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ATONIC PRIMARY POSTPARTUM HAEMORRHAGE;

THE EFFICACY OF B-LYNCH SUTURE IN MANAGEMENT DURING CESAREAN SECTION

Maimoona Qadir[1], Sohail Amir[2]

1. MBBS, FCPS Gynae, Registrar Gynae C Unit Khyber Teaching Hospital, Peshawar.
2. MBBS, MS Neurosurgery, Assistant Professor Neurosurgery Naseer Teaching Hospital, Peshawar.

Correspondence Address:
Dr. Maimoona Qadir
MBBS, FCPS Gynae,
Registrar Gynae C Unit
Khyber Teaching Hospital, Peshawar.
dr.maimoona1983@gmail.com

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ABSTRACT… Background: Surgical methods of reduction of bleeding from uterus by inserting compression sutures have been developed to reduce the need for emergency hysterectomy in patients with atonic primary postpartum haemmorhage. **Objectives:** To determine the efficacy of B-Lynch brace suture in the management of atonic primary postpartum haemmorhage during cesarean section. **Study Design:** A prospective observational study. **Setting:** Gynaecology Department, Khyber Teaching Hospital, Peshawar. **Period:** 1st January 2016 to 31st December 2016. **Methodology:** 14 patients who underwent B-lynch suturing for atonic PPH during cesarean section, nonresponsive to medical line of management. Patient's age, parity, booking status, birth weight of newborn, blood transfusion and effectiveness of procedure was noted. The patients were followed up for 6months for any postprocedural morbidity. **Results:** In all 14 patients with atonic primary postpartum haemmorhage with failed medical treatment, B-lynch suture was applied. 10(71.42%) belonged to 21-30 years age group. 8(57%) were multiparous and 10(71.42%) were non booked. Birth weight of 9(52.94%) cases was 2-3kg.4-5 units of blood was transfused in 6(42.8%) cases. Most common indication for cesarean section was prolonged labor in 4(28.57%), followed by placental abruption and multiple pregnancy in 3(21.42%) each. Success rate of this procedure was 92.85%. It failed in one patient who ended up in hysterectomy. Patients were followed for 6 months and no postprocedural morbidity was seen. **Conclusion:** This is a beneficial procedure for surgical treatment of atonic uterus especially in young patients where fertility issues are of concern, and has added advantage of less time of application, less bleeding and lesser skill requirement.

Key words: Atonic postpartum haemmorhage, B-Lynch, Placental abruption, Lower segment cesarean section, Coagulopathy, Uterine inversion.

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INTRODUCTION

Excessive bleeding affects approximately 5 to 15% of women after delivery.[1] Literature says that 600,000 to 800,000 women die during delivery per year[2], and postpartum haemmorage is responsible for 150,000 of these deaths annually, and causes morbidity in 200,000 women each year.[3]

Conventionally, postpartum haemmorage is defined as bleeding in excess of 500ml in vaginal delivery or 1000cc in caesarean section. The common causes include uterine atony, lower genital tract lacerations, retained placenta and placental fragments, coagulopathy, uterine inversion and ruptured uterus.[4] The most common consequences of PPH include hypovolemic shock, disseminated intravascular coagulopathy, renal failure, hepatic failure and adult respiratory distress syndrome.[5]

When persistent and unresponsive uterine atony occurs at the time of cesarean section, the obstetrician is usually committed to direct surgical techniques, including ligation of uterine, ovarian and internal iliac vessels,[6] and a variety of direct suturing techniques aimed at oversewing[9,10] or compressing the anterior and posterior walls of uterus.[7] The compression suture described by B-lynch et al[4] is particularly applicable to cases in which a lower segment cesarean section has been performed. A number of studies suggest that this technique may be used as an alternative to hysterectomy.[8] Surgeons have adopted

this procedure because of its simplicity and effectiveness.[9]

The B-lynch suture is the most well known uterine compression suture since the first published series in 1997, and described over sewing of the uterus with a continuous suture to apply ongoing compression.[10] Since then, the technique has been adopted for control of bleeding in severe PPH due to uterine atony as well as placenta previa/accrete.[11]

The theory behind this technique is mechanical compression of uterine vascular sinuses that prevent further engorgement with blood and continuous haemmorhage. Our study aims at evaluating the effectiveness of B-lynch compression suture in the control of primary PPH and its related morbidity.

MATERIALS AND METHODS

This prospective observational study was conducted at Gynaecology and Obstetrics Department of Khyber Teaching Hospital, Peshawar from 1st January 2016 to 31st December 2016. A total of 14 cases were enrolled in the study. Inclusion criteria was all women of any age or parity, who developed atonic postpartum haemmorage during lower segment cesarean section and B-lynch suture was applied following failure of first line medical treatment. Exclusion criteria was patients with postpartum haemmorhage after vaginal delivery, secondary PPH and PPH due to causes other than atonicity.

Approval from hospital ethical committee was taken. Patients were informed about the purpose of study and written informed consent was taken. Patient's age, parity, gestational age, indication of cesarean section and cause of PPH was recorded and entered in a structured proforma. A detailed medical history was taken to exclude any contraindication for use of any uterotonics. B-lynch suture was applied only when medical line of treatment had failed. Medical management included oxytocin as intravenous bolus of 5 units and rapid infusion of 40 units in 1L Ringer lactate. Ergometrine 0.25mg by intramuscular injection was given after excluding hypertensive and cardiovascular disorders.15-methyl prostaglandin F2 alpha 0.25mg was given both intramuscularly and intramyometrially and misoprostol tablets 800 micrograms per rectally. If still bleeding persisted, the test of potential efficacy of B-lynch suture application was done by bimanual compression after exteriorization of uterus. If blood loss reduced after that, B-lynch suture was applied, using no.2 chromic catgut.

The blood loss was estimated by measuring the amount of blood suctioned out in suction apparatus after placental delivery and by mops soaked in blood. The clots and blood were collected in separate kidney tray and measured. Bleeding per vaginum and uterine contour was observed from24 hours post procedure. Hb% was repeated 24 hours after procedure. Blood was transfused depending upon intraoperative blood loss and post procedural Hb%. Patients were kept in high dependency unit for 24 hours and vital monitoring including careful watch on bleeding per vaginum was done.

All cases were discharged on tenth postoperative day after removing skin stitches. They were followed after one week, then after one month and then six months later. At each visit, menstrual history was taken and complaints like pain in abdomen or foul smelling lochia was recorded. General and pelvic examination done to exclude any complication like ischemic necrosis of the uterus or pyometra.

Statistical analysis was done using SPSS version 20.0.Mean and standard deviation were calculated for numerical variables like age, gestational age and parity and frequency and percentages were calculated for categorical variables like indications for cesarean section and success rate of procedure.

RESULTS

Total number of patients to whom B-lynch suture was applied was 14.Four age groups were created, one patient was less than 20 years age, 10(71.42%) fell into 21-30 years age group, 2(14.28%) patients were in 31-40 years age group and one patient was more than 40 years

age. Mean age was 27.6 years. 8(57%) cases were multiparous and 4(28.5%) were grand multiparous. 10(71.42%) were unbooked cases and 4(28.57%) were booked. Birth weight of babies delivered was less than 2 kg in 4(23.5%), 2-3 kg in 9(52.94%), and 2(11.76%) each for 3.1-4 and more than 4kg birth weights. (Table-I)

Amongst the indications of the cesareans sections where B-lynch suture was applied, Prolonged labor was most common being in 4(28.57%) cases, placental abruption and multiple pregnancy was indication in 3(21.42%) each cases. Chorioamnionitis and good size babies were responsible for 2(14.28%) each cases.

Blood transfusion was done in all cases. 1-3 units of blood was transfused to 5(35.7%), 4-5 units were transfused to 6 (42.8%) and more than 5 units of blood were transfused to 3(21.42%) patients.

B-lynch suture was successful in controlling postpartum haemmorhage in 13(92.85%) cases. It failed in one case which ended up in hysterectomy.

No mortality or morbidity while in hospital or on follow up was seen in any case of our study.

Demographic Variable	Frequency	Percentage
Age		
<20 years	1	7.14%
21-30 years	10	71.42%
31-40 years	2	14.28%
>40 years	1	7.14%
Parity		
Primiparous	2	14.2%
Multiparous	8	57%
Grandmultiparous	4	28.5%
Booking Status		
Booked	4	28.57%
Unbooked	10	71.42%
Birth Weight	(n=17 as 3 were twins)	
<2 kg	4	23.5%
2.1-3 kg	9	52.94%
3.1-4 kg	2	11.76%
>4kg	2	11.76%

Table-I. Demographic characteristics. (n=14)

Indication	Frequency	Percentage
Prolonged Labor	4	28.57%
Placental abruption	3	21.42%
Multiple pregnancy	3	21.42%
Chorioamnionitis	2	14.28%
Good size baby	2	14.28%
Total	14	100%

Table-II. Indications for cesarean sections. (n=14)

No. of blood units	Frequency	Percentage
1-3	5	35.7%
4-5	6	42.8%
>5	3	21.42%
Total	14	100%

Table-III. Blood transfusions. (n=14)

DISCUSSION

Primary PPH is an obstetrical emergency which can ultimately lead to emergency hysterectomy in patients with treatment resistant, life threatening bleeding. Surgical methods of controlling PPH by inserting uterine compression sutures have been developed to reduce the incidence of emergency hysterectomy and to preserve fertility in these patients.

Mean age of patients in our study was 27.6 years and the most prevalent age group was 21-30 years. This is close to the study done by El-Sokkary et al in Cairo, Egypt where they found that the mean age was 29.3 years.[12] Similarly, Nalini et al reported 28 years mean age.[13] On the contrary, Koh et al reported 35 years as the mean age[14], which can be explained by elderly gravid uterus leading to atonicity and thus PPH. The results of our study regarding age were consistent with several other studies.[15,16]

Majority of patients (57%) in our study were multiparous and non booked (71.42%) with most of them induced and augmented at peripheral areas by untrained Dais and Lady Health Visitors. These results were almost same as those noticed by Sheikh et al in their study where they observed that 51.4% of their study population was multiparous and 74.3% were unbooked cases hailing from rural areas.[17]

Mean birth weight in our study was 2.9 kg. Kalkar

et al observed a mean birth weight of 2.7kg in their study with most of the babies weighing between 2-3 kg.[18] 52.94% of our babies belonged to this range of birth weight. In comparison average birth weights of 3.49 and 3.5 kg were reported by few authors.[12,15] Our average birth weight might have got lessened due to the three twin deliveries where uterus got atonic and babies were of 2-3kg weight.

Clark et al in their case series of emergency hysterectomy for obstetric haemmorhage, noted a significant association with prolonged labor, augmented labor, chorioamnionitis, and a lack of uterine response to oxytocin and ergometrine.[19] In our study too, we noticed a significant number of cases (28.57%) had caesarean sections due to prolonged labor. Kalkal N et al also reported prolonged labor as the most common indication for cesarean sections where B-lynch suture was applied for atonic uterus.[18] This was followed by Placental abruption which was also noticed to be an important indication in the study done by Kanwal M et al[20] where they noticed 25% of their caesareans being done for this indication.

The success rate of B-lynch suture in our study was 92.85%, where out of 14, only one patient ended in caesarean hysterectomy. B-lynch suture has been declared highly successful in earlier studies where success rates of 100%[18,21,22], 97.3%[13], 97.78%[25], 93.5%[23] and 85%[24] has been reported.

No mortality or morbidity due to this procedure was seen in our study on follow up for six months. Whereas it has been shown by the studies that uterine necrosis is a rare complication which can occur as early as day 8 or may be delayed till 3 weeks postprocedure.[26]

Various modifications of B-lynch suture have been reported. In 2000, Cho et al described a multiple square suturing technique to approximate the anterior and posterior walls of uterus. In 2002, Hayman et al reported two vertical apposition sutures together with two transverse horizontal cervico-isthmic sutures. In 2005, Hwu et al used two parallel vertical compression sutures placed in lower segment of uterus. Pereira proposed a combination of longitudinal and transverse sutures applied with superficial intramyometrial bites in 2005. Most recent is Bhal technique, which entails two sutures, with knots tied in antero-inferior margin of lower uterine segment.[27]

There were several limitations in our study. First, the sample size was very small. Secondly, only Khyber Teaching Hospital was taken as the study place, inclusion of other hospitals from same locality could have given better idea about the efficacy of this procedure due to a larger sample size but higher observer bias.

CONCLUSION

B-lynch brace suturing technique has proved invaluable in the control of primary PPH as an alternative to hysterectomy. The cost effectiveness of this procedure may encourage developing countries like ours to consider its application in cases where hysterectomy cannot be performed due to fertility or low parity issues and even in high parity cases where uterine preservation is aimed at.

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AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Maimoona Qadir	Conception & Design, Collection & Assembly of Data, Analysis & Interpretation of Data, Critical revision of article for important intellectual content, Final approval and guarantor.	
2	Sohail Amir	Drafting of article, Statistical expertise.	