

Research Article

Assessment of efficacy of Modified Balogun Lynch-Stitch in management of Atonic Postpartum Hemorrhage

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Abstract

Objectives: To evaluate safety and efficacy of Modified Balogun Lynch suture in Atonic Postpartum hemorrhage and to reduce maternal mortality and morbidity by timely application of Modified B-Lynch suture.

Material & Method: Study included all patients of uncontrolled Atonic PPH delivered vaginally or by Caesarean section in Government Medical College and Hospital, Aurangabad from September 2011 to August 2013 in whom Modified B-Lynch Suture was taken.

Results: Modified B-Lynch suture was taken in 50 patients of uncontrolled atonic PPH and it was found successful in 94% of patients. In 3 cases hysterectomy was done as a life saving procedure.

Conclusion: Modified B-Lynch suture is effective in controlling Postpartum Hemorrhage due to uterine atony in all vaginal deliveries and caesarean section when medical line and conservative treatment fails. This technique proved valuable in control of massive Postpartum Hemorrhage as an alternative to hysterectomy when timely applied.

Keywords: Atonic Postpartum Hemorrhage, Modified Balogun Lynch suture.

1. Introduction

Primary Postpartum hemorrhage means loss of more than 500 ml of blood from or into the genital tract in the first 24 hrs after vaginal delivery or more than 1000 ml following caesarean delivery¹. It has been estimated that worldwide over 1,25,000 female die of Postpartum hemorrhage each year². In India, 25.6% maternal death is due to postpartum hemorrhage³.

Atonic uterus is preventable cause of maternal mortality and morbidity constituting 80% of PPH cases. The traditional management has conservative methods like bimanual compression, uterine massage, medical therapy with uterotonic agents, uterine tamponade with balloons and occasionally arterial embolisation, the failure of which often mandates surgical intervention. Surgical measures such as ligation of major pelvic vessels demands a rarely used skill possessed by few surgeons. In the event of intractable hemorrhage despite the above measures, hysterectomy is finally the last resort.

To overcome PPH in 1997 Balogun Lynch Christopher described use of uterine compression stitch to uterine atony in massive obstetrics hemorrhage with objective of compressing the uterus without devascularisation. Since its invention in 1997, the B-Lynch technique has been used successfully in approximately 1,300 cases worldwide⁴.

Richard Hayman and Professor Subratnam Arulkumaran in Derby modified this procedure & made it simple in 2002.⁵ This study aims studying the effectiveness of this modified stitch to arrest maternal mortality and morbidity.

2. Material and Methods

Clinical study consisting of 50 patients of uncontrolled atonic postpartum hemorrhage delivered vaginally or by caesarean section in Govt. Medical College and Hospital, Aurangabad or referred from outside from Sept 2011 to Aug 2013 constituted study group. Patients were subjected to modified B-Lynch suture application when medical line of management failed to control PPH. The test of potential efficacy for B-Lynch suture application was simple bimanual compression of exteriorized uterus. If the later procedure reduced blood loss then modified B-Lynch suture was applied.

Patient of atonic postpartum hemorrhage not responding to measures such as uterine massage, bimanual compression, use of uterotonics were included in study group. Patients with traumatic PPH, DIC, retained placenta, bleeding disorder, uterine anomalies were excluded. If the patient required hysterectomy in spite of giving modified B-Lynch suture then it was failure case. If the patient did not require Hysterectomy it was successful case.

All the blood loss after placental delivery was recorded by noting amount of blood suctioned out in suction apparatus. Also the clots and blood from vagina were collected in separate kidney tray and then measured. This was added to the visually estimated blood loss.

The patients were observed for 24 hours post-procedure for bleeding per vaginum and uterine contour. Hb gm% was repeated after 48 hours after procedure. Blood transfusion was done depending on patient pre-procedure Hb% and amount of blood loss during surgery. Postoperative complications like fever, wound gape, deep vein thrombosis, vesicovaginal fistula, uterine wall necrosis were looked for. Patients were observed for 7 days and discharged if well & without any complications on 8th day postoperative.

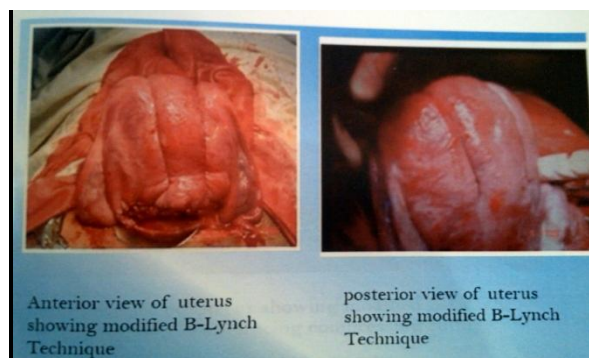
2.1 B-Lynch suture

This technique was first described by Christopher Balogun Lynch in 1997⁶ and hence named after him as B-Lynch suture. Following are steps of B-Lynch suture

On entering the abdomen under anesthesia either a lower segment incision is made after dissecting off bladder or sutures of a recent caesarean section are removed and the cavity entered. The uterus is exteriorized. A No. 2 chromic catgut with round body needle is used to puncture the uterus 3cm from the right lower edge of the uterine incision and 3cm from the right lateral border. The catgut is threaded through the uterine cavity to emerge at the upper incision margin 3cm above and approximately 4cm from the lateral border. The catgut now visible is passed over to compress the uterine fundus approximately 3-4 cm from the right cornual border. The catgut is fed posteriorly and vertically to enter the posterior wall of the uterine cavity at same level as upper anterior entry point throws to secure tension. The lower transverse uterine incision is now closed in normal way in two layers.

2.2 Modified B-Lynch suture

Hayman *et al*⁷ in Derby modified this procedure of B-Lynch suture in 2002. Vertical apposition of the uterus is achieved by passing the needle from the anterior surface of uterus in lower segment above bladder reflection, coming out posteriorly through the full thickness of uterus and tying the suture over the fundus. Since the technique does not require opening of uterine cavity, it is quicker to perform.



3. Results

1) **Mode of delivery:-** In our study, in majority of cases modified B-Lynch suture was taken during emergency cesarean section i.e. 72% and in 14% after vaginal delivery.

Table 1: B-Lynch stitch and mode of delivery

Mode of delivery	No. of patients	Percentage	
Vaginal	7	14%	
Caesarean section	Emergency	36	72%
	Elective	7	14%

2) **Blood loss:-** Maximum blood loss was 2500 ml. 50% patients had blood loss in the range of 1200 ml to 1500 ml (timely application of modified B-Lynch suture). The mean blood loss was 1495 ml.

Table no 2: B-Lynch stitch and Blood loss

Classes of hemorrhage	No. of patients	Percentage
Class 1 (<900ml)	4	8%
Class 2 (1200ml-1500ml)	25	50%
Class 3 (1800ml-2100ml)	15	30%
Class 4 (>2400ml)	6	12%
Total	50	100%

3) **Decrease in Hb%:-** 44% cases had decrease in Hb by 1.1 to 1.5 gm%, 30% had decrease by 0.5 to 1gm%, whereas only 4% had decrease in Hb by >2gm%.

Table no 3: Decrease in Hb%

HB (gm %)	Number	Percentage
<0.5	04	8%
0.5-1	15	30%
1.1-1.5	22	44%
1.6-2	06	12%
>2	02	4%
Not applicable	01	2%
Total	50	100%

4) **Blood transfusion:-** This depended both on preoperative Hb% and amount of blood lost during the operation. 34% of the patients did not need any blood transfusion, 24 % needed 2 units blood transfusion. Only 14% needed more than 3 units of blood transfusion.

Table no 4: Mod B-Lynch stitch and Blood loss

No. of unit of Blood Transfusion	No. of patients	Percentage
No blood transfusion	17	34%
1 unit blood transfusion	14	28%
2 unit blood transfusion	12	24%
3> unit blood transfusion	07	14%
Total	50	100%

5) **Time taken to put the stitch:** - 50% of the stitch took less than 10 min.

Table 5: Time taken to put Mod.B-Lynch stitch

Time taken to put the stitch	No. of patients	Percentage
<10 min	25	50%
11-20 min	22	44%
>20 min	03	06%
Total	50	100%

6) **Outcome:** - Stitch was successful in 94% cases and hysterectomy was required in only 6% cases.

Table 6: Success of B-Lynch stitch

Outcome	No. of patients	Percentage
Success	47	94%
Failure(Hysterectomy done)	3	06%
Total	50	100%

7) **Complications:** - In our study 2 patients had postoperative pyrexia, 1 patient had wound gape and there were 2 maternal mortalities.

Table 7: Complications of Mod. B-Lynch stitch

Complications		No. of cases
Minor	Fever	2
	Wound gape	1
	Haematoma Formation	0
Major	Vesico vaginal fistula	0
	Deep vein thrombosis	0
	Uterine wall necrosis (no signs and symptoms of puerperal sepsis)	0
	Mat. Mortality	2

4. Discussion

Primary PPH may require emergency obstetric hysterectomy in patient with treatment resistant life threatening bleeding. Surgical method of controlling uterine bleeding by inserting B- Lynch suture has been developed to reduce the incidence of emergency hysterectomy and to preserve fertility in these patients. Because of simplicity of application and less time taken to put the modified B-Lynch stitch, it should be the preferred choice.

Various parameters are compared as follows:

In Khatoon *et al*⁸ study, modified B-Lynch stitch was applied on 9 cases i.e. 60% after vaginal delivery and on 6 cases i.e. 40% during cesarean section. In Our study modified B-Lynch stitch was taken on 7 cases i.e. 14% after vaginal delivery and on 43 cases i.e. 84% during cesarean section.

In prospective study of Hackenthal *et al*⁹ Hb difference is 3gm% and in our study it was 1.02gm% indicating that blood loss was less in Our study.

In Koh *et al*⁴ study, 4 patients required more than 3 units of blood transfusion and 2 patients did not require any blood transfusion while in Our study 7 patients required more than 3 blood transfusion and 17 patients did not require any blood transfusion, reflecting the effectiveness of modified B-Lynch stitch in the control of Atonic postpartum hemorrhage.

In study of Anamika *et al*¹⁰, time taken to put stitch was 11 to 20 min in 35 patients and less than 10 min in 3 patients, more than 20 min in 5 patients. In Our study, time taken to put stitch was less than 10 mins in 25 patients, between 11-20 mins in 22 patients and more than 20 mins in 3 patients.

Study conducted by Hackenthal *et al*⁹ and Anamika *et al*¹⁰ had success rate of 100%, thus proving that this technique was highly effective. In Our study success rate was 94%.

In Anamika *et al*¹⁰ study, 1 patient died on 21st postpartum day due to Acute Respiratory Distress Syndrome and Septicaemia. In our study, 1 patient died immediately 3 hours after the Caesarean section because of Disseminated Intravascular Coagulation and 1 patient died because of Acute renal failure on 5th post-operative day. In both these patients Obstetrical Hysterectomy was done after taking modified B-Lynch stitch as the bleeding was not controlled by the stitch.

In prospective study conducted by Ghodake *et al*⁵, 31 patients underwent modified B-Lynch stitch, out of which 5 patients had post-operative pyrexia, 3 patients had surgical wound gape. In our study 50 patients underwent Modified B-Lynch stitch out of which 2 had post-operative pyrexia and one had wound gape. In Our study, there was no major complication.

5. Conclusion

In conclusion, our series of cases of postpartum hemorrhage treated with modified B-Lynch suture shows that it is an effective method of controlling postpartum hemorrhage if done as early as possible after conservative measures and medical managements fail. It has proved to be valuable as an alternative to obstetric hysterectomy.

Application of a modified B-Lynch suture should be taught to all trainees and registrars in obstetrics. Its relative simplicity of application, life saving potential & safety, makes it very useful if conservative measures and medical line of management do not control postpartum hemorrhage. Its capacity to preserve the uterus compels us to attempt it before any radical surgery is considered. Hence it is helpful in reducing both maternal morbidity and mortality. In this comparatively new method, the study has dealt with only 50 cases, so larger studies are required to carry out further conclusion. Similarly, the study can be further strengthened by precisely measuring the amount of blood loss in postpartum hemorrhage.

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