Effectiveness of uterine compression suture as a conservative measure to control post-partum haemorrhage: At a secondary care hospital

Tahmina Yousaf[1], Tahira Khalid[2]

ABSTRACT

Objective: To assess the effectiveness of uterine compression suture to control postpartum haemorrhage.
Study Design: Prospective experimental case series.
Place and Duration: From 1st April, 2014 to 30th April, 2017 at the Labour Ward of Federal General Hospital, Chak Shahzad, Islamabad.
Methodology: All women who went into postpartum hemorrhage (PPH) after vaginal delivery or cesarean section were selected. B lynch suture was applied by obstetrician on call. Patient was kept in high dependency area for 24 hours with close monitoring. Demographic characteristics, amount of blood loss, type of intervention used to arrest bleeding and underlying cause of bleeding were noted. All cases were discharged on fifth day. They were followed up till 3 months postpartum for development of complications like secondary post-partum haemhorrhage and infections.
Results: A total of 20 women underwent postpartum haemorrhage during the study period. Demographic characteristics showed that 55% of patients were young and 70% were primigravida. 70% had gestational age of 37-40 weeks. Commonest cause of haemorrhage was uterine atony (50%). Average blood loss of 1000-1500ml was noted in 45%, while 35% had blood loss range of 1500-2000 ml. Sever postpartum haemorrhage was seen in only (5%) patient, in our study. 80% required <3 blood transfusions and 20% had >3 transfusions. B Lynch suture was the only intervention in 65% of study patients while 35% had bilateral uterine arteries ligation along with application of B Lynch suture. In 70% of study patients B Lynch suture was applied during lower segment cesarean section while in 30%, emergency laparotomy was performed after vaginal delivery. Success rate of B Lynch application was 100%.
Conclusion: B Lynch compression suture is effective in controlling massive haemorrhage in a very short time and success rate was 100%.
Keywords: Pregnancy, Postpartum haemorrhage, Uterine atony, Uterine compression suture, B Lynch suture.

How to Cite This:
Yousaf T, Khalid T. Effectiveness of uterine compression suture as a conservative measure to control post-partum haemorrhage: At a secondary care hospital. Isra Med J. 2019; 11(3): 133-136.

INTRODUCTION

Postpartum Haemorrhage (PPH) accounts for 30% of maternal deaths related to pregnancy and is the major threat to the maternal life during child bearing years. Leading etiological factor being responsible for 60-70% cases of post-partum haemorrhage, is the uterine atony followed by placental abruption, placenta increta, accrete, percreta, uterine inversion and uterine rupture[1].

1. Assistant Professor of Obstetrics and Gynaecology, Federal Medical and Dental College Islamabad.
2. Associate Gynecologist, Federal General Hospital, Chak Shahzad, Islamabad.

Correspondence to:
Tahmina Yousaf
Associate Professor,
Federal General Hospital, Chak Shahzad, Islamabad.
Email: tahmina.farrukh@yahoo.com

Received for Publication: 22-05-18
Accepted for Publication: 12-06-19

Traditionally, when pharmacological measures to arrest post-partum haemorrhage had failed, the options available to the surgeon are limited and includes ligation of pelvic arteries and hysterectomy. Angiographic arterial embolization is a new approach to control haemorrhage and it was first described in 1979 and widely used at centers where facilities for interventional radiologist are available[2].

Uterine compression suturing technique was first performed in 1989 by Christopher B-Lynch. This suture aims to control bleeding by reducing pelvic pulse pressures, the principle that underlies surgical ligature and radiologically guided embolization of pelvic arteries. The B-Lynch suture achieves this by exerting continuous vertical vascular compression on the uterus[3]. The main advantage of the suture is its simplicity as application is far less surgically complex than ligation of pelvic arteries or hysterectomy; neither does it require involvement of interventional radiologist, whose expertise may not be available immediately. The suture boasts good efficacy with high success rate of >90% in previous studies[4,5]. Its effectiveness can be assessed prior to its application by applying bimanual compression. If this appears to control haemorrhage, it can be assumed that the B-Lynch suture, when applied, will have a

similar effect. The only drawback is that laparotomy is required, but benefits outweigh the complications related to hysterectomy. In the recent years, increasing trends have been seen in applying the uterine compression suture as a conservative measure to control and stop PPH. The theory behind this technique is the mechanical compression of uterine vascular sinuses that prevents further engorgement and pooling of blood in uterine vessels, ultimately controlling the severity of ongoing haemorrhage.

Purpose of this study is to test the efficacy of B-Lynch suture as a conservative surgical measure to arrest postpartum hemorrhage, at a center with limited resources. If the expertise to apply compression sutures are available at low resource centers, then the need for referrals to the tertiary care centers will be reduced. Eventually, maternal morbidity and mortality will be reduced by avoiding delays that we usually encounter during referral. This study was conducted with an objective to assess the effectiveness of uterine compression suture to control postpartum haemorrhage.

METHODOLOGY

This experimental case series was conducted at Federal General Hospital, Chak Shahzad, Islamabad from 1st April 2014 to 30th April 2017. All pregnant females who underwent postpartum hemorrhage (blood loss of 1000ml) during the study period were selected by consecutive non random sampling. Women with Secondary PPH, PPH due to mechanical causes like tears and uterine rupture and PPH due to pre-existing coagulation defects like thrombocytopenia were excluded from the study. Verbal consent was obtained. A detailed medical history was sorted from patient/attendants to recognize any contraindication for use of various uterotonics. Primary postpartum hemorrhage was defined as loss of more than 500 ml of blood from genital tract after vaginal delivery or lower segment cesarean section. For the study purpose, blood loss in excess of 1000ml after vaginal delivery or cesarean section was considered as an indication for application of B-Lynch suture, after the pharmacological measures to control life threatening hemorrhage had failed. B-Lynch suture was applied by the obstetrician (Senior Registrar/Assisstant Professor) on call. The test of potential efficacy for B-Lynch suture was performed by simple bimanual compression after exteriorizing the uterus. If this maneuver reduced the blood loss, then B-Lynch suture was applied with chromic catgut no-2, using a classical technique.

Blood loss was measured by collecting the blood and clots in a kidney tray of 1000 ml capacity in all the patients. A fist size clot was measured as equal to 500 ml of blood loss. Blood in suction bottle and all the soaked mops were added for blood loss estimation and estimated amount of amniotic fluid was subtracted from total blood loss estimation. Hemoglobin level was estimated before and 24 hours after the application of suture. Patient was kept in high dependency unit for 24 hours with close monitoring of pulse, blood pressure, intake output, bleeding per vagina and uterine fundal height were observed closely. Blood was transfused depending on intraoperative blood loss and patient's post-procedure Hb%. The amount of blood loss, need for blood transfusion and the need for additional surgical methods like uterine artery ligation and decision to perform hysterectomy were studied in all cases. For analysis, blood loss was categorized further as mild (1000-1500ml), moderate (1500-2000ml), sever (2000-2500ml) and massive (>2500ml). Similarly patients were divided into two groups depending upon the number of transfusions required (< 3 and > 3 transfusions).

All cases were discharged on fifth day. They were followed up till 6 weeks postpartum for development of complications like infection, secondary PPH.

Data Analysis: Data was entered on pre-designed performa and was analyzed on SPSS version 11. Frequencies and percentages were calculated for all study parameters.

RESULTS

During the study period, 20 women were selected for the application of B Lynch suture. Demographic characteristics showed that 55% of patients were of younger age group (21-25 years) and 70% were primigravida. Two third of women (70%) had gestational age of 37-40 weeks.

Indications for application of B Lynch suture were uterine atony in 12(60%), prolonged labour 03(15%), placental abruption 01(5%), muliparity 03(15%), and good size baby in 02(10%). (Table-I)

Table-I: Etiological factors for PPH. (N=20)

Cause of bleeding.	Number (%)
Uterine Atony	12 (60%)
Prolonged labour	03 (15%)
Multiparity	03 (15%)
Good size baby	02 (10%)

Out of 20 total patients, 09(45%) had average blood loss of 1000-1500ml, 07(35%) had 1500-2000 ml and 03(15%) lost 2000-2500ml. Massive heamorrhage with estimated blood loss of more than 2500 ml was seen in only 01(5%) patient. (Table-II)

Table-II: Amount of blood loss (N=20)

Blood loss(ml)	Number (%)
1000-1500	09 (45%)
1500-2000	07 (35%)
2000-2500	03 (15%)
>2500ml	01 (05%)

More over 16(80%) required <3 blood transfusions and 04(20%) had >3 transfusions. In 14(70%) patients, B Lynch suture was applied during lower segment cesarean section while in 06(30%) had to proceed to laparotomy for application of compression suture.

B Lynch suture was the only intervention in 13(65%) of study patients while 07(35%) had bilateral uterine arteries along with application of B Lynch suture. (Fig-1)

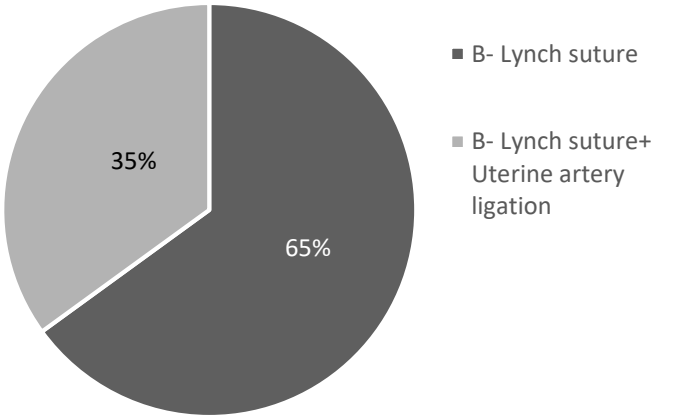

Fig - 1: Type of interventions used to control hemorrhage. (N=20)

All the patients remained stable and discharged on 5th post operative day so success rate of B Lynch application is 100% in the present and hysterectomy was not required in any case. No complication was observed on follow up of patients at 6 weeks and 6 months. Uterine artery ligation

DISCUSSION

This study reports 20 cases of uterine compression suture from a secondary level hospital, at peripheral area of Islamabad. In all these cases B-Lynch suture was applied when medical management failed to arrest bleeding. Timely application of B Lynch suture not only helped to prevent a major surgery with all its associated morbidities but also saved the precious lives of these women by avoiding all the delays that might have encountered on their way to the referral hospital for hysterectomy.

Massive haemorrhage is the most important leading cause of maternal death in developing countries[6]. In the present study B Lynch suture alone successfully controlled bleeding in 13(65%) and in 07(35%) cases bilateral uterine arteries were also ligated. Similar results were seen in a study by Wohlmouth et al who applied B Lynch alone in 10 patients and B Lynch and uterine artery ligation in 12 patients[7].

The average blood loss was 1000-1500 ml in 9 (45%) and 1500-2000 ml in (35%) of patients in our study which was much less than in studies by Allahdin et al[8] and Nanda et al[9]. This might be the result of difference in the threshold to decide for uterine compression suture when medical management fails in achieving adequate uterine response. This finding also explains that timely application of B-Lynch sutures decreases blood loss and need for transfusion.

Major indication for application of compression suture in our study was uterine atony (50%). Etiological factor behind PPH due to prolonged labour, good size baby and multiparity is also uterine atony indirectly. This observation was consistent with previous studies (Vachhani M et al) which showed uterine atony as the major reason for application of B Lynch suture[10]. Success rate of B Lynch, in our study was 100% and similar results were appreciated in study by Koh et al and Nalini et al. 11, 12 None of the patients in both studies required hysterectomy, however sample size in these studies was small 7 and 6 respectively. Success rate with B-Lynch in other studies ranged from 80 to 95 %. In 2005, Price and B-Lynch presented a review of 15 published reports, which included 46 cases with two failures and success rate of approximately 95.7%[13].

In the present study, 70% of patients B Lynch suture was applied after cesarean section and 30% had it after vaginal delivery. Choudry et al similarly applied B Lynch on 12 patients after lower segment cesarean section and 5 patients after normal delivery and it was successful in 82% of patients[14].

Previous literature shows minimal risk of complications following application of compression sutures. None of the patients developed any complications in the present study. This finding was similar as in the study by Gerli et al where out of 75 cases, 62 were followed up till 3 months and no significant complication was noted[15]. Kalkal et al[16] and several other studies reported the erosion of a B-Lynch suture through the uterine wall at 6 weeks postpartum. Few studies described various complications like uterine ischemia and pyometra, fever and wound dehiscence, in a very small percentage of patients. During our study we could not appreciate these complications on short term follow up[17-20].

B Lynch compression suture is an effective method in controlling massive haemorrhage in a very short time. It has the advantage of easy and rapid application and learning curve is very short. So it should be taught to all the trainee doctors and should be attempted when medical measures fail to control on going hemorrhage.

CONCLUSION

B Lynch compression suture is effective in controlling massive haemorrhage in a very short time and success rate was 100%.

LIMITATIONS

This study has certain limitations. It was designed at a secondary level hospital where we have less number of patients due to limited resources. So we could report only 20 cases of post-partum hemorrhage. Due to the vital importance of preventive and interventional techniques to control post-partum hemorrhage, we cannot deny the paramount importance of this study which reflects the situation in the peripheral area of federal territory. Even smaller studies can contribute to the reduction of maternal mortality from post-partum hemorrhage in a country with high maternal mortality parameters. In the literature we were able to report the studies with only 6 and 7 study patients. We recommend that study should be repeated with adequate number of patients.

ACKNOWLEDGEMENT

I acknowledge the help and support of Dr. Sadia Irum, Dr. Uzma Javed, Dr. Naima Lodhe, Dr. Fatima MIshal, Dr. Tahira Aziz, Dr. Tahira Khalid and Qurat ul Ain.

CONTRIBUTION OF AUTHORS

Yousaf T: Data collection, Literature review, Manuscript writing, Data interpretation, Data analysis
Khalid T: Conceived idea, Designed research methodology, Data analysis, Manuscript writing

Disclaimer: None.
Conflict of Interest: None.
Source of Funding: None.

REFERENCES

1. Kirby JM, Kachura JR, Rajan DK. Arterial embolization for primary postpartum hemorrhage. J Vasc Interv Radiol 2009;20:1036-45
2. Mallappa Saroja CS, Nankani A, El-Hamamy E. Uterine compression sutures, an update: review of efficacy, safety and complications of B-Lynch suture and other uterine compression techniques for postpartum hemorrhage. Arch. Gynecol. Obstet. 2009;28(4):581–88.
3. Allam MS, Lynch C. The B-Lynch and other uterine compression suture techniques. Int Gyaenocol. Obstet. 2005; 89: 236-41
4. Zheng J, Xiong X, Ma Q, Zhang X. A new uterine compression suture for postpartum haemorrhage with atony. BJOG.2011 Feb;118(3):370-74
5. Vachhani M, Virkud A. Prophylactic B-Lynch suturing emergency caesarean section in women at high risk of uterine atony: A pilot study. Internat J Gyne Obst. 2007;7(1):114-18
6. Khan KS, Wojdyla D, Say L, Gulmezoglu AM, Van Look PF. WHO analysis of causes of maternal death: a systematic review. Lancet. 2006; 367:1066-74.
7. Wohlmouth CT, Gumbs J, Quebral-Ivic J. Int J Fertile Women Med 2005;50(4):164-73.
8. Allahdin S, Aird C, Darielian P. B-Lynch sutures for major primary pph at caesarean delivery. Obstet Gynecol. 2006:26(7). 639-42
9. Nanda S, Singhal SR. Hayman uterine compression stitch for arresting atonic postpartum hemorrhage: 5 year experience. Taiwan J Obstet Gynaecol.2011; 50(2):179-81
10. Vachhani M, Virkud A. Prophylactic B-Lynch suturing emergency caesarean section in women at high risk of uterine atony: A pilot study. Internet J Gyne Obst. 2007;7(1):1-8
11. Koh E, Devendra K, Tan L. B-Lynch suture for the treatment of uterine atony. Singapore Med J. 2009;50(7):693-97
12. Nalini N, Singh JK. B-lynch suture- an experience. J Obstet Gynaecol. 2010;60(2):128-34.
13. Price N, B-Lynch C. Technical description of B-Lynch suture for treatment of massive postpartum hemorrhage and review of published cases. Int J Fertil 2005;50:148–63
14. Choudry A., Mirza Z. The B Lynch suture technique for the control of massive PPH because of uterine atony. Ann Park Inst Med Sci. 2005;1:4–6.
15. Gerli S, Favilli A, Giordano C, Pericoli S. Fertility after" only B-Lynch" suture: a case report and literature review. Taiwan J Obstet Gynaecol 2013;52(1):110-112
16. Kalkal N, Sarmalker MS, Nayak AH. The effectiveness of b-lynch sutures in the management of atonic postpartum haemorrhage during section. Int J Repro Contracept Obstet Gynecol 2016;5:2915-20.
17. Ali MK, Badee AY, Abbas AM, Shazly AS. Novel technique for modified B-lynch suture for the control of atonic postpartum haemorrhage**.** Aust N Z J Obstet Gynaecol, 2013;53:94-97
18. Rathat G, Do Trinh P, Mercier G, Reyftmann L, Dechanet C, Boulot P, et al. Synechia after uterine compression sutures. Fertil Steril 2011;95: 405-409.
19. Sentilhes L, Gromez A, Trichot C, Ricbourg-Schneider A, Descamps P, Marpeau L. Fertility after B-Lynch suture and stepwise uterine devascularization. Fertil Steril 2009;91:934-36.
20. Sentilhes L, Gromez A, Marpeau L. Fertility after pelvic arterial embolization, stepwise uterine devascularization, hypogastric artery ligation, and B-Lynch suture to control postpartum hemorrhage. Int J Gynaecol Obstet 2010;108:249-51