

# Characteristics of Women with Postpartum Hemorrhage who do not Respond to B-Lynch Suture and Require Hysterectomy

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**OBJECTIVE:** Aim of this study is to criticize the women with postpartum hemorrhage due to uterine atony after vaginal delivery.

**STUDY DESIGN:** This was a retrospective analysis performed in Şanlıurfa Maternity Hospital, from September 2008 to August 2010. Criteria for inclusion of the patients in the study were requirement of B-Lynch suture for intractable postpartum hemorrhage (PPH) due to uterine atony after vaginal delivery. The cases were identified by searching operating room records and patient files. There were 51 cases that B-Lynch suture was performed for intractable PPH due to uterine atony after vaginal delivery. In group 1 there were 12 cases that B-Lynch suture was failed and lead to hysterectomy and in group 2 there were 39 patients that B-Lynch suture achieved to cease the hemorrhage.

**RESULTS:** In group 1; the mean age, gravidity and parity of women were  $31\pm 4.8$ ,  $5.2\pm 2$  and  $3.8\pm 2.2$  respectively. Several high-risk antenatal obstetric to conditions were observed in 8 of 12 (66.7%) women. Induction or augmentation of labor was performed all of the patients who required hysterectomy. In group 2; the mean age, gravidity and parity of women were  $26.5\pm 5.5$ ,  $3.6\pm 1.9$  and  $2.3\pm 1.9$  respectively. Induction or augmentation of labor was performed 8 of 39 women (20.1%) in group 2.

**CONCLUSION:** Multiparity and induction or augmentation of labor seems to be the major characteristics of women who required hysterectomy after failed B-Lynch suture.

**Key Words:** Postpartum hemorrhage, B-Lynch suture, Postpartum hysterectomy

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## Introduction

Postpartum hemorrhage (PPH) is an obstetrical emergency that is a major cause of maternal morbidity, and it can follow vaginal or cesarean delivery. The most common cause of PPH is uterine atony, which is responsible for at least 80 percent of cases of PPH.<sup>1</sup> Risk factors of atonic uterus are multiple gestation, polyhydramnios, and macrosomia, uterine fatigue after a prolonged or induced labor, uterine inversion and retained placenta.<sup>2</sup>

PPH treatment includes resuscitation including fundal massage and uterotonic agents. If the patient does not respond to initial management surgical interventions such as uterine tamponade, uterine compression sutures, uterine artery ligation, bilateral hypogastric artery ligation, X-ray guided artery

embolization and or hysterectomy should be considered. The choice will depend on future fertility of the patient and experience of surgeon.

In 1997, B-Lynch et al. pioneered the use of uterine compression suture.<sup>3</sup> Since then, various uterine compression sutures have been described. In case reports and small series, B-Lynch suture has been highly successful in controlling uterine bleeding from atony when other methods have failed. The technique is relatively simple to learn, appears safe, and preserves future reproductive potential. It should only be used in cases of uterine atony.<sup>4-7</sup>

The aim of the present manuscript is to evaluate the cases of B-Lynch compressive to control PPH due to uterine atony after vaginal delivery.

## Material and Method

This study was carried out from September 2008 to August 2010 in Şanlıurfa Maternity Hospital. Şanlıurfa Maternity Hospital is a major referral center that performs an average of 20.000 deliveries annually basically of low socioeconomic income women. There were 51 cases that B-Lynch suture was

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performed for intractable PPH due to uterine atony after vaginal delivery.

The cases were identified by searching operating room records and patient files. Recorded data included: Maternal age, gravidity, parity, antenatal high-risk obstetrical conditions, labor features, and transfusion requirements, additional pharmacological or surgical interventions used to arrest bleeding intraoperative and postoperative complications.

Criteria for inclusion of the patients in the study were requirement of B-Lynch suture for intractable PPH due to uterine atony after vaginal delivery.

Patients who required B-Lynch suture for uterine atony were initially treated with uterine massage and uterotonic agents (intravenous infusion of oxytocin up to 60 IU, intramuscular ergometrine 0.2 mg up to 5 doses and rectal 800µgr misoprostol).

B-Lynch suture was placed by laparotomy after hysterotomy was performed. Hysterotomy allows exploring the uterine cavity and removing blood clots, retained products. It has been postulated that hysterotomy makes proper application of the suture possible and maximizes the compression to both sides of the uterus.<sup>5</sup> The present series used a classic B-Lynch technique. Hysterectomy was performed as the last resort to require prompt control of uterine hemorrhage to prevent death.

Analysis was performed with the SPSS software package (Version 13.0 for Windows, SPSS Inc, Chicago, Illinois, USA). The paired Student t-test was used to compare continuous related data. A p value of <0.05 was considered as statistically significant.

Table 1: General and pregnancy characteristics of group 1

Parameters	n	(%)
Age (years) (mean)	31	
Parity		
Primigravid (none)	0	0
Multiparous (1-5)	9	75
Grand multiparous (>5)	3	25
Antenatal high risk obstetrical conditions	8	66.7
PPROM	9	75
Oligohydramnios	1	8.3
Post term pregnancy	5	41.7
Labour features		
Duration of first stage (hours)(mean±SD)	6.0±2.1	
Duration of second stage(hours) (mean±SD)	0.9±0.4	
Oxytocin use	8	66.7
Misoprostol use	4	33.3

## Results

During the study period, a total of 51 B-Lynch sutures were applied for PPH due to uterine atony after vaginal delivery. All patients were required laparotomy due to uterine atony. B-Lynch suture was performed as an initial step. Twelve of 51 (23.5%) cases required hysterectomy and defined as group 1. Hysterectomy was performed in five patients immediately. Reoperation for hysterectomy was performed for intractable hemorrhage in seven patients after B-Lynch suture. Thirty-nine of 51 (73.5%) cases B-Lynch sutures achieved to cease the bleeding; defined as group 2. Interval from delivery to surgery was ranged between 35-210 minutes.

General and pregnancy characteristics of women in group 1 are depicted in Table 1 The mean age, gravidity and parity of women in group 1 were 31±4,8, 5,2±2,2 and 3,7±2,4 respectively. Several high-risk antenatal obstetric conditions were observed: oligohydramnios (8.3%); premature rupture of membranes (PROM)(16.7%) and post term pregnancy (41.7%). Induction of labor was performed 8 of 12 women (66.7%) due to these conditions. Misoprostol was used for cervical ripening 4 of 12 women and oxytocin was used 4 of 12 (33.3%) women for induction of labor and 4 of 12 (33.3%) women for augmentation of labor for protracted labor. All women in group 1 required transfusions. Mean transferred packed red blood cells and fresh frozen plasma was 3.7±0.9 and 2.7±1.1 respectively. One patient was referred to a tertiary center due to disseminated intravascular coagulopathy. There were no maternal deaths and intraoperative complications in group 1. One of 12 patients had postoperative ileus. Women had a mean 3.5±1.2 day's hospital stay, after which they were discharged.

Table 2 illustrated the general and pregnancy characteristics of women group 2. The mean age, gravidity and parity of women in group 1 were 26.5±5.5, 3.6±2 and 2.3±1.9 respectively. Induction of labor was performed 3 of 39 women (7.7%) due to postterm pregnancy and PROM. Misoprostol was used for cervical ripening 3 of 39 women and oxytocin was also used in these 3 women for induction of labor. Five of 39 (12.8%) women oxytocin was used for augmentation of labor due to protracted labor. Thirty-one of 39 (79.5%) patients required transfusion. Mean transferred packed red blood cells and fresh frozen plasma was 1.8±1.2 and 0.5±0.9 respectively. Neither maternal deaths nor intraoperative complications were seen in group 2. Two of 39 patients had wound infection.

There was no statistically difference between mean age, gravidity and parity of two groups.

## Discussion

Since the initial report by B-Lynch et al, the frequency of use of uterine compression sutures has been increased, because it can be performed as soon as an operating room is available, including in settings with low technical resources. There is little knowledge about the success rates of B-Lynch and other compression sutures because data come largely from small retrospective studies or case reports. In 2011, a nationwide population-based study was published. This study analyzed maternal outcomes of uterine compression sutures and to characterize the risk factors for failure, defined as cases that proceeded to hysterectomy. The overall rate of failure, leading to hysterectomy, was 25% there were no significant differences in failure rates among suture techniques. Women were more likely to have a hysterectomy if they were aged 35 years or older multiparous, had a vaginal delivery, or a delay of between 2 and 6 hours from delivery to uterine suture compression.<sup>8</sup> In this study the failure rate for uterine compression sutures were higher than previously reported.<sup>6,9,10,11</sup> It is emphasized that prolonged delay of 2-6 hours between delivery and uterine compression suture was independent factor for hysterectomy requirement.

In our case serial, we evaluate the characteristics of the patients who required B-Lynch suture for uterine atony. Mean parity of the women in this serial is  $3.7 \pm 2.4$  and there was no primigravid woman in patients who required hysterectomy. Although there was no statistically significant difference between two groups, there was a trend through those women required hysterectomy was more likely to be grandmultiparous. Babinszki et al reported that high parity is a risk factor for intractable PPH.<sup>12</sup> It is also reported by Kayem et al that multiparity is a risk factor for requirement of hysterectomy after uterine compression sutures.<sup>8</sup>

Table 2: General and pregnancy characteristics of group 2

Parameters	n	(%)
Age (years) (mean)	26.5	
Parity		
Primigravid (none)	1	2.6
Multiparous (1-5)	36	92.3
Grand multiparous (>5)	2	5.1
Antenatal high risk obstetrical conditions	5	12.8
PPROM	2	5.1
Oligohydramnios	1	2.6
Post term pregnancy	2	5.1
Labour features		
Duration of first stage (hours)(mean±SD)	5.9±2	
Duration of second stage(hours)(mean±SD)	0.9±0.3	
Oxytocin use	8	20.1
Misoprostol use	3	7.7

Khiredine et al published a population based case control study in 2013. This study reported that even in low risk women, induction of labor, regardless of the method used, is associated with a higher risk of PPH than spontaneous labor (OR: 1.28).<sup>13</sup> In our case serial all patients received misoprostol or oxytocin for induction or augmentation of labor. Indications for induction of labor were post term pregnancy, oligohydramnios and PROM. Although, Kayem et al did not report induction or augmentation of labor as a risk factor for requiring hysterectomy after uterine compression sutures, induction of labor is known to be a risk factor for intractable PPH. Indications should be absolute for induction of labor to avoid PPH.

Many authors have reported that a prolonged second stage of labor is associated with PPH related to uterine atony.<sup>14,15</sup> Four women (33.3%) in hysterectomy required group and five women (12.8%) in B-Lynch suture only group received augmentation of labor for protracted labor. All cases with protracted labor were augmented in the second stage of labor. Important implications for management of the second stage of labor should be kept in mind to avoid intractable PPH.

In Southeast Anatolian region statistics of neonatal and maternal mortality, birth and antenatal care rates are different from whole Turkey and this population is at higher risk for obstetrical complications.<sup>16</sup> Because of the cultural structure of this population pay much more attention for fertility saving. Therefore, fertility saving procedures such as uterine compression sutures is good alternatives for intractable PPH. B-Lynch suture is a valuable clinical tool for daily obstetric practice and a convenient, easy to perform and low-risk alternative procedure to hysterectomy. But these procedures are not always successful for ceasing the hemorrhage. Careful evaluation of blood loss after delivery to avoid any prolonged delay in recognition of hemorrhage is the pivotal point of the management. Prolonged delay increases the need for blood transfusions, obstetric hysterectomies, requiring intensive care units and other complex emergency surgical procedures.

### Postpartum Kanama Nedeniyle B-Lynch Dikişi Konulan Ancak Histerektomi Gerektiren Olguların Karakteristik Özellikleri

**AMAÇ:** Postpartum kanama nedeniyle B-Lynch dikişi uygulanan ancak kanama durdurulamayıp histerektomi ihtiyacı olan kadınların karakteristik özelliklerinin değerlendirilmesi.

**GEREÇ VE YÖNTEM:** Bu çalışma; Şanlıurfa Kadın Hastalıkları ve Doğum Hastanesi'nde Eylül

2008-Ağustos 2010 tarihleri arasında gerçekleşmiş retrospektif bir değerlendirmedir. Çalışmaya vajinal doğum sonrası atoni kanaması nedeniyle B-Lynch dikişi konulan hastalar dahil edilmiştir. Çalışmaya dahil edilen hastaların bilgilerine ameliyat defterlerinden ve hasta dosyalarından ulaşılmıştır. Kriterlere uygun 51 hasta tespit edilmiştir. Grup 1'de B-Lynch dikişi konulan ancak kanamanın durdurulamaması nedeniyle histerektomi gereği olan 12 hasta yer almaktadır. Grup 2'de yer alan 39 hastada B-Lynch dikişi kanamayı durdurmak için yeterli olmuştur.

**SONUÇLAR:** Grup 1'de yer alan hastaların ortalama yaşı, gravida ve paritesi sırasıyla  $31\pm 4,8$ ,  $5,2\pm 2,2$  ve  $3,7\pm 2,4$  olarak saptanmıştır. Farklı antenatal risk faktörleri çalışmada yer alan 12 hastadan 8'inde saptanmıştır. Çalışmada değerlendirilen hastaların tamamı doğum indüksiyonu ya da doğum augmentasyonuna maruz kalmıştır. Hastaların genel özellikleri değerlendirildiğinde multiparite, doğum indüksiyonu ve augmentasyon dikkatimizi çekmektedir. Grup 2'de yer alan hastaların ortalama yaşı, gravida ve paritesi sırasıyla  $26,5\pm 5,5$ ,  $3,6\pm 1,9$  ve  $2,3\pm 1,9$  olarak saptanmıştır. Grup 2'deki 39 (%20,1) hastadan 8'ine indüksiyon ya da augmentasyon uygulanmıştır.

**Anahtar Kelimeler:** Postpartum kanama, B-Lynch dikişi, Postpartum histerektomi

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