

## Original Article

# B-Lynch suture - An Experience

Nalini Neelam<sup>1</sup>, Singh Jitendra Kumar<sup>2</sup>

<sup>1</sup>Senior Resident, Department of Obstetrics and Gynaecology (RIMS),

<sup>2</sup>Chief Consultant Radiologist, Advanced Diagnostic Centre, Ranchi

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### Abstract

**Objectives:** To study the effectiveness of B-Lynch suture to control postpartum hemorrhage. To know the effect of this extreme degree of compression (produced by B- Lynch suture) on uterine anatomy three months after delivery. **Method:** B-Lynch suture (Classical / modified form) was applied in 75 cases. A No. 2 chromic catgut suture was used on a big size round body needle. During the placement of suture, patient was placed in frog-leg position to assess the compression effect of B-Lynch suture. In 62 cases (82.66%) B-Lynch suture was the only intervention. In 8 cases (10.66%) uterine arteries (O'Leary method) were also ligated and in five cases (6.66%) cervico-isthmic apposition suture was also applied in addition to B-Lynch suture. **Result:** Failure rate was 2.67%. Hysterectomy was required in two cases **Conclusion:** B-Lynch suture technique is a simple, effective, safe, life saving and fertility preserving method to control atonic postpartum hemorrhage.

**Key-words:** postpartum hemorrhage, B-Lynch suture, placenta previa

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### Introduction

Postpartum hemorrhage is traditionally defined as blood loss of more than 500 ml after vaginal delivery and more than 1,000 ml after cesarean delivery. But intraoperative estimation of blood loss is notoriously inaccurate. Thus the American College of Obstetricians

and Gynecologists defines it as a decrease in hematocrit of more than 10% from the pre delivery status<sup>1</sup>. The commonest cause of postpartum hemorrhage is uterine atony. It is a serious obstetrical problem and it has been estimated that worldwide over 125,000 women die of postpartum hemorrhage each year<sup>2</sup> which contributes to 25-43% of all maternal deaths in the developing countries. This suture technique was described by Christopher B-Lynch in 1997 that envelopes and compresses the uterus to control life threatening postpartum hemorrhage<sup>3</sup>.

### Material and Method

This study was conducted between 2003 September to 2006 November on cases of Cesarean section (CS) who developed atonic postpartum hemorrhage (PPH). Of the 75 cases of LSCS, 55 cases developed atonic PPH. The

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Correspondence:

Dr. Nalini Neelam

E-159, Sector-II

Dhurwa, Ranchi -834004

Jharkhand

Phone -0651-2442304(R)

Mobile -9334701303

E-mail- endmasingh@dataone.in

cause of uterine atony was unexplained in nine cases; due to obstructed or prolonged labor in 15 cases; due to preeclampsia in 14 cases; due to eclampsia in nine cases; due to twin pregnancy in seven cases; due to placenta previa in two cases and due to abruptio placentae in two cases. B-Lynch suture was applied (Classical B-Lynch suture/modified B-Lynch suture) on 75 women during LSCS to control life threatening, intractable postpartum hemorrhage, unresponsive to ecbolics.

Uterine atony was defined when uterus failed to contract even after giving following dose of ecbolics.

- i) 25 units of Oxytocin (5 units I.V bolus and 20 units in drip)
- ii) One amp. of methyl ergometrine very slow i.v.
- iii) 250 microgram of PgF<sup>2</sup> alpha (Carboprost) i.m.

Out of 75 cases, 62 cases (82.66%), turned up for follow-up study after 3 months of delivery. Integrity of uterine anatomy was assessed by MRI and HSG (Hysterosalpingography) in 15 cases and in the remaining 47 cases by HSG alone (because of high cost of MRI, it was not possible to follow all cases with MRI). Out of 75 cases, eight cases (10.66%) were followed up to their next delivery. In 48 (64%) cases, classical B-Lynch suture was applied and in rest 27 (36%) cases Modified B-Lynch Suture was applied .

#### Steps:

When uterus remains refractory to ecbolics, women were positioned in frog leg supine position, which is important for assessing vaginal bleeding intraoperatively and determining the success of bimanual compression and the B-Lynch suture. For this procedure chromic catgut No.2 on round bodied needle was used (Figure -I)

The uterus is punctured (site 1) at about 3cm from the right lower edge of the uterine incision and 3cm from the lateral border. The thread is passed through the cavity to emerge at the upper incision margin 3m above and approximately 4cm from the lateral border. The catgut is passed over the uterine fundus approximately 3-4cm from the right cornual border. Then catgut is passed posteriorly to puncture the uterine cavity at the same level as the upper anterior entry point. The chromic catgut is pulled under moderated tension and

is passed posteriorly through the same surface marking as for the right side, the suture lying horizontally. The catgut is passed vertically over the fundus compressing the fundus on the left side as occurred on the right. The needle is passed in the same fashion on the left side through the uterine cavity and out approximately 3cm anteriorly and below the lower incision margin on the left side. The two lengths of catgut are pulled taut assisted by bimanual compression to minimize trauma and aid compression. The vagina is now checked for bleeding. If good hemostasis is secured, whilst the uterus is compressed by an assistant, the principal sur-

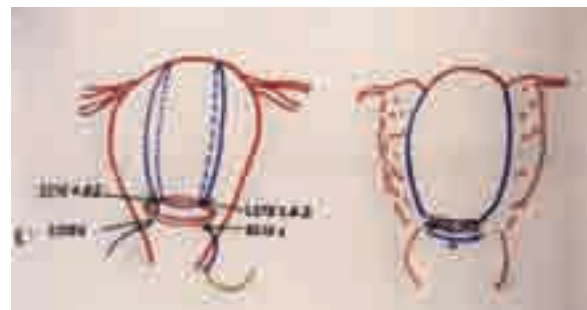


Fig 1: B- lynch (diagrammatic)

geon ties the two lengths of satgul to secure tension. The lower transverse uterine incision is now closed in the normal way.

**Modified B-Lynch suture:** These were the cases, where we had already closed the LSCS incision on the uterus and then because of uterine atony decision was taken to apply B-Lynch suture. LSCS sutures were not reopened. Vesicouterine flap was already down and a large Mayo needle was used to blindly enter and exit the anterior uterine wall at sites 1 & 2 and the suture then looped over the fundus as described above. It then entered and exited the posterior uterine wall at sites 3 and 4. The suture again was looped over the fundus and inserted blindly in the uterine cavity at site 5 and exited at site 6 (avoided reopening of LSCS suture). The distended thin pliable uterine segment made the blind passage of suture easy to accomplish.

This is particularly useful if we are applying B-Lynch to control postpartum hemorrhage following vaginal delivery, thus avoiding a uterine incision.

#### Observation and Result

Age distribution of women is shown in Graph I , parity



Fig 2 : MRI of pelvic organ (three month post operative – normal finding)



Fig 3 : Hysterosalpingography (three month post operative – normal finding)

distribution in Graph II, gestational weeks in Graph III, presenting diagnosis in Graph IV and type of intervention in Graph V. Photographs 2, 3 and 4 are of the same woman. In my study, 57 cases (76%) were of emergency LSCS and 18 (24%) were elective LSCS. One unit of blood transfusion was required in 8 (10.67%) cases, two units in 54 cases (72%) and three units of blood transfusion was required in 13 (17.33%) cases. This suture technique was found to be very effective in controlling postpartum hemorrhage. Hysterectomy was required in two cases (2.67%). Post operative period was uneventful with no abnormality detected in 62 cases (82.66%) on follow up (MRI/HSG) Fig 2 & 3 after three months of delivery.

## Discussion

Published data suggest a variety of acceptable methods of treatment of postpartum hemorrhage, such as simple bimanual compression, ergonovine, which are safe and effective but occasionally prove inadequate or unsatisfactory. Various surgical methods to reduce pelvic pulse pressure have been described from simple surgical ligation of the uterine artery to more complicated uterine, ovarian and internal iliac artery ligation. These procedures need skill which may not normally be possessed by the duty registrar / resident faced with such

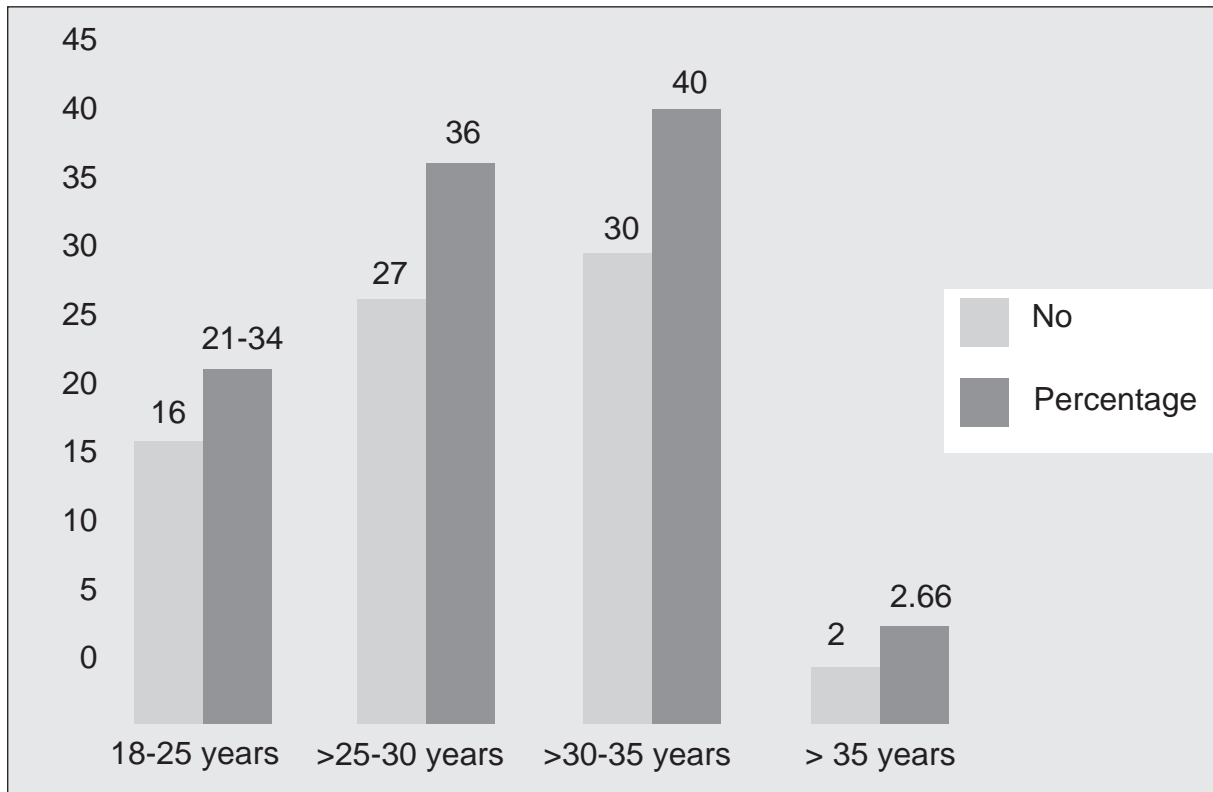
problems.

Wohlmuth et al<sup>4</sup> performed B-Lynch suture on 22 patients at cesarean section to control intractable postpartum hemorrhage, that did not respond to uterotonic agents. In the 12 instances, the B-Lynch Suture was the only intervention, whereas in 10, it was combined with vessel ligation. In our series B-Lynch was the only intervention in 62 (82.67%) cases and in the rest it was combined with other methods. Wohlmuth found that where the etiology of postpartum hemorrhage was uterine atony, the B-Lynch suture was more successful in 85% of the cases. Hysterectomy was avoided in 17/22 cases. In our series also, we found B-Lynch suturing more effective in controlling PPH due to uterine atony. In all the five cases (6.67%) of placenta previa, B-Lynch suture was not effective enough and was combined with cervicoisthmic apposition suture.

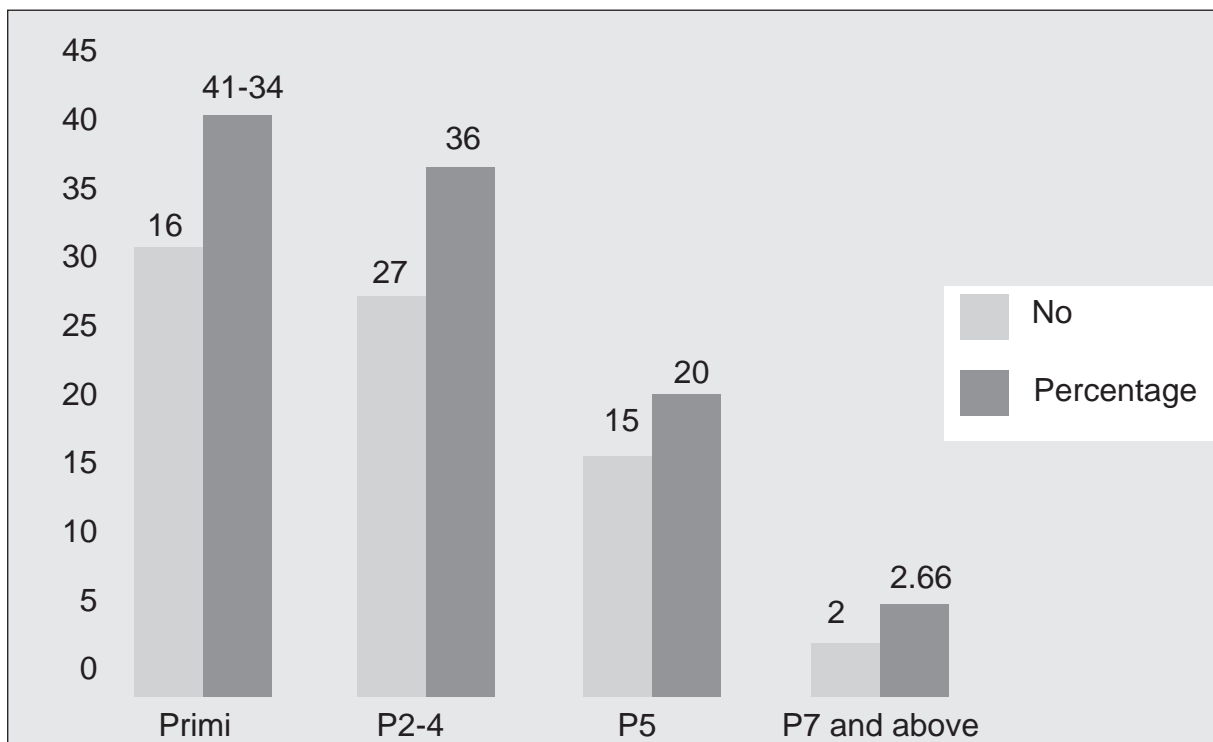
Faruqi et al<sup>5</sup> performed B-Lynch suture on 45 women to control PPH. They applied this suturing technique successfully in 44/45 patients with failure rate of 2.22%. In our series failure rate was 2.67%.

Choudry<sup>6</sup> performed B-Lynch suture on 17 patients with refractory PPH of whom 12 were applied at Cesarean section and five were a sequel to vaginal deliv-

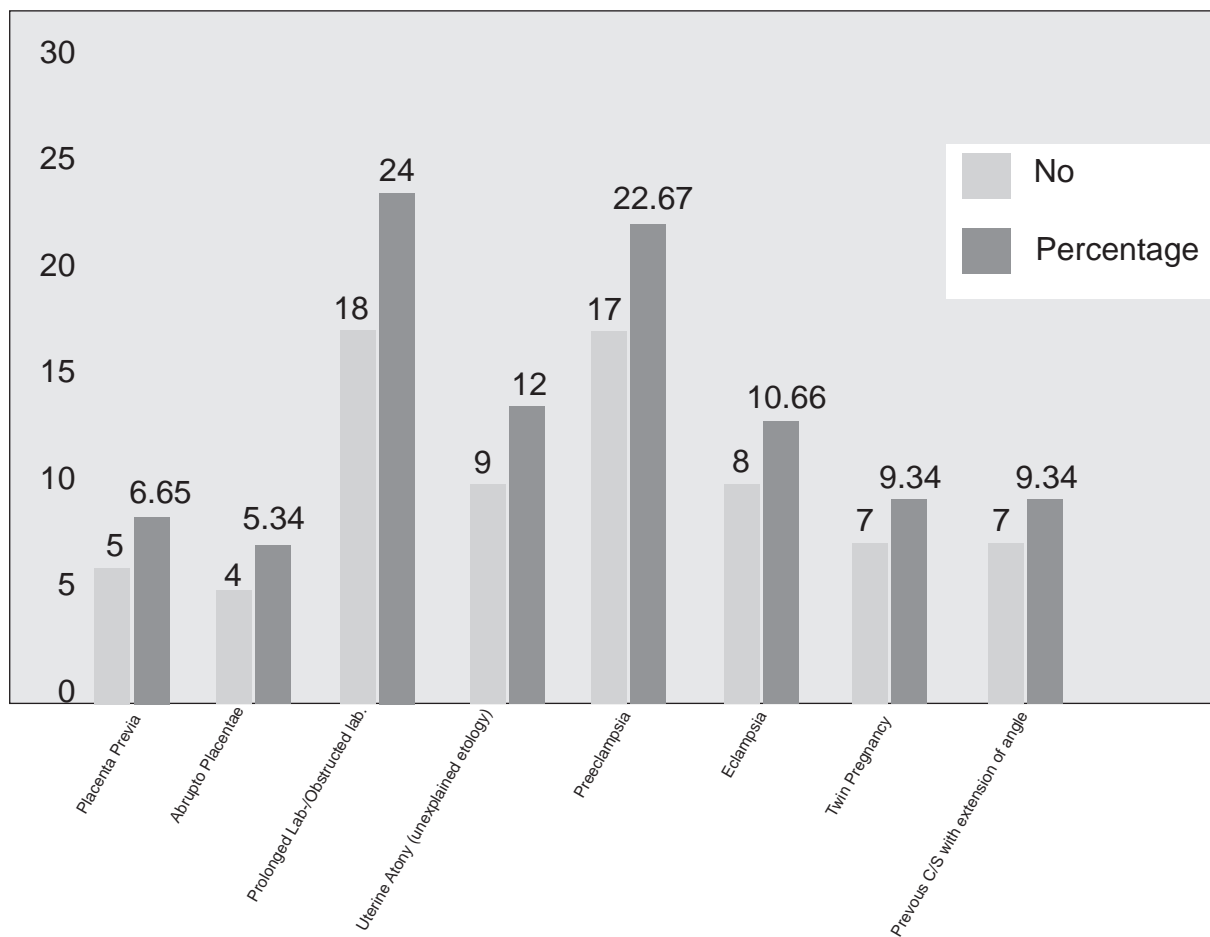
**Graph - 1 Age Distribution**



**Graph - II Parity Distribution**



**Graph - III Presenting Diagnosis**

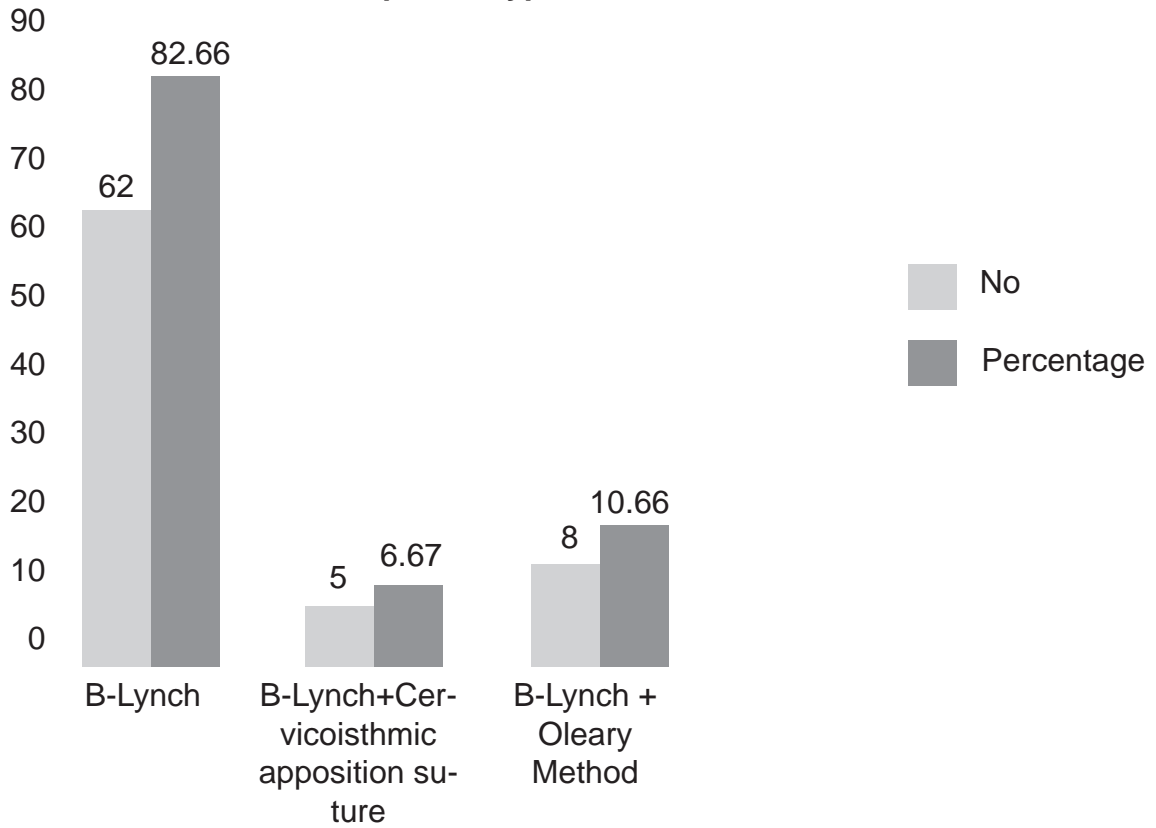


ery. The procedure was successful 14 patients. Failure of B- Lynch was more with placenta previa, previous CS and DIC. These conclusions were similar to our study. In our series B- Lynch was found to be not very satisfactory in controlling bleeding due to major degree of placenta previa but it was found satisfactory in controlling bleeding due to morbidly adherent upper segment placenta (placenta accreta). Similarly in cases of previous LSCS / obstructed labor with lateral extension of uterine incision, B-Lynch suture was combined with O'leary method of uterine artery ligation. Instead of the Lloyd Davies position (a combination of lithotomy and Trendelenburg position) we used frog leg position and found it completely satisfactory for assessing cessation of bleeding, as the operative field remains level instead of tilt, if the woman were in the steep Trendelenburg position. Out of the 75 cases, 62 (8.62%) were followed up with hysterosalpingography (HSG) after 3 months

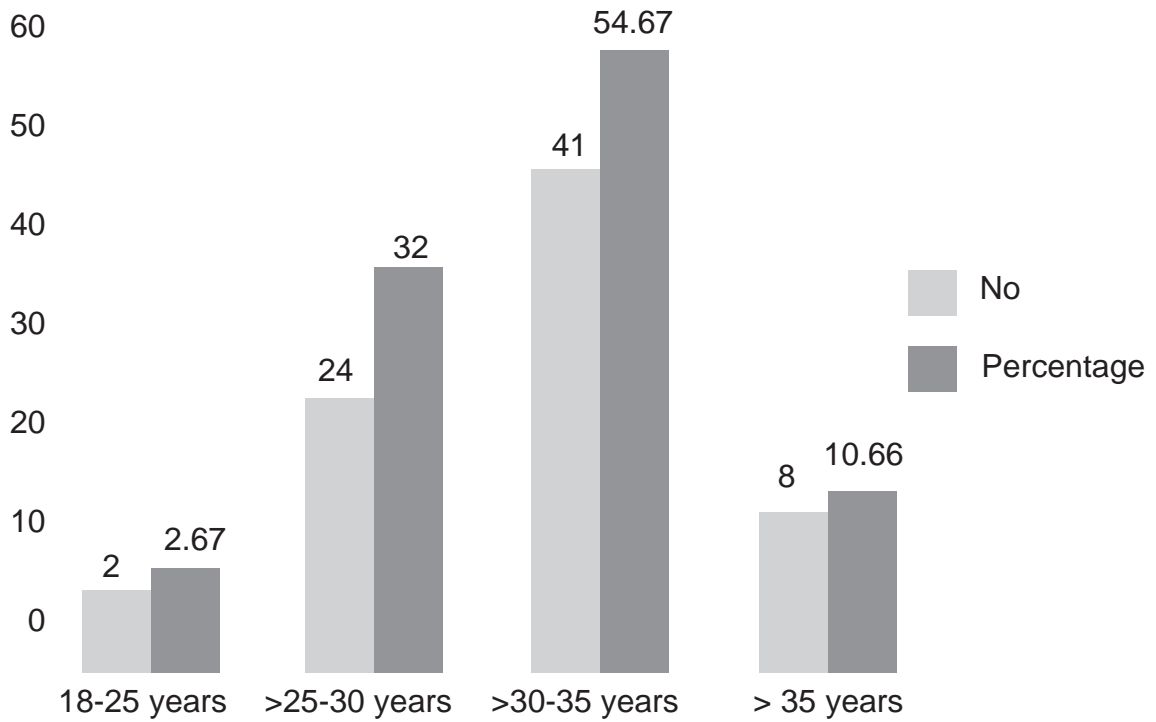
of delivery. Fifteen cases (20%) had undergone MRI also. All (62) had normal HSG and MRI (15 cases) Out of the 75 cases, we could follow only eight (10.67%) cases in their subsequent pregnancy. Out of these eight cases six had repeat CS and two had vaginal delivery (VBAC). In all the 6 cases of repeat CS, uterine anatomy was intact.

There is not much experience with this surgical technique so the patients should be followed up carefully in the subsequent pregnancy. The extreme degree of uterine compression with this technique (although life saving) raises concerns about uterine anatomic damage. In our series, among the 62 followed up cases, no uterine defects were detected, which might be secondary to rapid involution of the uterus lessening the suture tension on each postpartum day. To avoid prolonged compression effect on the uterus, it will probably be better

Graph - IV Type of Intervention



Graph - V Gestational Weeks



to use absorbable suture (Chromic catgut No 2) instead of using delayed absorbable or unabsorbable suture.

### Conclusion

B-Lynch suture is simple, less time consuming and very effective method of controlling life threatening hemorrhage especially due to uterine atony. The unsatisfactory outcome of B-Lynch suture was more with placenta previa, and PPH due to uterine angle extension. It is very effective in compressing upper uterine segment but not much satisfactory in creating tamponade effect on lower uterine segment. It is a life saving, fertility preserving and cost effective method to control PPH.

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