than more radical surgical methods, such as internal iliac arterial ligation or hysterectomy, not only because it is technically easier, but also because the application of the suture is away from the uterine cornua, without major vessel or organ compromise. Although several reports on fertility and pregnancy outcomes following hypogastric artery ligation, or arterial embolization [4–6] for severe postpartum hemorrhage have been published with extensive literature review [7–10], no definitive clinical evidence is present related to a B-Lynch suturing technique and subsequent reproductive outcome, not associated to other hemostatic surgical interventions.

We report a case of a successful pregnancy occurring spontaneously after a B-Lynch suture without concomitant devascularization, introducing a new concept of fertility assessment after a pure B-Lynch procedure.

Case report

A 37-year-old, gravida 1, with a body mass index of 24 kg/m², was referred to the Department of Obstetrics and Gynecology, University of Perugia, Italy, in January 2009. The patient, at 35 weeks' gestation, had a personal history of type I

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diabetes mellitus, Basedow disease treated by thyroidectomy, and celiac disease. Her pregnancy was uneventful, except for a suspected fetal malformation: hyperechogenic areas were found on the fetal heart and liver, with moderate ileal distension. A bowel atresia was suspected. Levels of glycemia were not within the normal range, although insulin was adjusted daily. An ultrasound scan revealed a fetal macrosomia (>90th percentile), therefore a termination of pregnancy was programmed. Lung maturity was previously confirmed by diagnostic amniocentesis with a lecithin sphingomyelin ratio of 6 and the presence of phosphatidylglycerol. After 36 weeks, a healthy newborn of 3160 g was born by cesarean section. After fetal extraction, the uterus appeared atonic and a moderate bleeding of 900 mL was observed. Intravenous oxytocin (5 IU followed by 20 IU in 0.9% saline) failed to arrest the bleeding. Although methylergometrine (0.25 mg i.v.) and sulprostone (0.5 mg i.v. in 0.9% saline at 250 mL/h) were administered, the uterus was still flabby and atonic. Therefore a hemostatic synthetic absorbable, surgical suture (polyglactin) was carried out according to the B-Lynch procedure, to preserve the uterus. Bleeding was stopped and the abdomen was closed. The patient did not receive any transfusion. Two hours later, blood parameters were stable: the white blood cell count was 10,910/mL and hemoglobin was 9.2 g/dL. During the following days, vaginal blood loss was regular. Histology revealed the presence of a placental subchorionitis. She was discharged from the hospital on day 4. Forty days later, a Doppler velocimetry did not reveal any abnormality in uterine vessels. In January 2010, a new unplanned pregnancy was registered. The antenatal course of the pregnancy was uneventful. Due to the recent cesarean section, a surgical delivery was electively performed at 39 weeks' gestation. During surgery, the potential consequences associated with the previously applied B-Lynch brace suture were evaluated. Only omental adhesions were found on the anterior surface of the uterus. A healthy newborn of 3460 g. was delivered through a lower uterine segment incision. Delivery of the placenta was unremarkable. Intravenous oxytocin (5 IU) was administered and the uterine incision was closed with absorbable braided suture material. The total blood loss was 400 mL. After the surgery, hemoglobin was 10.2 g/dL. No complications in the postoperative days were observed and the patient was discharged 72 hours later.

Discussion

Post partum hemorrhage occurs in approximately 4% of vaginal and 6% of cesarean deliveries [11]. A new PPH top-guideline adopts a practical approach, whereby a perceived loss of 500–1000 mL prompts basic measures of monitoring and readiness for resuscitation, whereas 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 [2]. The prevalence of severe PPH was estimated in 6.7 per 1000 deliveries [12], while deaths from PPH occur in approximately 1 per 1000 deliveries [11]. Different uterine compression sutures have recently been described to

control PPH, including the B-Lynch suture that runs through the full thickness of both the anterior and posterior uterine walls [2]. The mechanical compression of uterine vascular sinuses prevents further engorgement with blood and continued hemorrhage. The compression effect keeps these bleeders inactive until physiological hemostasis is achieved.

Since the B-Lynch technique was reported, several modifications have been described, with only minor variations from the original procedure [13]. In the Hayman procedure, for example, hysterotomy is not performed and there are concerns about occlusion of the uterine cavity and blood entrapment, without the possibility to exclude retained products.

Among the hemostatic surgical techniques, the B-Lynch suture gained a major popularity, mainly because many practitioners are less confident with more complicated surgical procedures, such as bilateral hypogastric artery ligation, and prefer to proceed with an easier, quicker, and effective B-Lynch suture.

Almost nothing is known about fertility and pregnancy outcomes for patients who have undergone B-Lynch suture for severe PPH, with or without concomitant uterine devascularization procedures. Initial fears about possible anatomical damage due to extreme uterine compression have materialized. These uterus preserving procedures are not always without complications. Ochoa et al [14] reported pyometra complicating square suture technique and Joshi and Shrivastava [15] reported a partial ischemic necrosis of the uterus after a brace compression suture. Rathat et al presented a study where patients were assessed by hysteroscopy, after a previous uterine compression suture. Synechia occurred in seven patients (out of 13 patients), three of whom had Asherman syndrome that could not be corrected [16]. Fourteen cases of subsequent pregnancy after B-Lynch suture have been reported in the literature [17], but only in four cases was a B-Lynch suture realized without associated hemostatic surgical procedures [3,18,19]. Hypogastric artery ligation or stepwise uterine devascularizations were sometimes associated to B-Lynch suture. Thirteen pregnancies were uneventful, one was complicated by preeclampsia and PPH that required hysterectomy [16]. Sentilhes et al [20] described uneventful pregnancy after four different uterine-sparing procedures that included pelvic arterial embolization, stepwise uterine devascularization, hypogastric artery ligation, and B-Lynch suture.

If we consider the dramatic vascular changes occurring immediately after the hypogastric uterine arteries ligatures, or furthermore, arterial embolization, we cannot exclude that the vascular modifications induced by the B-Lynch suture carried out immediately after a stepwise uterine devascularization are totally different and probably more limited than vascular changes induced by the “only B-Lynch” case. A confirmation of this comes from Pirard et al: uterine necrosis and sepsis after vascular embolization and uterine artery ligation for postpartum hemorrhage due to placenta accreta were found [21]. Moreover, accidental embolization of ovarian vessels via uterine–ovarian anastomoses can result in the loss of ovarian function, as Chrisman et al have reported in connection with fibroid embolizations [22].

Table 1
Characteristics of pregnancies after “only B-Lynch” procedures.

First author (reference)	Case number	Parity at the time of B Lynch suture	Wks of gestation	Cause of PPH	Mode of delivery	Observations and complications during subsequent cesarean section	Neonatal outcome
B-Lynch [3]	1	1	>37	Abruptio placentae	Vaginal delivery	—	Healthy
	2	1	39	Uterine atony	Cesarean section	None	Healthy
Haberck [18]	3	1	>37	Uterine atony	Cesarean section	Slight synechia along previous B-Lynch suture	Healthy
Vitthala [19]	4	1	Not specified	Uterine atony	Cesarean section	Bands of adhesion between uterine fundus and bowels at level of previous B-Lynch	Not specified
Our case	5	0	39	Uterine atony	Cesarean section	Omental adhesion on the anterior surface of the uterus	Healthy

To determine the exact relation between the B-Lynch suture and a subsequent pregnancy, in terms of conception and pregnancy outcome, it would be therefore more accurate to analyze results deriving from “only B-Lynch” cases, with no other associated hemostatic, surgical procedure. Our case is the fifth reported case in a recent literature of a successful pregnancy after a previous cesarean section and a B-Lynch procedure due to postpartum hemorrhage caused by uterine atony, not associated to any other surgical ligation.

In previous reported “only B-Lynch” cases, one patient delivered vaginally [3] while three patients had a repeated cesarean delivery [3,18,19]. No PPH or any other complication occurred. Bands of adhesions were found between the uterus and the bowel only in one case [19]. Only omental adhesions were found on the anterior surface of the uterus in our case (Table 1).

The B-Lynch suture is a successful, safe, inexpensive, and simple method for the treatment of PPH during cesarean section, which reduces the incidence of mutilating urgent peripartum hysterectomy due to uterine atony or coagulopathy, possibly preserving subsequent patient fertility.

Additional clinical evidences in a greater case-series of patients that involves “only B-Lynch” sutures are obviously needed, to assess the value of the method for fertility preservation.

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