

# B-LYNCH SUTURE IN THE MANAGEMENT OF POSTPARTUM HAEMORRHAGE; A CROSS-SECTIONAL STUDY

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## ABSTRACT

**Objective:** To assess the outcome of B-lynch suture in primary postpartum haemorrhage.

**Methodology:** This cross sectional study was conducted on 38 patients in Obstetrics and Gynaecology unit Lady Reading Hospital Peshawar from January, 2017 to December 2018. Women with primary postpartum haemorrhage who failed to respond to first line medical management were selected with consecutive sampling. B lynch was applied by consultant gynaecologist. Success was assessed in terms of control of bleeding. Failure of the procedure was defined as the need for an invasive intervention to control bleeding.

**Results:** Average age of the patients was 27.55 years + 5.9 SD with a range of 18-38 years. Out of them, 14 (35%) women were primipara while 26 (65%) were multipara. Uterine atony was the most frequent cause of PPH. B Lynch was effective to control primary postpartum haemorrhage in 38 (100%) patients.

**Conclusion:** B-Lynch can be recommended for controlling primary postpartum haemorrhage and preserving the uterus.

**Key Words:** B-Lynch suture, Postpartum haemorrhage, Uterine atony

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## INTRODUCTION

According to the UK seventh report of the Confidential Enquiries into Maternal Deaths (2003–2005), obstetric haemorrhage is the third direct cause of maternal death (6.6 deaths / million maternities) and remains one of the major causes of maternal death in both developed and developing countries<sup>1,2</sup>. In developing countries, one of the most common and preventable cause of obstetrical haemorrhage is uterine atony, which is estimated to cause one maternal death every 10 minutes<sup>3,4</sup>. Uterine atony is usually treated with medication such as oxytocin, ergometrin or misoprostol<sup>5</sup>. When these medications fail, second line surgical treatment<sup>6</sup> is used which includes uterine artery ligation, internal iliac artery ligation or hysterectomy. Hysterectomy is the ultimate measure for controlling bleeding and preventing maternal death<sup>5</sup>.

B lynch compression suture technique was introduced in 1997 for the treatment of postpartum haemorrhage (PPH) due to atonic uterus with good results. It is also advocated for prevention of PPH for atonic uterus during caesarean section in women who are at risk of

PPH<sup>8,9</sup>. The technique has been modified by many centres around the world<sup>9</sup>. After its introduction, it was more widely applied in developed countries with frequency of 10% in Netherland and 27% in United Kingdom<sup>10,11</sup>. Its success rate in different retrospective studies has been reported to be almost 100%<sup>11</sup>.

Other surgical methods to control massive postpartum haemorrhage include pelvic devascularisation from simple surgical ligation of the uterine artery to more complicated internal iliac artery ligation. These procedures require highly skilled obstetrician or vascular surgeon who may not be available in low resource setting like Pakistan. B Lynch suture can be a procedure to resort to, before proceeding to hysterectomy or complex vascular ligation procedure. This study aimed to determine the outcome of B Lynch suture in patients with PPH.

## METHODOLOGY

This was a cross-sectional study conducted at Obstetrics and Gynaecology unit LRH Peshawar on 38 patients. from January 2017 to December 2018. Ethical approval was obtained from LRH ethics committee. Inclusion criteria were patients with PPH secondary to

atonic uterus, postpartum bleeding from placental bed and patients with placenta praevia who had not responded to medical treatment. Patients presenting with primary PPH due to other causes like retained products of conception (RPOCs'), uterine rupture, genital tract trauma and disseminated intravascular coagulation (DIC) were excluded.

PPH was defined as blood loss of >500 ml after vaginal delivery and >1000 ml after caesarean section, determined by examination and haemoglobin levels. (Approximately 1 full kidney tray=500 ml blood loss, 1 soaked sanitary pad=100 ml blood loss). All patients' characteristics like age, parity, previous caesarean section, mode of delivery and cause of PPH were noted. B-lynch was applied by consultant gynaecologist accompanied by senior resident according to the following technique.

The patient was anaesthetised and put in the Lloyd Davies position. Per vaginal examination was performed to assess quantity of blood. Per-abdominal Pfannenstiel incision was given, or if the patient has had caesarean section, the same incision was re-opened. On entering the abdominal cavity, either a lower segment incision was made after dissecting off the bladder or sutures of a recent caesarean section were removed and the uterine cavity entered. The uterine cavity was evacuated, examined and swabbed. The uterus was exteriorised and re-checked to identify any bleeding point. Evaluation was performed for diffuse bleeding (due to uterine atony or placental-bed bleeding) where no obvious bleeding point was observed, compression test was tried first to assess the potential chance of success of the B lynch suturing technique. At the same time, vaginal swabbing was performed to control bleeding. In case of bleeding control with uterine compression test, the B lynch was applied as follows;

A 70 mm round bodied needle on which vicryl No. 1 was used to puncture the uterus 3 cm from the right lower edge of the uterine incision and 3 cm from the right lateral border. Vicryl was threaded through the uterine cavity to emerge at the upper incision margin 3 cm above and approximately 4 cm from the lateral border (because the uterus widens from below upwards). It was passed over to compress the uterine fundus approximately 4 cm from the right border. Vicryl was fed posteriorly and vertically to enter the posterior wall of

the uterine cavity at the same level as the upper anterior entry point. It was pulled under moderate tension assisted by manual compression exerted by the first assistant. The length of the vicryl was passed back posteriorly through the same surface marking as for the right side, the suture being lying horizontally.

Vicryl was fed posteriorly and vertically over the fundus to lie anteriorly and vertically compressing the fundus on the left side as on the right. The needle was passed in the same fashion on the left side through the uterine cavity and out approximately 3 cm anteriorly and below the lower incision margin on the left side. The two lengths of vicryl were pulled taught assisted by bi-manual compression to minimise trauma and to achieve or aid compression. During such compression, the vagina was checked for control of bleeding.

B lynch and its outcome in terms of success and failure was noted. Treatment failure was defined as the need for an additional invasive therapy to control bleeding. Data was analysed with SPSS version 20. Frequency of treatment success, failure and hysterectomy were calculated as percentages. Chi square test was used to find out association between variables of interest.  $P \leq 0.05$  was considered statistically significant.

## RESULTS

Average age of the patients was 27.55 + 5.9 years with a range of 18-38 years. Majority of the patients were in the age range of 25-35 years. Out of 38 patients, 18 (35%) women were primipara while 20 (65%) were multipara. Uterine atony was most frequent cause of PPH. The mode of delivery is shown in table 1. B lynch was successful in 100% of the patients.

There was significant association of B lynch with age with a p value < 0.05 as shown in table 2. Results also showed that parity, mode of delivery and morbidity had no association with the outcome of B lynch.

## DISCUSSION

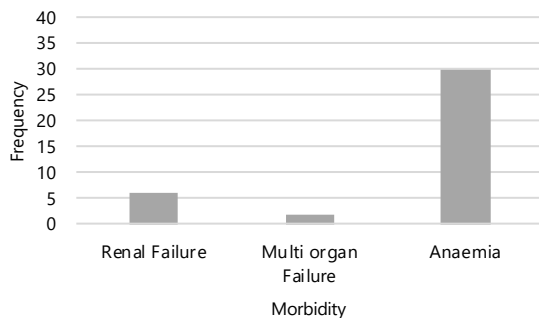
The results of our study revealed that B lynch, a simple compression suture, was effective in controlling PPH in patients who were resistant to medical treatment. This can be considered positive outcome with regards to effectiveness which is in accordance with other studies<sup>10,11</sup>. Some studies have found it successful in 75% patients, but have found additional 94.4% success

**Table 1: B-Lynch and the mode of delivery in patients**

| Surgical Management | Mode of Delivery              |                             |                         | Total n (%) |
|---------------------|-------------------------------|-----------------------------|-------------------------|-------------|
|                     | Normal vaginal delivery n (%) | Instrumental delivery n (%) | Caesarean section n (%) |             |
| B Lynch Suture      | 16 (42.1)                     | 0                           | 22 (57.9)               | 38 (100)    |

**Table 2: Association of B Lynch with other risk factors**

| B Lynch N=38     |                         | P-Value    |       |
|------------------|-------------------------|------------|-------|
| Age (in years)   | < 25                    | 18 (47.4%) | 0.043 |
|                  | 26 – 30                 | 12 (31.6%) |       |
|                  | 31-35                   | 8 (21.1%)  |       |
| Parity           | Primi-para              | 18 (47.4%) | 0.189 |
|                  | Multi-para              | 20 (52.6%) |       |
| Mode of Delivery | Normal Vaginal Delivery | 16 (42.1%) | 0.236 |
|                  | Caesarean Section       | 22 (57.9%) |       |
| Morbidity        | Renal Failure           | 6 (15.8%)  | 0.769 |
|                  | Multi organ Failure     | 2 (5.3%)   |       |
|                  | Anaemia                 | 30 (78.9%) |       |

**Figure 1: Complications in PPH patients treated with B-Lynch**

when it was combined with bilateral internal iliac artery ligation. These results are different from our study and cannot be compared as such because that is more extensive procedure<sup>13</sup>. Although uterine artery ligation and uterine compressive sutures are considered gold standard surgical interventions for severe PPH<sup>14</sup>, as per 2014 guidelines for PPH management, in low resource settings like Pakistan where there can be shortage of consultant gynaecologists and trained staff, B Lynch can be used effectively in certain cases.

Major cause of PPH in this study was uterine atony. This is consistent with the results of the study conducted by Lutomski<sup>15</sup>. Moreover, it was seen that atonic uterus was most frequent cause of PPH after caesarean section than vaginal birth. This may be due to pre existing risk factors of PPH; caesarean section being performed for obstructed labour and secondary arrest of labour, which are the major risk factors for atonic uterus.

We recorded no failure of B lynch. This is consistent with other studies which have reported high efficacy of B Lynch and a low failure rate or no failure. This failure was seen after caesarean section and not during or after vaginal birth, which is consistent with other studies<sup>16</sup>. No short-term complications of B-lynch uterine compres-

sion suture were noted in our study which is consistent with other studies<sup>13</sup>. The major complications observed in patients who presented with PPH and underwent B-Lynch was mostly blood loss anaemia, followed by acute renal failure (who recovered after dialysis), and 2 patients were complicated with multi organ failure as they had presented to hospital in hypovolemic shock due to delay in transfer. These were complications of the illness itself.

Although this study has used a prospective design which was its strength, the sample size was small and generalizations cannot be made based on this sample. This was a single centre study and no control group was used to make comparisons which decreases the internal validity of the study.

## CONCLUSION

B-lynch suture can be used in low resource settings like Pakistan and in areas where there is a high patient load and scarcity of staff.

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### CONTRIBUTORS

FZ conceived the idea, wrote initial manuscript, made the plan, submitted the protocol to research ethics committee and followed the project. MIS and SM helped in acquisition and interpretation of data, literature review, bibliography and writing of final draft of the manuscript. SJ helped in technical corrections, designing the plan, provision of surgical expertise and overall supervision. All authors contributed significantly to the submitted manuscript.