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Original Article

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Role of the Uterine Artery Ligation (UAL) in Control of Postpartum Hemorrhage

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ABSTRACT

Objective: T o determine the efficacy and safety of uterine artery ligation (UAL) in the control of Postpartum Hemorrhage at tertiary care Hospital.

Methodology: This cases series study was conducted at Gynecology and Obstetrics department Peoples University of Medical & Health Sciences for Women Nawabshah from January 2018 to June 2018. All the women age between 20-45 years, gestation duration at and beyond 34 weeks, intraoperative atonic postpartum hemorrhage, antepartum hemorrhage, adherent placental part after removal of the piecemeal of placenta with placental site bleeding and placenta accrete were included. After the failure of treatment from medical measures, the initial surgical approach of uterine artery ligation (UAL) was done. Efficacy was defined as positive when the patient improves or clinically doesn't develop any complications throughout admission after UAL. Safety was assessed by the appearance of side effects if any occurred after the procedure. All the information was collected by the study proforma and SPSS version 20 was used for the analysis of data.

Results: The mean age of the cases was 29.21±6.2 years. Most of the patients 59.2% were multiparous. Uterine atony was the commonest reason for the postpartum hemorrhage among 56.5% of women followed by adherent Placenta accreta 43.42%. Most of the patients 81.6% had no postoperative complications except for 11 patients, who had developed gaping of the wound from which they recovered and were discharged. Two patients required hysterectomy due to intractable hemorrhage and 1.3% mortality observed due to DIC.

Conclusion: Uterine devascularization by bilateral uterine artery ligation is a simple, effective, and safest initial surgical option with less blood loss and less surgical time for controlling postpartum hemorrhage during cesarean section.

Keywords: Postpartum hemorrhage, uterine artery ligation

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Introduction

Globally Postpartum hemorrhage accounts for 2–11%,[1] with increasing prevalence seen among developing countries. It is one of the commonest causes of maternal death throughout the world with an estimated death rate of 127,000 per year.[1,2] Postpartum hemorrhage is defined as the blood loss > 500ml blood loss during 24 hours after normal vaginal delivery and blood loss >1000ml after caesarean delivery.[3] In Pakistan it is the leading cause of death contributing to nearly one third of all deaths in seven years[4], however, rates vary in different parts (9.5%, 1.6%)[5,6], with higher rates usually seen among multiparous women than primiparous i-e; 32.4% compared with 10.6% for singletons.[1,5] To control massive or severe bleeding, a surgical approach is used by ligating uterine, ovarian artery, internal iliac artery and

B-lynch procedure in order of severity and cause. Uterine artery ligation (UAL) is the initial step of uterine devascularization. Nearly 90% of blood supply is controlled by ligating uterine vessels with no effect on obstetric reproductive outcomes and restoration of normal uterine circulation due to recanalization after temporary vascular occlusions. Recent studies also emphasize the use of simpler methods and a stepwise approach in the management of major obstetric hemorrhage (PPH).[9] Uterine artery ligation is associated with minimal complications and is being favored because of restoration of fertility even after surgery. Decrease in menstrual flow due to decreased perfusion just after uterine artery ligation but normal restoration of menstrual flow. Vascular occlusion is however temporary and recanalization soon is ensured with normal uterine circulation.[7] The fertility is also restored within one year after UAL.[6-9] No other complications have been seen and therefore it is the favored method in patients of reproductive age presenting with PPH. The study aimed to determine the outcome of uterine artery ligation in control of PPH to control morbidity, mortality from this life-threatening health problem.

Methodology

This case series study was conducted at Gynecology unit I at Peoples University of Medical & Health Sciences Nawabshah. The study was conducted from Jan 2018 to June 2018. A sample size of 76 patients was calculated by taking the prevalence of PPH 9.6%. Non-probability, convenient sampling technique was used. Females of age between 20-45 years, gestation duration at and beyond 34 weeks, intraoperative atonic postpartum hemorrhage, antepartum hemorrhage, adherent placental part after removal of the piecemeal of placenta with placental site bleeding and placenta accrete were included. Patients with a history of bleeding disorders, patients on heparin/warfarin, ruptured uterus, cervical trauma and hemodynamically unstable patients were excluded. Data was collected from patients of PPH admitted in Gynecology unit l at Peoples Medical College Hospital meeting inclusion criteria. Informed consent was taken from the patient or next to kin by the patient. After the failure of treatment from medical measures, the initial surgical approach of uterine artery ligation (UAL) was done and patients postoperatively were monitored during first 24 hours and followed up as outpatient in OPD on first and second week for delay healing of wound, anemia, restoration of menstruation and infections. All the data was collected by study proforma. Data analysis was done by using SPSS version 20.

Results

The mean age of the total 76 patients was 29.2 years. Most of the women were multiparous (59.2%) and (40.8%) were primiparous. The most common causes of postpartum hemorrhage were uterine atony 56.5% and adherent Placenta accreta 43.42%. (Table I)

Table I: Demographic characteristics of the patients (n=76)

Variables	Statistics
Age (Mean ± SD)	29.21±6.208 years
Parity	
Multiparous	45(59.2%)
Primiparous	31(40.8%)
Cause of Postpartum hemorrhage	
Uterine Atony	43 (56.5%)
Adherent Placenta accrete	33 (43.42%)

Out of all (14.5%) developed postoperative complications like gaping of the wound which was successfully managed and patients recovered. Bleeding was not controlled by uterine artery ligation in 2 patients who were turned into hysterectomy due to uncontrollable bleeding, and there was one mortality (1.3%) secondary to the development of disseminated intravascular coagulation. Figure 1&2

Fig:1. Post-operative complications of the patients (n=76)

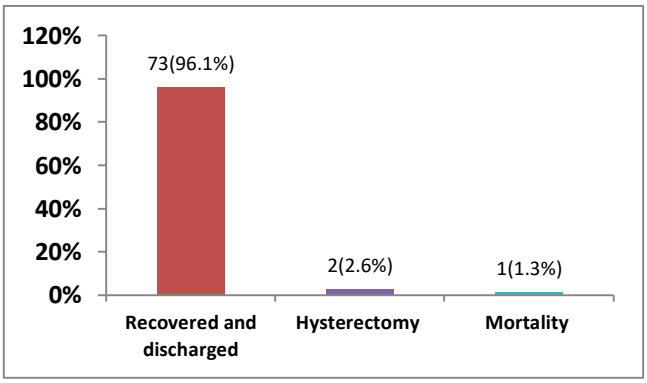

Figure 2. Post-operative outcome of the patients (n=76)

Discussion

Postpartum hemorrhage is one of the major causes of maternal morbidity and mortality worldwide. Different treatment options for severe PPH like medical treatment with uterotonics agents including vascular embolization and abdominal hysterectomy. In this study of 76 patients of PPH were initially controlled with uterotonic agents and then subjected to uterine artery ligation if the bleeding was not controlled. In this study mean age of the cases was 29.21±6.208 years with predominantly occurring in multiparous women. Similarly in the study of Thawal V et al[3] reported that the average age of the females was 26.4±7.4 years and multiparous women were in majority 60%. In another study by Kebede BA et al[10] demonstrated that around 83.9% of females were aged 20–34

years and Verit FF et al[11] reported that the mean age of females who underwent uterine artery ligation was 28.16±2.74 years. In this study, the most common causes of postpartum hemorrhage were uterine atony 56.5% and adherent Placenta accreta 43.42%. However, Thawal V et al[3] reported that out of all 77.5% cases had uterine atony, 15.0% patients had perineal trauma, 5.0 seen with retained placenta and 2.5% were females had a bleeding disorder. Also, adherent placental accreta was second most common cause of PPH seen in our study. Tariq et al and Khatoon et al have also found an increased incidence of uterine atony 75-90% to be responsible for PPH.[13,15] In this study the PPH was successfully controlled by uterine artery ligation with 96.1% had no postoperative complications. Consistently Wang CY et al[14] reported that the hemorrhage was controlled effectively among 8(88.9%) cases out of nine among females who were undergone bilateral HAL even their conditions was critical initially. On other hand, Samy A et al[15] also observed that the bilateral uterine artery ligation was seen as the effecting management technique during and after cesarean deliveries to the controlling the hemorrhage among females at high-risk post-partum hemorrhage after the risk of uterine atony. In this study in two patients (2.6%) hysterectomy was done due to intractable postpartum hemorrhage and was one female (1.3%) was died due to disseminated intravascular coagulation. Consistently İçen MS et al[16] reported that the rate of mortality was higher among referral cases as 10.25%, while the mortality rate was only 1.01% in female's cases who gave births at the hospital and further, they stated that the BHAL, is the best management option, which can be applied in all the cases of post-partum hemorrhage, because it is a good fertility-preserving method. However, it only preserves the fertility of cases, but also gives the higher survival.[16] Bailit et al[17] demonstrated that the cases of placenta accrete had the requirement of hysterectomy was 92%. However, obstetric hysterectomy is the major operative method for uncontrolled hemorrhage and also significantly linked to neonatal and maternal morbidity and mortality throughout the world.[18] İçen MS et al[16] reported that 2 cases underwent hysterectomy due to vaginal bleeding recurrence at 4-hour post-BHALs. In cases of intractable hemorrhage however internal iliac ligation or hysterectomy is necessary to control bleeding[16] Ishaq et al has had one mortality out of 49 patients with PPH, with uterine atony to be the leading cause of PPH. The underlying factors identified by Ishaq et al[12] for uterine atony were multiparity, multiple fetuses, hydramnios, large fetus and previous history of PPH and reducing the risk factors and their early management is important for the management of PPH. Maternal mortality reported by Hossain et al to be 7 out of 113 patients with PPH with the again commonest cause behind PPH was uterine atony.[19] Different studies have realized that the reduction and early identification are important for the of prevention of PPH among high-risk patients. It is reported that the age, pregnancy numbers, labor duration, retained placenta, homemade remedies insertion in vagina, avoidance of milk and rest during postpartum period are the factors. Lack of infrastructure and lack of appropriate training to health care trainers, pessimistic cultural practices effects on women health particularly of reproductive age.

Conclusion

Uterine devascularization by bilateral uterine artery ligation is a simple, effective and the safest initial surgical option with less blood loss and less surgical time for controlling postpartum hemorrhage during cesarean section. Application of uterine artery ligation is associated with minimal rate of complications (hematoma and uretric damage) and mortality. With uterine artery ligation, there is no compromission of future pregnancy and menstruation. Uterine artery ligation should be use as the first surgical step of choice because its relative simplicity, its life saving potential, relative safety, and above all, its capacity for preserving the uterus, makes it the recommended procedure of choice if conservative measures do not control PPH.

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