

DOI: <http://dx.doi.org/10.18203/2320-1770.ijrcog20191948>

Original Research Article

## B-lynch suture in the management of uterine atony during caesarean section

Sudha H. C.\*, Jaganathan Pairu, Kamalakshi

Department of Obstetrics and Gynecology, Bangalore Medical College and Research Institute, Bangalore, Karnataka, India

**Received:** 22 February 2019

**Accepted:** 01 April 2019

**\*Correspondence:**

Dr. Sudha H. C.,

E-mail: drhcsudha@gmail.com

**Copyright:** © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

### ABSTRACT

**Background:** Third stage of labour is still the “sword of Damocles” hanging above an obstetrician, in spite of today’s advanced technologies and personal care. The importance in the management of this deadly stage lies in the anticipation of complications and being quick enough to treat them timely. Hence in such scenarios, B-lynch suture is most popular method in treatment of uterine atony during caesarean section. The objective is to study and evaluate the cases in which the B-Lynch suture was used to treat the uterine atony during caesarean section.

**Methods:** A prospective randomized study consisting of 50 women with high risk factors for atonic pph during caesarean section were included as study group patients were subjected to B-Lynch suture application when conventional drugs failed to control PPH. Blood loss was measured using a measuring jar. The fall in Hb% and the need for blood transfusion, and the need for hysterectomy as a last resort to save the life was evaluated.

**Results:** The average blood loss was 1490 ml and the majority of patients had reduction in Hb% from 1.1-1.5 gm% (52%), 36% of the patients did not receive any blood transfusion after B-Lynch suture, and in 80% of cases hysterectomy was avoided.

**Conclusions:** Our study shows cases treated with B-Lynch procedure showed that it is an effective method of containing pph. It has the advantage of being applied easily and safely. It should be attempted when conservative management fails and before any radical surgery is considered.

**Keywords:** B-Lynch, Caesarean section, Hysterectomy, Oxytocics, PPH, Uterine atony

### INTRODUCTION

Postpartum haemorrhage remains a significant cause of maternal mortality and morbidity like hypovolemic shock, anemia, multiorgan failure, coagulopathy, DIC, blood transfusion related complications and hysterectomy leading to loss of child bearing potential. In 1997, Christopher B-Lynch devised an innovative technique to treat uterine atony and it has been used worldwide widely as a conservative mode of surgical management in atonic PPH during caesarean section. By definition, primary postpartum haemorrhage means loss of more than 500 ml of blood from or into the genital tract in the first 24 hours

after vaginal delivery or more than 1000ml following caesarean delivery.<sup>1</sup> As the effect of blood loss is important rather than the amount of blood lost the clinical definition which is more practical states Any amount of bleeding from or into the genital tract following birth of the baby up to the end of the puerperium which adversely affect the general condition of the patient evidenced by rise in pulse rate and fall in blood pressure is called PPH”. ACOG defines PPH as ‘blood loss which decreases the Hb% by 1% or needs blood transfusion’.<sup>2</sup> Hemorrhage occurring beyond 24 hours and within puerperium is called secondary hemorrhage.<sup>2</sup>

Even with appropriate management, approximately 3% of vaginal deliveries will result in severe PPH3. It is the most common cause for maternal morbidity in developed countries and as a major cause of death worldwide globally. It has been estimated the incidence is said to be 3.9% in vaginal deliveries and 6.4% in caesarean section deliveries.<sup>3</sup> It has been estimated worldwide that over 1, 25,000 women die of PPH each year.<sup>4</sup> In India, 25.6% of maternal deaths are due to haemorrhage.<sup>5</sup>

Haemorrhage which persists in spite of conventional treatment will threaten the life of the mother; Where in hysterectomy is resorted to as the last life saving measure. This in turn can be relatively difficult to perform and has the obvious disadvantage of depriving the women of future fertility.

B-Lynch suture originally described by Christopher B-lynn in 1997 has gained utmost popularity and has been used as uterine compressive sutures as a conservative surgical measure for treating PPH.

The objectives of this study were to determine the efficacy of B-Lynch suture in the management of PPH secondary to uterine atony. And to assess the advantage of timely application of B-Lynch suture in uncontrolled PPH, thereby reducing the blood loss, decreasing the need for blood transfusions and its associated complications, preserving uterus and obviating the need for hysterectomy.

## METHODS

The present study was conducted at Vanivilas Hospital attached to Bangalore medical College and Research Institute, from January 2018 to December 2018. This is a tertiary care centre, where most of the cases being referred on emergency basis and the data for the study collected by studying patients posted for emergency caesarean section with high factors for atonic PPH. A total 50 patients were included.

### Inclusion criteria

- Prolonged labour
- Obstructed labour
- Antepartum haemorrhage(placenta previa/abruption placenta).
- Prolonged rupture of membranes (PROM>24hrs).
- Big baby
- Multiple gestation
- Polyhydramnios.

### Exclusion criteria

- PPH after vaginal delivery
- Secondary PPH
- Patients with bleeding disorders
- Patients with uterine anomalies.

## RESULTS

Table 1 shows distribution of age. 58% of age belonged to 20 to 25 years with mean age being 23 years. Patients between 26 to 30 years were about 32%. Patients who are less than 20 years and more than 30 years 6% and 4% respectively.

**Table 1: Distribution of patients according to age.**

Age	Number	Percentage
<20 years	3	6%
20-25 years	29	58%
26-30 years	16	32%
>30 years	2	4%
Total	50	100%

**Table 2: Distribution of patients according to gravida status.**

Gravida	Number	Percentage
Primi	25	50%
G2	12	24%
G3	10	20%
G4	03	6%
Total	50	100%

**Table 3: Distribution of patients according to gestational age.**

Gestational age	Number	Percentage
<28 weeks	01	2%
29-32 weeks	04	8%
33-36 weeks	08	18%
37-40 weeks	34	68%
>41 weeks	02	4%
Total	50	100%

**Table 4: Distribution of patients according to indication for caesarean section.**

Indication	No.	%
APH (Abruptio/placentaprevia)	24	48%
Prolonged PROM with failed induction	10	20%
Big baby	06	12%
Obstructed or Prolonged labour	06	12%
Multiple pregnancy	03	06%
Polyhydramnios	01	02%
Total	50	100%

Table 2 shows number of gravid patients. 50% of patients were primigravida. While gravida2 patients were 24%. Gravida3 and Gravida4 patients were 20% and 6% respectively.

Table 3 shows number of patients with different gestational age. Majority of the patients were 37-40 weeks of gestation (68%). Patients who were between 33-36

wks are 18%. Patients who were post-dated are 4% while less than 28 weeks of gestation were only 2%.

Table 4 shows the indications for c. section, APH is the commonest indication (48%) which includes abruption and placenta previa. Prolonged PROM with failed induction patients were 10%. Obstructed or prolonged labour and big baby were about 12% each.

**Table 5: Distribution of new born weight.**

Birth weight	Number	Percentage
<2kg	14	26.4%
2-3kg	23	43.4%
>3kg	16	30.2%
Total	53	100%

Table 5 shows majority of newborn babies weighs between 2-3 kg (43.4%), and those weighing more than 3kg were about 30.2%. Among the 3babies of multiple

**Table 7: Distribution of blood loss according to gravida status.**

Gravida	Number	Mean blood loss	Standard deviation	Minimum	Maximum
Primi	25	1420.08	393.280	900	2000
Multi	25	1569.92	462.551	800	2500
Total	50	1495.00	428.363	800	2500

Table 7 shows the blood loss according to gravida status. The mean blood loss in primi was 1400ml and in multi was 1500ml. The minimum blood loss in primi was 900ml and in multi it is around 800ml. The maximum blood loss was 2000ml in primi and 2500ml in multi.

**Table 8: Distributions of Hb values.**

	Mean	N	SD	Mean difference	SD
Pre Hb	9.7	49	1.0763	1.0816	0.4803
Post Hb	8.6	49	1.044		

In Table 8 the mean pre procedure Hb was 9.7 gms% and mean post procedure Hb% was 8.6 gm%. The mean difference in pre and post procedure was 1.08gm% reflecting that timely application of B-Lynch suture reduced blood loss and hence decrease in post procedure Hb%.

The mean pre Hb in primi was 9.9gm% and in multi was 9.5gm%. The mean post Hb in primi was 8.8gm% and in multi it was 8.5gm%.

Table 9 shows that the amount of blood required was very less reflecting the effectiveness of B-Lynch suture in reducing the blood loss. 40% of the patients required only one pint of blood transfusion and 24% of patients did not

require any blood transfusion at all. Only 14% of patients had more than 3 pints of blood transfusions.

**Table 6: Distribution according to blood loss.**

Blood loss	Number	Percentage
<500ml	0	0
500-1000ml	12	24%
1000-1500ml	27	54%
1500-2000ml	08	16%
>2000ml	03	6%
Total	50	100%

Table 6 shows the amount of blood loss which was measured in a measuring jar. The minimum blood loss was 800ml and the maximum being 2500ml in our study. Majority had blood loss in the range of 1001-1500ml (54%) which can be attributed to timely application of B-Lynch suture.

**Table 9: Mean distribution of Hb values according to gravida.**

	N	Mean	SD
Pre Hb	Primi 25	9.93	0.937
	Multi 25	9.50	1.154
Post Hb	Primi 25	8.79	0.798
	Multi 25	8.47	1.216

**Table 10: Distribution of blood transfusion.**

No of pints of blood transfusion	Number	Percentage
No blood transfusion	12	24%
1 pint blood transfusion	20	40%
2 pint blood transfusion	11	22%
>3 pint blood transfusion	7	14%

In our study the B-Lynch suture was successful in about 80% of the cases where hysterectomy was avoided. Hysterectomy was reported as a final procedure in uncontrolled PPH in 18% of cases and conclusion was not drawn in one case which was settled without B-Lynch suture.

**Table 11: Distribution of outcome.**

Outcome	Number	Percentage
Successful B-Lynch suture	40	80%
Failure(hysterectomy done)	09	18%
Not applicable	01	02%
Total	50	100%

## DISCUSSION

Primary PPH is common obstetric emergency which can lead to emergency hysterectomy in patients with treatment resistant, life threatening bleeding, surgical methods of controlling uterine bleeding by inserting compression sutures have been developed to reduce the

incidence of emergency hysterectomy and to preserve future fertility in these patients.

In this study, B-Lynch suture technique for achieving uterine compression in PPH during caesarean section has been achieved. The technique is easy to perform during emergency condition at caesarean section. Furthermore, the procedure prevented emergency post partum hysterectomy in 80% of cases. The timely application of this suture also reduced the need for blood transfusion and its associated complications.

The mean age in our study was 24 years which is similar to the study of Mohini et al.<sup>9</sup> The mean gestational age in our study was 37.1 weeks. The mean blood loss was 1495ml (800-2500ml).

**Table 12: The various parameters of our study compared with other studies.**

Parameters	Quobha et al <sup>6</sup>	Hackethal et al <sup>10</sup>	Koh et al <sup>8</sup>	Allerhdin et al <sup>7</sup>	Mohini et al <sup>9</sup>	Present study
Mean age (yrs)	32 (23-40)	32 (25-40)	35 (33-41)	31 (25-38)	29 (19-23)	24
Gestational age (weeks)	38.7	35.4	36.8	38	38	37.1
Blood loss (ml)	-	2500 (2000-3500)	2200 (800-5000)	3500 (2000-10000)	-	1495 (800-2500)
Hb difference (gm%)	-	3 gm% (1.3-5.7)	-	-	0.8 (0.3-1.8)	1.02 (0.4-2.2)
Baby weight (kg)	-	-	-	3.5 (2.1-4.8)	-	2.6 (0.9-4.1)
Success rate	95%	100%	86%	72%	100%	80%

The Hb difference in our study was 1.02 gm% which is comparable to original study of Mohini et al (0.8 gm%).<sup>9</sup> The average birth weight in our study was 2.6kg in comparison to 3.5 kg in original study of Allerhdin et al.<sup>7</sup>

Success rate in our study was 80% with similar results in original study by Koh et al (86%).<sup>8</sup>

Quabha et al conducted a review study of all uterine compression sutures for PPH at one tertiary obstetric hospital. During the 6 years, 20 uterine compression sutures were performed in 31,519 deliveries, 17 at the time of caesarean delivery; 3 after vaginal delivery. Hysterectomy was avoided in 95% cases. None of the women developed complications related to the procedure. Eight tried to conceive and six women had subsequent uncomplicated pregnancies, thus concluding that uterine compression sutures for severe PPH may obviate the need for hysterectomy and appear not to jeopardize subsequent pregnancy.<sup>6</sup>

Allerhdin et al, conducted a retrospective study on 11 consecutive patients who had undergone B-Lynch suture application during caesarean section as a measure to control atonic PPH.<sup>7</sup> Patients age, gestational age, blood loss was recorded. Patients were followed up with clinic

visits at 6 weeks and whether subsequent successful pregnancies were achieved or not were documented. The mean age was 31 years, mean gestational age was 38 wks. The average blood loss was 3500ml and hysterectomy was needed only in 3 patients accounting to 72% success rate.<sup>7</sup>

Koh et al, conducted a retrospective study on women who had undergone the B-Lynch procedure. The mean age in their study was 35 years and average gestational age was 37 weeks. The average blood loss was 2200ml (400-5000ml range). The B-Lynch procedure failed to control bleeding in 2 cases accounting to a success rate of 86%. There were no known immediate or long-term complications.<sup>8</sup>

Mohini et al conducted a pilot study to evaluate the effect of elective B-Lynch suture in preventing atonic PPH during emergency caesarean section. The mean age in this study was 20 years and average gestational age was 38 weeks. None of the women required blood transfusion or additional pharmacological intervention. No intra-operative or postoperative or six-month follow up complications were noted. In conclusion elective B-Lynch suture is cheap, quick and appeared to be effective in preventing atonic PPH in women undergoing

emergency LSCS with high risk factors for atonic PPH.<sup>9</sup> Hackethal et al, conducted a prospective study to evaluate the effectiveness of a modified U-suturing technique in uterine compression, in patients with primary PPH after caesarean section. The mean age in this study was 32 years and average gestational age was 35.4 weeks. Average blood loss was 2500ml (2000-3500ml range). Success rate was 100% thus proving that this technique is highly effective and straight forward emergency procedure which conserves uterus in patients with atonic PPH.<sup>10</sup>

## CONCLUSION

Present study showed cases treated with B-Lynch procedure showed that it is an effective method of containing pph. It has the advantage of being applied easily and safely. It should be attempted when conservative management fails and before any radical surgery is considered.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee*

## REFERENCES

1. Arulkumarn S. Onning Tanizian: The management of post partumhaemorrhage; in arulkumarns; The management of labour. 2<sup>nd</sup> Edition. 2006;208-228.
2. Dutta DC. Complication of third stage of labour: Text book of Obstetrics: 6<sup>th</sup> edition. 2004;411-418.
3. Combs CA, Murphy E, Larv RK. Factors associated with post partumhaemorrhage with vaginal birth. *Obstet Gynecol.* 1991;77:69-76.
4. Drief J. Management of primary post partumhaemorrhage. *Br. J. Obstet Gynecol.* 1997;104:275-7.
5. Registrar General of India in health information, India. Ministry of Health. New Delhi. 2008.
6. Quahba J, Picketty M, AZarian M. Uterine compression sutures for post partum bleeding with uterine atony. *BJOG.* 2007;114(5);619-22.
7. Allerhdin S, Aird C, Darielian P. B-Lynch sutures for major primary PPH at caesarean delivery. *Obstet Gynecol.* 2006;26(7).
8. Koh E, Devendra K, Tan LH. B-Lynch suture for the treatment of uterine atony. *Singapore Med J.* 2009;50(7):693-97.
9. Vachhani M, Virkud A. Prophylactic B-Lynch suturing in emergency caesarean section in women at high risk of uterine atony: A pilot study. *The Internet Journal of Gynecology and Obstetrics.* 2007;7(1):1-8.
10. Hackethal A, Bruggmann D, Oehmke F, Tinneberg HR. Uterine compression U sutures in primary PPH after caesarean section: Fertility preservation with a simple and effective technique. *Human Reproduction.* 2008;23(1):74-9.

**Cite this article as:** Sudha HC, Pairu J, Kamalakshi. B-lynch suture in the management of uterine atony during caesarean section. *Int J Reprod Contracept Obstet Gynecol* 2019;8:1946-50.