

THE EFFECTIVENESS OF B-LYNCH SUTURES IN MANAGEMENT OF ATONIC POSTPARTUM HEMORRHAGE DURING LOWER SEGMENT CESAREAN SECTION

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ABSTRACT

Background: Primary Postpartum Hemorrhage [PPH] is a common obstetric emergency which can lead to emergency hysterectomy in patients with treatment resistant, life threatening bleeding.

Objectives: This study was conducted to determine the efficacy of B-Lynch suture in management of PPH secondary to uterine atony. And to determine whether timely application of B-Lynch suture in uncontrolled atonic PPH obviates the need for hysterectomy and thus help in pursuing subsequent fertility.

Methods: An observational study consisting of 30 pregnant women who had atonic PPH during LSCS in which B-Lynch suturing was done following failure of medical line of management constituted the study group. It included both our hospital registered and referred patients. The test of potential efficacy for B-Lynch suture application is a simple bimanual compression after exteriorizing the uterus. If the latter procedure reduces the blood loss, then B-Lynch suture is applied.

Result: The procedure was successful in 100% of the cases following failure of medical line of management. None of them required hysterectomy/ uterine devascularisation. One patient died of other complications due to abruption with DIC with severe anemia. Intraoperatively patient had 600 gm of retroplacental clot. - When followed up over six months, each patient had uneventful puerperium and resumed regular normal menstrual cycle. Two patients conceived and are following up with us on antenatal OPD basis.

Conclusion: Application of a B-Lynch suture should be taught to all trainees and registrars in obstetrics. Its relative simplicity and ease of application, its life saving potential, relative safety and above all its capacity for preserving the uterus, make it the recommended procedure of choice if conservative measures do not control PPH, and should be attempted before any radical surgery is considered.

Keywords: B-Lynch Suture, Gestational Age, Primary Postpartum Hemorrhage [PPH], Caesarean Delivery

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INTRODUCTION

Third stage of labour is still the “Sword of Damocle” hanging above an obstetrician, inspite 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. By definition, primary postpartum hemorrhage 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 1000 ml following caesarean delivery¹. As the effect of the 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 upto the end of the puerperium which adversely affect the general condition of the patient evidenced by rise in pulse rate and falling blood pressure is called PPH”. ACOG defines PPH as blood loss which decreases the hematocrit (Hct) by 10% or needs a transfusion.²

Hemorrhage occurring beyond 24 hours and within puerperium is called secondary or late or delayed hemorrhage.² Even with appropriate management, approximately 3% of vaginal deliveries will result in severe PPH.³ 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 that the incidence is 3.9% in vaginal deliveries and 6.4 % in caesarean.¹ It has been estimated in India, 25.6% of maternal deaths are due to hemorrhage and worldwide that over 1,25,000 women die of PPH each year.⁴

Hemorrhage which persists in spite of conventional treatment will threaten the life of the mother; wherein 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 woman of future fertility. The theory behind this technique is mechanical compression of uterine vascular sinuses that prevent further engorgement with blood and continued hemorrhage.⁵

The special attributes and features of B-Lynch suture are if the procedure fails, other radical procedure can always be considered. In conclusion, our initial series of cases of PPH treated with B-Lynch procedure shows that it is an effective method of containing PPH.⁶

Application of a B-Lynch suture should be taught to all trainees and registrars in obstetrics. Its relative simplicity and ease of application, its life saving potential, relative safety and above all its capacity for preserving the uterus, make it the recommended procedure of choice if conservative measures do not control PPH, and should be attempted before any radical surgery is considered.

MATERIALS AND METHODS

The present study was conducted at Government Medical College and Hospital, Aurangabad, Maharashtra, from November 2016- November 2017. This study was conducted to determine the efficacy of B-Lynch suture in management of PPH secondary to uterine atony. And to determine whether timely application of B-Lynch suture in uncontrolled atonic PPH obviates the need for hysterectomy and thus help in pursuing subsequent fertility.

The data was collected by studying patients who had atonic PPH during LSCS in which B-Lynch suturing was done following failure of medical line of management. All cases whether booked or unbooked were included in the study.

An observational study consisting of 30 pregnant women who had atonic PPH during LSCS in which B-Lynch suturing was done following failure of medical line of management constituted the study group. It included both our hospital registered and referred patients. The test of potential efficacy for B-Lynch suture application is a simple bimanual compression after exteriorizing the uterus. If the latter procedure reduces the blood loss, then B-Lynch suture is applied.

Patients undergoing cesarean sections landing up in atonic PPH during LSCS in which B-Lynch suturing was done following failure of medical line of management were included in the study. Patients who had PPH after vaginal delivery, Secondary PPH, PPH due to causes other than atonicity, and Prophylactic B-Lynch suture application e. g. In cases of placenta previa were excluded in the study.

A detailed obstetric history was taken to recognize high risk factors for atonic PPH. Menstrual history was taken. A detailed clinical examination was done. Hb%, BT and CT were estimated when patient had atonic PPH during LSCS prior to B-Lynch suture application.

During LSCS amount of liquor was estimated by measuring suction jar after amniotomy. This is a crude method and leads to underestimation of amount of liquor and thus an overestimation of intraoperative blood loss. As a routine 10 U of Oxytocin was added in 500ml of RL/NS after extraction of the baby. Then placenta was removed and the blood loss was estimated. If uterus remained flabby after 5 minutes, additional 10-20U Oxytocin infusion was added. If still uterus remained flabby and bleeding persisted after 10 minutes, Inj. Methylergometrine 0.25 mg IM or Inj. Carboprost 0.25 mg either IM/ intramyometrial were further added considering the contraindications for their use. If bleeding still persisted after 15 minutes, Tab Misoprostol 800-1000µgm was administered per rectal.

After 20 minutes if the uterus was still atonic and bleeding persisted bimanual compression was done. If this reduced the blood loss, then B-Lynch suture was applied using a No-2 Chromic Catgut.

The blood loss was estimated as follows. All the blood loss after the placental delivery was recorded by noting the amount of blood suctioned out in suction apparatus and by mops soaked with blood. The clots and blood from the vagina were collected in a separate kidney tray and measured. Approximately 1 gm of blood clot is considered equivalent to 3 ml of blood loss. The total amount of blood loss was estimated by adding all the values and subtracting the amount of liquor measured initially.

The patients were observed for 24 hrs post procedure, for bleeding per vaginum, uterine contour. Hb% was repeated 24 hrs after procedure. Blood was transfused depending on patient's post-procedure Hb% and amount of blood loss.

The parameters studied were, the amount of blood loss, need for blood transfusion and need for additional surgical methods to control bleeding.

Follow up was performed till 6 month post partum (one week after discharge, one month later, 6 months later) in all the cases. We could follow 6 patients till 18 months postpartum

also. History of menstruation and any complaints like pain in abdomen, foul smelling lochia was asked. General and pelvic examination was done to note any complication like ischemic necrosis of uterus or pyometra.

RESULTS

In our study all patients were emergency LSCS. The mean weight in my study was 54.7 kg. Majority i.e. 56.67% were term pregnancies, rest were constituted by preterm pregnancies (43.33%). The mean gestational age was 37.5 weeks. The major risk factor accounting for atonic PPH was obstructed or prolonged labour and antepartum hemorrhage (APH) followed by prolonged PROM. Most patients with prolonged/ obstructed labour were primigravidas and most with APH were multigravidas. The mean birth weight in this study group was 2.7 kg (The range being 1.2 kg - 4.2 kg). The minimum blood loss was 1000 ml and the maximum being 2800 ml. The mean blood loss in primigravida was 1173 ml and in multigravida was 1553ml. All cases of APH occurred in multigravidas and thus that retroplacental clot added on to the amount of blood loss in multigravidas creating a significant difference in the mean blood loss between primigravidas and multigravidas.[Table 1]

The mean difference in pre and post procedure Hb was 2.01 gm% with a significant p value of <0.05. Blood was transfused in 8 patients' intra operatively. We did post op Hb at 24 hour post LSCS but in 7 cases with significant pallor it was done immediate postpartum to guide blood/ blood product transfusion. These confounding factors decrease pre op and post op Hb significance. [Table 2]

The mean decrease in pre and post op Hb would have been much more if time consuming procedures like step wise revascularization or hysterectomy would have been performed.

This was dependent both on the pre operative Hb% and the amount of blood lost during the operation. 16.67% of the patients did not need any blood transfusion and majority required single blood transfusion (40%) again reflecting the effectiveness of timely application of B-Lynch suture in reducing the blood loss and obviating the need for blood transfusion. Eight patients were transfused intraoperatively.

Maximum patients had to stay in the hospital for ≤ 10 days reflecting the efficacy of B-Lynch sutures in decreasing morbidities like deep venous thrombosis associated with prolonged stay. One patient had wound gape and thus had to stay for around 21 days. This was included as PPH leads to lower recovering ability of the body. One patient expired on day 2 of surgery due to her poor general condition on admission who had very poor general condition when she arrived due to abruption with DIC with severe anemia. She underwent LSCS for obstructed labor with abruption. Intraoperatively patient had 600 gm of retroplacental clot (equivalent to around 1800 ml blood loss). She also had atonic PPH with 1000 ml blood loss, which could be easily controlled with B-Lynch sutures as uterine compression test was positive. [Table 3]

The procedure was successful in 100% of the cases following failure of medical line of management. None of them required hysterectomy/ uterine revascularization. Five patients didn't require blood transfusion at all. Mean blood loss and mean decrease in Hb were moderate because of timely application of B-Lynch.

When followed up over six months, each patient had uneventful puerperium and resumed regular normal menstrual cycle. Two patients conceived and are following up with us on antenatal OPD basis. Thus, the above results show the effectiveness of B-Lynch sutures in atonic PPH if timely applied.[Table 4]

DISCUSSION

In our study all patients were emergency LSCS. The mean weight in my study was 54.7 kg. This might be due to the reason that our hospital caters to majority of low socioeconomic population which are not well nourished and have inadequate weight gain in pregnancy.

Majority i.e. 56.67% were term pregnancies, rest were constituted by preterm pregnancies (43.33%). The mean gestational age was 37.5 weeks comparable to findings of Kalkal N et al⁷, Shabnam et al⁸ and Allerhdin et al.⁹

The major risk factor accounting for atonic PPH was obstructed or prolonged labour and antepartum hemorrhage (APH) followed by prolonged PROM. Most patients with prolonged/obstructed labour were primigravidas and most with APH were multigravidas. This finding was similar to that of Shabnam et al⁸ and Sentilhes L et al.¹⁰

The mean birth weight in this study group was 2.7 kg (The range being 1.2 kg - 4.2 kg).

The minimum blood loss was 1000 ml and the maximum being 2800 ml. The mean blood loss was 1363 ml which is comparable to mean blood loss (1480 ml) in study of Shabnam et al⁸ and much lesser than other studies.

The mean difference in pre and post procedure Hb was 2.01 gm% with a significant p value of <0.05, which is comparable to the findings by Mohammed et al¹¹ (Mean Hb difference 2.8, p<0.05) and Ahonen J et al¹² (Mean Hb difference 3.0, p<0.05). In our study, we transfused 8 patients intra operatively.

In our study, mean age of women was 26.6 yrs, which was similar to Kalkal N et al⁷ et al and Shabnam et al⁸ et al, higher in Hackethal et al,¹³ Quahba et al¹⁴ and Koh et al¹⁵ and lower et al in Mohini et al.¹⁶

In our study Gestational age was 37.5 weeks in Kalkal N et al⁷ Shabnam et al⁸ Allerhdin et al,⁹ Sentilhes L et al,¹⁰ Mohammed et al¹¹ Quahba et al,¹⁴ and Mohini et al¹⁶ has similar results.

Our study observed 1363 ml average blood loss in delivery which was similar to Shabnam et al⁸ on the contrary to studies conducted by Allerhdin et al,⁹ Mohammed et al,¹¹ Hackethal et al¹³ and Koh et al.¹⁵

In our studies Hb difference was 2.01 (0.6-3.4) gm% which was higher in Hackethal et al¹³ et al and lower in Mohini et al.¹⁶

In our study, average Baby weight was observed 2.7 (1.2-4.2) Kg, Allerhdin et al⁹ was having 3.5 Kg baby weight which was higher than our study.

Our study has 100% success rate which was similar to the study conducted by Hackethal et al¹³ lowest in Allerhdin et al⁹ upto 72%.

Ghodake et al¹⁷ performed a prospective study in 2006 on 71 patients also evaluated B-Lynch suture had the advantage of less frequency and severity of complications as compared to obstetric hysterectomy viz. vesicovaginal fistula, deep venous thrombosis.

The limitations of our study were-

Our hospital caters to 95% of low socio economic population and thus bias in patient selection. Sample size was 30. But being a surgical procedure which is performed in special circumstances, maximum studies have less sample size. Study done over a longer period would tell us in a better way. However, as none of our patients required hysterectomy, it shows B-Lynch application was successful.

CONCLUSION

This observational study was conducted with the intention of determining whether B-Lynch suture is effective in controlling PPH due to uterine atony during cesarean section, when medical line of management fails. The development of this technique has proved to be invaluable in the control of massive PPH as an alternative to hysterectomy. It proves to be a valuable addition for surgical treatment of PPH and great advantage in young patient with restoration of future fertility. With the added on advantage of lesser time of application, lesser blood loss, lesser blood transfusion, lesser skill required.

Thus, we can adopt B-Lynch suture as a mid step before resorting to uterine devascularisation or hysterectomy when medical line of management fails. Resident doctors in teaching institutes must be well versed in this technique.

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TABLES

Characteristics	Subgroup	Number	Percentage (%)
Age (years)	≤ 20	4	13.33
	21-25	6	20
	26-30	17	56.67
	>30	3	10
Weight (kg)	40-50	10	33.33
	50.1-60	15	50
	60.1-70	4	13.33
	>70	1	3.33
Gravida	Primi	15	50
	Multigravida	15	50

Table 1: Age, weight and Gravida Distribution of the study population

Characteristics	Subgroups	N	%
Gestational age (weeks)	<32 weeks	1	3.33
	32.1-34	5	16.67
	34.1-37	7	23.33
	37.1-40	12	40
	40.1-42	5	16.67
Causative factors for PPH	Obstructed or prolonged labour	10	33.33
	APH (Abruptio placenta/placenta previa)	9	30
	Prolonged PROM	6	20
	Big baby*	2 (1 with GDM)	6.67
	Multiple pregnancy	2 (1 with polyhydramnios)	6.67
	Chorioamnionitis	1	3.33
Birth weight	< 2	6	18.8

(Kg)	2.1-3	14	43.8
	3.1-4	10	31.2
	>4	2	6.2
Blood loss (in ml)	≤1000	5	16.67
	1100-1500	18	60
	1600-2000	5	16.67
	2100-2500	1	3.33
	>2500	1	3.33
Decrease in Hb (gm%)	≤1	2	6.8
	1.1-1.5	3	10.3
	1.6-2	12	41.3
	2.1-2.5	7	24.1
	2.5-3	1	3.4
	>3	4	13.7
	Total	29	
No. of units of blood transfusion	No blood transfusion	5	16.67
	1 unit blood transfusion	12	40
	2 units blood transfusion	6	20
	≥3 units blood transfusion	7	23.33
	Total	30	
Duration of hospital stay (days)	≤ 10	25	83.33
	11-15	04	13.33
	16-20	00	0
	>20	01	3.33
	Total	30	
Outcome	Successful (Hysterectomy avoided)	30	100
	Failure (Hysterectomy done)	00	00

*Big baby – birth weight \geq 4 kg

Table 2: Distribution of clinical and laboratory variables among the study population

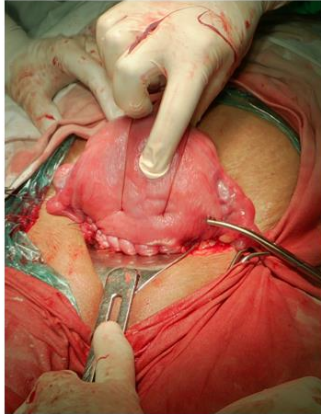
Gravida status	N	Mean Blood Loss(ml)	Standard Deviation(ml)	Minimum (ml)	Maximum (ml)	P Value
Primi	15	1173.33	198.08	1000	1800	0.00016 (<0.05)
Multi	15	1553.33	464.24	1100	2800	
Total	30	1363.33	400.41	1000	2800	

Table 3: Distribution of Blood Loss according to Gravida status

	Gravida status	N	Mean	Standard Deviation
Pre Op	Primi	15	10.19	1.21
	Multi	15	10.13	2.26
Post Op	Primi	15	8.21	0.99
	Multi	15	8.08	1.11

Table 4: Mean Distribution of Hb values according to Gravida status (Pre and Post op)

ATLAS



A] Well Retracted Uterus



B] Couveleire Uterus

After B-Lynch Suture Application