

# Role of Modified B-Lynch in Controlling Postpartum Haemorrhage Due to Uterine Atony

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**Abstract:** To evaluate effectiveness of modified B-lynch suture in controlling atonic postpartum haemorrhage. Modified B-lynch suture was used in 40 cases, suffering from atonic ppH. Modified B-lynch alone, succeeded to control atonic ppH in 35 (87.5%) of cases. In addition to the uterine suture, ligation of both uterine & ovarian vessels, succeeded to control atonic ppH in 3 (7.5%) of cases. Emergency hysterectomy was performed in 2 (5%) of cases inspict of doing the uterine suture and ligation of uterine & ovarian vessels. Modified B-lynch suture is an effective method to control atonic ppH. It is simple, safe, easily applied, lifesaving procedure and could preserve the female fertility.

**Keywords:** Modified B-Lynch, controlling atonic postpartum haemorrhage, lifesaving procedure.

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## 1. INTRODUCTION

Postpartum haemorrhage (ppH) is defined as estimated blood loss of  $\geq 500$  ml after vaginal delivery or  $\geq 1000$  ml after cesarean section (1).

Another definition of ppH is a reduction in the patients hematocrit level of more than 10% compared with the prenatal value or blood loss causing hemodynamic instability of sufficient degree to require blood transfusion(2).

Atonic ppH, which is one of the most preventable causes of maternal mortality, is found in about 80% of women suffering from primary ppH(3).

In 1997, christopher B-lynch devised an innovative technique to treat uterine atony, where a continuous suture was used to envelope and mechanically compress the uterus in an attempt to avoid hysterectomy (4).

Published data have confirmed that the B-lynch surgical technique is safe, effective and free of short and long term complications(5).

However many modified procedures have emerged from the original technique to achieve optimal results and fewer difficulties during surgery. Various techniques such as cho's square suture and Hayman's modification of the B-lynch suture technique have been introduced adding more available methods of conservative surg-ery(6).

## 2. AIM OF THE WORK

This study aims to evaluate effectiveness of modified B-lynch suture in controlling atonic postpartum hemorrhage.

## 3. MATERIALS AND METHODS

A prospective ongoing study conducted at Benha Tea-ching Hospital, Department of Obstetrics and Gynaecology, Tertiary Hospital, evaluated 40 cases of primary atonic postpartum hemorrhage (ppH), over a period of two years from December 2011 to December 2013. Primary blood loss of 500ml or more was determined by visual inspection by the

attending obstetrician or nurses or relatives which was a subjective judgement. Uterine atony was determined by abdominal palpation of uterus and gush of vaginal bleeding on squeezing of uterus.

In atonic ppH, uterus is soft in contrast to traumatic ppH, where uterus is firm. Patient's record was examined to rule out any pre-existent coagulopathy. Examination under anesthesia was done to exclude presence of trauma through the birth canal. Previously before introduction of B-lynch suture, emergency hysterectomy was performed as a last step to save the patient suffering from intractable ppH, after failure of ordinary measures, including uterine devascularisation. So, B – lynch and its modifications should be tried in all cases of atonic ppH before uterine devascularisation or emergency hysterectomy.

The original B-lynch suture requires expert surgeon and also needs lower segment uterine incision. It is also time consuming and bleeding may occur from the multiple bites needed for doing it. Figure (1).

However, modified B-lynch suture (Hayman suture) does not need lower segment uterine incision and is less time consuming. Figure (2).

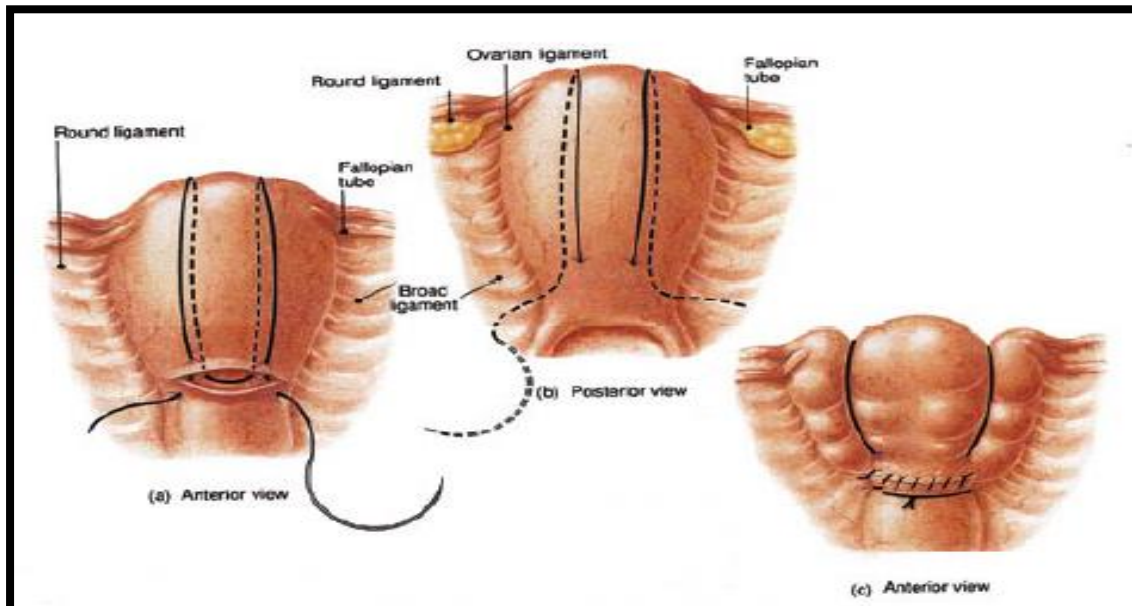


Figure (1): Parts (a) and (b) demonstrate the anterior and posterior views of the uterus showing applications of the B-lynch Brace Suture. Part (c) shows the anatomical appearance after competent application. Illustrations by Mr. Philip Wilson FAMM, AIMI, based on the authors video record of the operation)

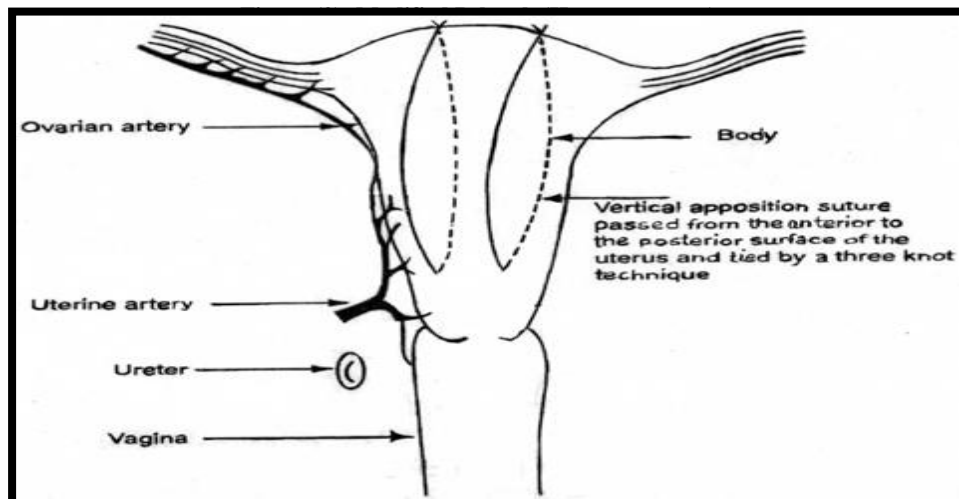


Figure (2): Modified B-lynch (Hayman suture)

B – lynch suture	Modified B – lynch suture
1- Needs export	Easy to perform
2- Needs LSUI*	No need for LSUI
3- Time consuming	Done in 2 – 3 minutes
4- More complications: - Cervical stenosis - Haematometra - B leading due multiple bites	Less complications: No cervical stenosis No haematometra. No multiple bites

\* Lower segment uterine incision

The modified B–lynch was performed in 40 cases of atonic primary ppH who did not respond to uterine massage, bimanual uterine compression and uterotonic drugs i.e. oxytocin, ergometrine and miso-prostol.

Out of the 40 cases, 34 cases were delivered in our department and 6 cases were referred from other hospitals. The modified B–lynch suture was done for all cases. Uterine and ovarian vessels ligation was added to modified B–lynch in 3 cases. Hysterectomy was needed in 2 cases, inspite of doing modified B–lynch and uterine devascularization.

The ideal suture to do modified B–lynch should be strong, monofilament (to minimize possible trauma to the friable tissue of the atonic uterus) rapidly absorbed and mounted on a long curved or on a straight needle. In our study the procedure was done by vicryl No 1 (polyglactin) in all cases.

Steps of modified B–lynch (Hayman suture):

- 1- Appropriate abdominal incision or reopening of a previous cesarean section incision, after giving the patient appropriate anesthesia and fixation of Foley's catheter, in the urinary bladder.
- 2- Exteriorization of the uterus, and bimanual uterine compression was first applied to test the potential chances of success of the suture. The vagina was examined to confirm sufficient control of the bleeding.
- 3- The uterus was transfixed from front to back, just above the reflection of the bladder and then tied at the fundus of the uterus, using long straight or curved needle. One suture on each side of the uterus was done.

#### 4. RESULTS

Modified B–lynch was applied in 40 cases with primary ppH, due to uterine atony.

In 35 patients, modified B–lynch (Hayman suture) alone was taken. Additional methods were taken in the rest 5 cases, including, ligation of uterine and ovarian arteries in 3 cases, and subtotal abdominal hysterectomy in 2 cases, as shown in table (1). Time of application was also recorded as shown in table (1).

Table (1):

	Number (N = 40)	Percentage(%)
<b>Time before application of modified B – lynch suture:</b>		
< 15 minutes.	4	10%
15 – 30 minutes	34	85%
> 30 minutes	2	5%
<b>Types of intervention</b>		
- Modified B–lynch	35	87.5%
-Modified B-lynch + uterine and ovarian vessel ligation	3	7.5%
-Modified B-lynch + uterine and ovarian vessel ligation + hysterectomy	2	5%

Age, parity and mode of delivery were recorded in table (2). Most of the patient were in the age group 20 – 35 years, at term pregnancy and were delivered by LSCS. Six patients were referred from outside.

All patients were followed up in the first week after delivery and 30 patients were followed up 6 weeks later on.

Table (2):

Parameter	Modified B lynch (n = 40)
<b>Age:</b>	
< 20	4 (10%)
20 to 25	22 (55%)
26 to 35	10 (25%)
> 35	4 (10%)
<b>Parity</b>	
Primigravida	5 (12.5%)
Second gravida	21 (52.5%)
Third gravida	8 (20%)
More than three gravida	6 (15%)
<b>Period of gestation</b>	
Term	37 (92.5%)
Preterm	3 (7.5%)
<b>Mode of delivery:</b>	
Cesarean section	33 (82.5%)
Vaginal delivery	7 (17.5%)
<b>Place of delivery</b>	
Our centre	34 (85%)
Referred from outside	6 (15%)

Uterine atomy was the only cause of postpartum haemorrhage in the study group. All the 40 cases needed secondary interventions, due to failure of conventional uterot-onics.

Modified B–lynch (Hayman suture) succeeded to control primary ppH, due to uterine atomy in most of cases. Postoperative recovery was an uneventful in all cases.

## 5. DISCUSSION

ppH is a common obstetric problem which can lead to emergency hysterectomy in patients with treatment–resistant, life threatening bleeding. Surg-ical methods of controlling uterine bleeding by inserting compression sutures have been developed to reduce the incid-ence of emergency hysterectomy and to preserve fertility in these patients. In this study we have evaluated the modified B–lynch suture technique(Hayman suture) for achieving uterine compress-ion in atomic ppH.

The Hayman suture is an easy procedure to perform during emergency conditions, safe and inexpensive procedure. Further-more, this technique enabled us to avoid emergency hysterectomy in most of the cases.

In 2002, Hayman placed two vertical sutures on each side of the uterine fundus in three patients with ppH without performing hysterectomy(7). The procedure is successful in preserving the uterus and hence fertility. Although uterine atomy is often the indication for the use of the compression sutures, it has been shown to be effective in controlling bleeding in cases of placenta Previa and Placenta accrete, in many case reports(7).

Reports of adverse complications, after B-lynch application have been isolated. Partial ischemic necrosis of the uterus occurring 24 hours after the procedure has been reported in a 26 – year old primigravida who undervent an emergency caesarean section for fetal distness followed by B-lynch suture(8). Erosion of the uterine wall was reported in a 19 years old primigravida after B-lynch suture (9).

Long term complications such as formation of bowel adhesion has also been reported (7).

Despite this, many patients on long term follow up have been demonstrated resumption of normal menstrual periods and normal reproductive health (10).

Modified B–lynch suture, is a newer and easy technique to control atomic ppH and most of the studies are based on case reports, so more controlled studies are required before it is accepted as a standard method (11).

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In our study two out of forty patients needed emergency hysterectomy due to failure of modified B-lynch in addition to uterine and ovarian arteries occlusion to control bleeding.

Ghodake et al. 2008 have reported no mortality after B-lynch suture, but minor complications like fever (5 out of 31) and wound gap (3 out of 31)(10).

Fatima et al. 2010, studied the effectiveness of combined B-lynch suture and uterine packing in 22 cases with ppH, and reported zero infection rate and two (9.1%) cases with secondary ppH required hysterectomy (12).

Another study showed failure of B-lynch suture to control ppH (1 out of 15 cases), needed hysterectomy, with failure rate of 6.6% (13).

Our study of 40 patients demonstrated the success of modified B-lynch suture (Hayman suture) in the management of intractable primary ppH with preserving the uterus in the majority of cases.

### 6. CONCLUSION

Modified B-lynch suture is an effective method of controlling primary atonic ppH. It should be attempted as early as possible in order to maximize its success. It is simple, safe, easily applied, lifesaving procedure and has the capacity for preserving the uterus and hence female fertility.

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