



## Original Research Article

## A prospective study of B-Lynch suture in the management of atonic PPH at tertiary care centre

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## ABSTRACT

**Background:** Postpartum haemorrhage (PPH) is one of the leading causes of maternal mortality and morbidity especially in the developing countries like India. Uterine compression sutures, originally described by B-Lynch et al can successfully control life-threatening PPH. With this background, we studied the use of modified B-Lynch sutures in our setup.

**Materials and Methods:** It was a single centre, hospital based cross sectional study conducted in the department of obstetrics and gynaecology in a tertiary care hospital in Maharashtra. About 50 cases during the study period (Nov 2017 to June 2019) who failed the medical management of control of PPH were included in the study. Demographic details like age, gestational age, religion, socio economic status and gravid were noted in the case record form. Amount of blood loss, success rates, immediate complications and follow up fertility were assessed.

**Results:** Among the 50 study subjects, 24% had blood loss of <1000ml, 54% had loss between 1000 to 1500ml, 16% had loss of 1501 to 2000ml and 6% had loss more than 2000ml in the present study. About 80% of the cases were successful and 20% failed in the present study. About 6% of the cases had wound gaping, 12% each had fever and had hospital stay more than 5 days and 14% of the cases had wound infection in the present study. About 90% of the cases had return of regular menstruation in the present study.

**Conclusions:** The success rate of B Lynch suture was 80% in the present study. There were few post operative immediate complications in our study. Follow up data also suggested that majority of them recovered with normal routine. In our experience, the B-Lynch technique is a safe, effective and easily implemented method of arresting bleeding in cases of major primary PPH due to uterine atony.

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### 1. Introduction

Postpartum haemorrhage (PPH) is one of the leading causes of maternal mortality and morbidity especially in the developing countries like India. It is defined as ‘any blood loss >500 ml following vaginal delivery and >1000 ml after cesarean section’.<sup>1</sup> The most common cause of PPH is postulated to be uterine atony which usually responds to uterotonic drugs. If this medical line of treatment fails uterine balloon tamponade can be attempted.<sup>2</sup> Various surgical methods to reduce arterial pulse pressure in the pelvis were described, from ligation of the uterine arteries to

the more complicated ligation of the internal iliac arteries. These procedures need skills, which the on call obstetrician and some consultants do not possess.<sup>3–5</sup> Embolisation procedures also require technical expertise, which is not found in most hospitals, Uterine compression sutures, originally described by B-Lynch et al<sup>6</sup> can successfully control life-threatening PPH. These are simple to perform and can be used as an alternative to more complicated surgical techniques including hysterectomy. With this brief background we conducted a study to understand the management of PPH using B Lynch suture and their outcome in our setup.

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## 2. Materials and Methods

It was a single centre, hospital based cross sectional study conducted in the department of obstetrics and gynaecology in a tertiary care hospital in Maharashtra. We included cases with atonic PPH with failure of medical line of management in this study. Cases with PPH after vaginal delivery, secondary PPH, due to other causes of atonicity, placenta previa and patients with DIC, bleeding diathesis, retained parts of the placenta or cases with uterine anomalies were excluded from the study. Since the duration of the study was limited, we considered upto 50 cases of PPH during the study period (Nov 2017 to June 2019). Data was collected using a pretested and predesigned questionnaire which consisted on three parts. Part 1 had demographic particulars like age, name, religion, socio economic status, etc. Part 2 had detailed clinical history and examination findings of the patient. Part 3 had the details of the management of the patients in particular of focus was B Lynch sutures done in the present study period.

Uterine atony was defined when uterus failed to contract even after giving following doses of ecbolics, 1) 25 units of oxytocin (5 units i.m and 20 units to 500ml RL drip), 2) 0.2mg of methylergometrine slow i.v., 3) 250microgram carboprost i.m. The test of potential efficacy for B-Lynch suture application will be done by simple bimanual compression after exteriorizing the uterus. If the latter procedure reduces the blood loss, then B-Lynch suture was applied. Blood loss was estimated based on the mop count (one small 10 × 10 cm fully saturated mop: around 60 mL of blood loss; one large 45 × 45 cm fully saturated mop: around 350 mL blood loss), 1gram of clot is equivalent to 3ml of blood. The amount of blood loss measured by amount of blood suctioned out in suction apparatus after the placental delivery and by mops soaked with blood. The clots and blood from the vagina were collected in a separate kidney tray and measured. The total amount of blood loss was estimated by adding all the values and subtracting the amount of liquor measured following amniotomy. Immediate complications like fever, wound gaping etc and follow up fertility of the patients was noted.

### 2.1. Statistical analysis

The data was collected, entered and compiled using Microsoft Excel. The data was analysed using Epi info version 7.2. The qualitative variables were expressed in terms of percentages. The quantitative variables was expressed either in terms of mean and standard deviation or categorised and expressed in terms of percentages. Difference between two means was tested using student t test. All the analysis was two tailed and the significance level was set at 0.05.

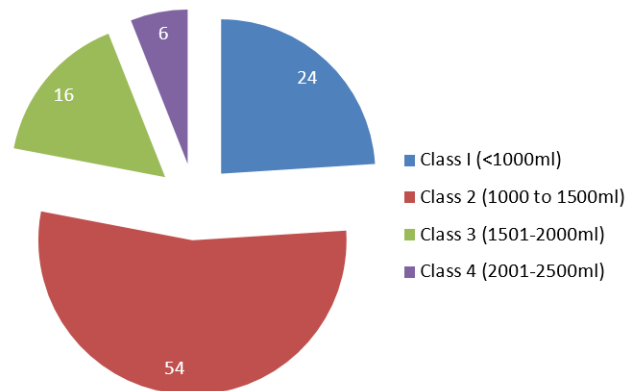
## 3. Results

We included 50 cases of PPH who underwent B Lynch compression suture in the present study.

**Table 1:** Demographic characteristics of the study subjects

Demographics	Frequency	Percentage
<b>Age group (in years)</b>		
<20	15	30.00
21 to 25	26	52.00
26 to 30	9	18.00
<b>Gravida</b>		
Primi	23	46.00
Multi	27	54.00
<b>Religion</b>		
Hindu	38	76.00
Christian	3	6.00
Muslim	5	10.00
Others	4	8.00
<b>Socio economic status</b>		
Class 1	1	2.00
Class 2	5	10.00
Class 3	10	20.00
Class 4	20	40.00
Class 5	14	28.00
<b>Booking status</b>		
Booked	21	42.00
Un booked	29	58.00
<b>Gestational age</b>		
≤28	1	2.00
29-32	5	10.00
33-36	10	20.00
37-40	30	60.00
≥41	4	8.00

Majority of the study subjects were in the age group of 21 to 25 years, were multi gravida, were of Hindu religion, belonged to Class 4 and had gestational age range of 37 to 40 weeks. About 42% cases were booked.



**Fig. 1:** Distribution of the study subjects based on the blood loss

Among the 50 study subjects, 24% had blood loss of <1000ml, 54% had loss between 1000 to 1500ml, 16% had loss of 1501 to 2000ml and 6% had loss more than 2000ml in the present study.

**Table 2:** Distribution of the study subjects based on thepre operative haemoglobin

Haemoglobin	Frequency	Percentage
Severe	13	26.00
Moderate	29	58.00
Mild	7	14.00
Normal	1	2.00
Total	50	100.00
Mean	7.34	
SD	2.88	
Range	6.5 to 12.00	

The mean haemoglobin pre operative was  $7.34 \pm 2.88$ mg/dl with minimum of 6.5 and maximum of 12 in the present study. Majority of the subjects has moderate anaemia followed by severe anaemia based on the world health organisation guidelines during pregnancy.

**Table 3:** Distribution based on outcome

Outcome	Frequency	Percentage
Successful	40	80.00
Failure	10	20.00
Total	50	100.00

About 80% of the cases were successful and 20% failed in the present study.

**Table 4:** Distribution of the study subjects based on immediate complications (n=50)

Immediate complications	Frequency	Percentage
Wound gaping	3	6
Fever	6	12
Hospital stay more than 7 days	6	12
Wound infection	7	14
Venous Thromboembolism	0	0

About 6% of the cases had wound gaping, 12% each had fever and had hospital stay more than 5 days and 14% of the cases had wound infection in the present study. About 10% had term pregnancies upon follow up in the present study. All the 5 cases delivered by C section with normal baby weight. About 90% of the cases had return of regular menstruation in the present study.

#### 4. Discussion

The development of the uterine compression suture technique has represented a major advance in the

management of PPH worldwide. Various case reports and series have been published in this regard but larger cross sectional studies are less reported. With this background, we conducted a study to understand the use of B lynch suture in management of PPH in our setup.

Among the 50 study subjects, 24% had blood loss of <1000ml, 54% had loss between 1000 to 1500ml, 16% had loss of 1501 to 2000ml and 6% had loss more than 2000ml in the present study. The amount of blood loss corroborated with studies conducted by Gadappa SN et al<sup>7</sup> (2018), Sudha HC et al<sup>8</sup> (2019) Devi PU et al<sup>9</sup> (2016) and El Sokyary M et al<sup>10</sup>(2016).

The success rates of the procedure in our study was 80% which was higher when compared to Devi PU et al<sup>9</sup> (2016) and lower when compared to Gadappa SN et al<sup>7</sup> (2018); Sudha HC et al<sup>8</sup> (2019) inferred almost similar success rates when compared to our results. Ghodake VB et al<sup>11</sup> (2008) reported that about 2 cases uterine packing helped in controlling the bleeding, 31 cases underwent B Lynch suturing, 36 cases underwent hysterectomy and 4 cases underwent uterine artery ligation along with suturing. Li GT et al<sup>12</sup> (2015) inferred that among the 11 cases they have reported only one case underwent subtotal hysterectomy. Yousaf T et al<sup>13</sup> (2019) inferred that about 65% of the cases B lynch only was required and the rest 35% required B Lynch along with uterine artery ligation for the control of bleeding in their study.

About 6% of the cases had wound gaping, 12% each had fever and had hospital stay more than 5 days and 14% of the cases had wound infection in the present study. Ghodake VB et al<sup>11</sup> (2008) noted 5 cases of fever post procedure and 3 cases of wound gaping in their study. El Sokyary M et al<sup>10</sup> (2016) included 2 groups in their study, Group 1 had the modified technique of B Lynch and Group 2 had the classic technique of the B Lynch suturing. Among the modified technique group, 7 cases had bleeding from multiple sites, 1 case had haematoma, 4 cases had wound haematoma, 4 cases had wound infection and 5 cases had fever. Similarly among the classic group, 13 cases had bleeding from multiple sites, 5 cases had haematoma, 4 cases each had wound infection and haematoma and 8 cases had fever. Gadappa SN et al<sup>7</sup> (2018) reported that about 4 cases in their study suffered from fever and 2 cases with wound gaping were reported in their study.

About 10% had term pregnancies upon follow up in the present study. All the 5 cases delivered by C section with normal baby weight. About 90% of the cases had return of regular menstruation in the present study. Tadakawa M et al<sup>14</sup> (2015) reported that of the 19 patients who wanted another child, 12 patients (63.2%) had 14 subsequent pregnancies. The results of pregnancies were nine uncomplicated term pregnancies, all delivered by elective cesarean section, two artificial abortions and three miscarriages. Marasinghe JP et al<sup>15</sup> (2011) reported that all

women had resumed normal menstrual cycles. Two women were pregnant 11 and 13 months after the compression sutures were performed.

There were some limitations of the study. It was an observational study. It had small sample size due time bound nature. It was a single center study. Nonetheless this study highlights the importance of using B Lynch sutures in the control of PPH in atonic uterus.

## 5. Conclusion

The success rate of B Lynch suture was 80% in the present study. There were few post operative immediate complications in our study. Follow up data also suggested that majority of them recovered with normal routine. In our experience, the B-Lynch technique is a safe, effective and easily implemented method of arresting bleeding in cases of major primary PPH due to uterine atony. However, due to the small sample size of 50 women we accept that the study may not accurately reflect the complication rate of the procedure and larger population based studies will be required in the future.

## 6. Source of Funding

None.

## 7. Conflict of Interest

None.

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