Original Article

Comparison of Intrauterine Balloon Tamponade and B Lynch Suture in the Management of Severe Postpartum Haemorrhage

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Abstract

Objective: To compare the success rate of intrauterine balloon tamponade and B Lynch suture for management of severe postpartum hemorrhage.

Methodology: The research included overall 104 individuals undergoing severe postpartum hemorrhage, aged between 20 and 35 years, and 36 to 42 weeks of gestational age. Patients with ruptured uterus, conception retirements, genital trauma, and any disorder of bleeding were excluded. Using the lottery technique, targeted subjects were randomly grouped into Group A and Group B (intrauterine balloon tamponade and B Lynch suture, respectively). Outcome factors such as bleeding control in less than 15 minutes following the procedure (success) were observed.

Results: The group-A females had a mean age of 27.69 ± 3.68 years and group B showed 27.60±3.65 years of mean age. The mean gestational age in both of the groups (A and B) was 39.98 ± 1.57 weeks and 40.04 ± 1.68 weeks respectively. Success rates in both of the groups (intrauterine balloon tamponade and B Lynch suture) were noted as 67.31% and 88.46% respectively; with a p-value of 0.009.

Conclusion: It was concluded that B-Lynch suture's success rate was more than the intrauterine balloon tamponade in managing the severe postpartum hemorrhage.

Keywords: Compression sutures, postpartum hemorrhage, hysterectomy.

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Introduction

Postpartum haemorrhage (PPH) is a likely blood loss above 500 ml and 1000 ml following vaginal delivery and following caesarean delivery, respectively.[1] Worldwide, PPH remains a predominant cause of maternal mortality and morbidity.[2] In underdeveloped countries, above 30 percent of maternal deaths are because of PPH.[3] However, through proper prevention, diagnosis and administration, PPH-associated maternal mortality can mainly be avoided.[3,4] Uterine atony is the commonest factor of PPH, however, a trauma to the genital tract (i.e. cervical or vaginal lacerations), retained placental tissue, uterine rupture, or disorders of maternal coagulation can also lead to PPH. Most PPH related maternal deaths can be avoided by preventing and treating PPH timely. Countries also require evidence-grounded support to upgrade their health strategies and to enhance their health-related outcomes.[6] In the management of PPH, First line treatment strategies include conservative therapy with uterotonic drugs (prostaglandins or

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oxytocin); second line treatment strategies involve uterine packing, compression of external uterine suture, and selective devascularization by ligation or embolization of uterine artery.[7,8] conservative management failure is mostly considered to require hysterectomy and currently, hysterectomy is a highly prevalent procedure for severe PPH arrest.[9]

Postpartum hysterectomy is correlated with complications of the long and short term, like blood loss, infection, other organ injuries, compromised wound healing, and fertility loss.[10] Peripartum hysterectomy is a PPH-associated severe complication and the woman's psychological recovery can be severely affected by it. Several trials have recently revealed increased rates of peripartum hysterectomy.[11,12] Vaginal birth following caesarean section, primary and repeated caesarean deliveries, and successive births appear to be correlated independently with enhanced peripartum hysterectomy risk.[12] Alternative processes like B Lynch (uterine compression) sutures or intrauterine balloon tamponade have become popular in preventing hysterectomy and its complications.[3,8,13-15] All intrauterine balloon catheters were originally intended to prevent bleeding from locations except for the uterus. Without pelvic surgery and potentially preservative fertility, postpartum hemorrhage may be avoided by B-Lynch sutures.[17] Postpartum haemorrhage, being a fatal complication of delivery, is correlated with high maternal morbidity and mortality, therefore this study has been carried out to evaluate the success rate of B Lynch suture and intrauterine balloon tamponade for the administration of severe postpartum hemorrhage among local females.

Methodology

This randomized controlled trial was carried out at the Department of Obstetrics & Gynecology, Bahawal Victoria Hospital, Bahawalpur from February 2014 to January 2015. All the subjects with severe postpartum haemmorhage in line with operational definition, aged between 20 and 35 years, with a parity of 2-5 in addition to 36-42 weeks of gestational age were included. All the patients with retained products of conception, genital tract trauma, perineal trauma, ruptured uterus and history of any disorder of bleeding were excluded. After taking informed consent the bbaseline investigations and urine complete examinations were carried out. All the patients were divided into 2 groups. Intrauterine balloon tamponade were implemented in Group A individuals by inserting 4 Foleys catheter of No. 24 via the cervix into the uterine cavity with an average 80 – 100 ml of balloon capacity. Warm saline was imparted into the balloons producing a complete volume of 320–400 ml of fluid. While B Lynch suture was implemented to the vagina in group B patients in the lithotomy position. Pfannenstiel incision was used to open the abdomen or to re-open the same incision if the woman had a c-section following which she bled. First, bimanual compression was introduced and an assistant simultaneously swabbed the vagina to verify optimal bleeding control. Supported by bi-manual compression the two extremes of suture were tightly pulled to minimize trauma and to assist or achieve compression. The suture was about 4 cm from the cornua and more or less vertical. If the bleeding was discontinued within 15 minutes following the operation, the surgery was regarded as successful. Hysterectomy was carried out when the bleeding continued after15 minutes of procedure and then the procedure was considered unsuccessful. The data was recorded via study proforma. All the data was entered and analyzed by SPSS version 16.0.

Results

The mean age of women in group A was 27.69±3.68 years and in group B 27.60 ± 3.65 years. The mean gestational age in group A was 39.98±1.57 weeks and in group B was 40.04±1.68 weeks. The mean parity in group A was 3.40±0.98 and in group B was 3.37±1.01. Table I.

The success rate within 15 minutes was seen 67.31% in group A (intrauterine balloon tamponade) and 88.46% in group B (B Lynch suture) with p-value of 0.009. Stratification of age groups and gestational age in both groups with respect to success showed a statistically significant difference among both groups of 31-35 years of age and >40 to 42 gestational age as shown in Table III.

Table I: Distribution for both groups according to Age, gestational age, and parity (n=104).

Variables	Group A (n=52)	Group B (n=52)	p-value
Age (years)	27.69±3.68	27.60 ± 3.65	0.917
Gestational Age (weeks)	39.98±1.57	40.04±1.68	0.884
Parity	3.40±0.98	3.37±1.01	0.788

Discussion

PPH-related morbidity and mortality are mainly preventable during pregnancy through professional care. Though, delays in detecting hemorrhage, delays in transportation to the suitable care point, and delays in obtaining the suggested therapy all correspond to elevated maternal mortality rates and PPH morbidity rates. In this study, the mean age of patients was 27.64 ± 3.65 years. Similarly, Yaqub U et al[18] found a mean age of 27 years with the majority of patients between 26 to 30 years of age. In another study stated that the mean age of the women was 30 years. In this study, the mean gestational age in our study was 40.01 ± 1.62 weeks and the majority of the patients 45 (43.27%) were >40 to 42 weeks of gestation. This shows that the risk of postpartum hemorrhage increases in patients with larger gestational age. These results were also coinciding with findings of Yaqub U et al[18] and Tirumuru S et al.[19] Although the study of Kanwal M et al[20] demonstrated that the mean age of women was 30.94+4.057 and mean gestational age was 37.63+1.088 weeks.

In this study, the success rate was within 15 minutes was lower 67.31% in the intrauterine balloon tamponade group as compared to 88.46% in the B Lynch suture group. Consistently Kanwal M et al[20] reported that the success rate of B Lynch sutures in PPH was 93.7 %. In a recent study of Yousaf T et al[21] mentioned that the success rate od B lynch sutures was 100%. Inconsistently Mohamed EH et al.[22] reported that there was no any significant deference in the success rate when compared the B-Lynch suture and bilateral uterine artery ligation in the management of PPH. However, Shazia et al[23] found similar findings as to the success rate of B Lynch suture in postpartum hemorrhage as 83%. Uterine tamponade means creating an intrauterine pressure higher than systemic arterial pressure to stop bleeding. There are different ways of producing uterine tamponade i.e. uterine packing, Sengstaken Blakemore oesophageal catheter, and Bakri Balloon Catheter. Based on previous expectations, they supposed that this technique will yield a similar rate of success in controlling atonic PPH besides reduction of the possible lethal sequences of compression on subsequent menstrual function and pregnancy. Apart from compression suture and balloon tamponade techniques, various fertility-preserving methods had been employed for patients with PPH, including pelvic devascularisation and radiological arterial embolization. Pelvic devascularisation includes ligation of the uterine artery and internal iliac artery, but such techniques require surgical expertise to apply and may be time-consuming. Complications such as broad-ligament haematoma, peripheral nerve ischaemia, and inadvertent ligation of the lower limb arteries have been reported with these techniques.[24,25]

Table II: Comparison of Success between both Groups (n=104).

		Group A (n=52)	Group B (n=52)	p-value
		N (%)	N (%)	
Success	**Yes**	35 (67.31%)	46 (88.46%)	0.009
	No	17 (32.69%)	06 (11.54%)	

Conclusion

This study concluded that success rate of B Lynch suture had higher success rate for management of severe postpartum hemorrhage as compared to intrauterine balloon tamponade. B Lynch suture

Table III: Stratification with respect to success (n=104).

		Group A (n=52)		Group B (n=52)		P value
		Success		Success		
		Yes	No	Yes	No	
Age groups (years)	20-25	10 (76.92%)	03 (23.08%)	12 (92.31%)	01 (7.69%)	0.277
	26-30	19 (67.86%)	09 (32.14%)	23 (85.19%)	04 (14.81%)	0.130
	31-35	06 (54.55%)	05 (45.45%)	11 (91.67%)	01 (8.33%)	0.043
Gestational age (weeks)	36-38	08 (88.89%)	01 (11.11%)	10 (100.0%)	00 (0.0%)	0.279
	>38-40	15 (71.43%)	06 (28.57%)	17 (89.47%)	02 (10.53%)	0.154
	>40-42	12(54.55%)	10 (45.45%)	19 (82.61%)	04 (17.39%)	0.042
Parity	2	09 (90.0%)	01 (10.0%)	10 (90.91%)	01 (9.09%)	0.943
	3	14 (73.68%)	05 (26.32%)	18 (90.0%)	02 (10.0%)	0.184
	4	08 (53.33%)	07 (46.67%)	11 (91.67%)	01 (8.33%)	0.030
	5	04 (50.0%)	04 (50.0%)	07 (77.78%)	02 (22.22%)	0.232

technique should be used as prime technique in these particular patients to reduce maternal morbidity and mortality due to severe postpartum hemorrhage. Moreover, hysterectomy could be avoided in these patients and this technique should be used routinely in our general practice for managing severe postpartum haemorrhage by fertility preserving method.

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