INTERNAL ILIAC ARTERY LIGATION FOR ARRESTING POSTPARTUM HEMORRHAGE

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ABSTRACT

Introduction: Postpartum hemorrhage (PPH) is one of the leading causes of maternal mortality in developing countries. Although internal iliac artery is a life-saving procedure however it is not commonly performed by obstetricians and gynecologists. This study is aimed at emphasizing the usefulness of IIAl and its role as a lifesaving procedure.

Objective: To find out the outcome of internal iliac artery ligation for arresting postpartum hemorrhage

Methodology: This retrospective study was conducted from January 2016 to December 2017 in Hayatabad Medical Complex, Peshawar. During the study period 18 patients were treated using internal iliac artery. A standard ligation procedure was performed in all cases.

Results: Out of the 18 procedures of internal iliac ligation, Atonic PPH was the most common indication for IIAL (55.56%) followed by trauma to genital tract (16.67%) then ruptured uterus, placenta accrete/percreta and abruption placenta.

Conclusion: Internal iliac artery is an effective procedure in treatment and prevention of PPH. It can be regarded as a lifesaving procedure and is more conservative in young women with PPH and gives a chance for preserving fertility.

Key words: Internal iliac artery ligation, postpartum hemorrhage, Tertiary care hospital

INTRODUCTION

Classically after the termination of third stage of labour, bleeding more than 500ml is defined as postpartum hemorrhage (PPH)[1]. Postpartum hemorrhage (PPH) is a major cause of worldwide maternal mortality ranging from 13% in developed countries to 34% in developing countries.[2]

Massive pelvic hemorrhage is a potential complication while undergoing obstetric and gynecological surgery. Pelvic hemorrhage whether postpartum or related to gynecological surgery, is associated with great degree of morbidity and mortality and has to be controlled immediately without compromising the rest of the pelvic blood supply.[3] When PPH continues despite aggressive medical management early consideration should be given to surgical intervention.

Various surgical techniques have been described PPH patients refractory to massage and uterotonic therapy, uterine compression sutures, bilateral uterine or internal iliac artery ligation and as a last resort sub-total or total hysterectomy can be performed.[4]

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Internal iliac artery ligation (ILIAC) has been advocated as an effective means of intractable PPH and preventive maternal death.[5] This study is aimed at emphasizing the usefulness of IIAl and its role as a lifesaving procedure.

MATERIAL AND METHOD

This is a retrospective study conducted from January 2016 to December 2017 in Hayatabad Medical Complex, Peshawar which is a tertiary care hospital for both low and high risk obstetrics and gynecology cases.

During the study period of two years, 18 patients were treated with iliac procedure. Maximum cases (n=11) were that of atonic PPH. The women who had atonic PPH during delivery either vaginally or during cesarean section were treated sequentially with medical treatment (Oxytocin, Misoprostol first then uterine tamponede tried with foley's catheter or sengstaken black more tube depending on availability. Meanwhile blood transfusion was arranged when the blood loss was still not controlled, then decision for therapeutic or prophylactic iliac ligation done at cesarean section or at laparotomy performed at variable time after vaginal or cesarean delivery.

A standard ligation procedure was performed in all cases. The bifurcation of common iliac was located in a triangle composed by the infandibulopelvic ligament, the lateral side of the uterus and ureter. A small incision was made in the peritoneum lateral to and parallel with the ureter in such a way that the ureter remains attached to the medial fold of peritoneal reflection. An absorbable sutures (vicryl-1) was passed beneath the ILA from lateral to medial side about 4 cm distal to its origin. The

Fermoral and Dorsalis Pedis Pulses were palpated and affirmed at the completion of artery ligation.

RESULT

18 procedure of internal iliac ligation were conducted during the study period of two years in Gyne "C" Unit of Hayatabad medical complex, Peshawar. Atonic PPH was the most common indication for IIAL (55.56%) followed by trauma to genital tract (16.67%) then ruptured uterus, placenta accrete/percreta and abruption placenta as shown in the Table-1.

Out of 5 cases of traumatic PPH, 2 women had rupture uterus. IIAL was performed after assessing the stability of the patients and the possibility of the repair of ruptured uterus. Hysterectomy was done in one case and repair was done in another case. However performing IIAC helped reducing the amount of bleeding. Three (03) women had lower genital tract injury, initially efforts were made to arrest the bleeding by repairing the injury but failed to control the bleeding, decision to laparotomy followed by IIAL made which was successful in all the three cases and none of them needed hysterectomy.

Two (02) women underwent cesarean section for placenta previa type IV with previous cesarean section, however on laparotomy they turned out to be Placenta accrete and percreta not diagnosed previously. IIAL was done prophylactically in both of these cases to arrest bleeding and create bloodless field and then hysterectomy was done.

Total number of hysterectomy cases with IIAL were 4. One was done for atonic PPH, 2 for Placenta acreta, Placenta percreta and one for ruptured uterus. None of the women required re-laparotomy after the initial procedure. SO the uterine salvage rate was 77.77%. Complications like injury to external iliac vein or internal iliac vein did not occur intra-operatively. There were no ischemic complications like gluteal muscles ischemia, or bladder ischemia did not occur in any of the cases followed up to a 6 weeks post-operative period.

DISCUSSION

Postpartum hemorrhage is an important cause of maternal morbidity and mortality. When faced with a situation of uncontrolled PPH, clinicians have few options. These include pelvic arterial ligation (including IIAL, UAL), UAE, and hysterectomy. While the former three are fertility preserving, hysterectomy is a more radical and definitive procedure, if the hemorrhage remains uncontrolled despite all possible measures.

Bilateral internal artery ligation is an effective life-saving method to control obstetrics and gynecological hemorrhage with ultimate benefit of uterus preservation with a success rate of 40 to 100%.

Ligation of internal iliac artery was first performed by Sir Kelly in 1893 in control of hemorrhage during hysterectomy for uterine carcinoma.[6] The procedure was later introduced by Mengert et al.[7] in 1969 and extensively investigated by Burchell in 1968.

Uterine artery ligation is a promising technique in the management of PPH as occlusion of uterine artery reduces 90% of the blood flow. It is useful in uterine atony but in uterine trauma, when the avulsed uterine artery retracts into the broad ligament forming hematoma, it is difficult to do the uterine artery ligation and salvage the uterus. IIAL in such situations is helpful as the pressure and flow of circulation decrease distal

Table 1: Indication for IIAL

Indication	Nos.	%age
Uterine atony	10	55.56 %
Placenta accrete	2	11.11 %
Abruptio Placenta	1	5.56 %
Rupture Uterus	2	11.11 %
Lower Genital track injury	3	16.67 %

Total Number of Patients = 18

Table 2: Uterine Salvage rate and Hysterectomy in Women undergoing IIAL

Indication	Nos	Hysterectomy	Salvage rate	%age
Uterine atony	10	1	9	90%
Rupture Uterus	2	1	1	50%
Placenta accrete	2	2	0	0%
Abruptio Placenta	1	0	1	100%
Lower Genital track injury	3	0	3	100%

Total Number of Patients = 18

to the ligation and readily enabling one to locate the bleeder and ligate it securely. Similarly, in cases of deep fornix tears and hematomas, uterine artery ligation or even hysterectomy does not stop the hemorrhage. In such cases, blood loss could be arrested after IIAL as vaginal artery is a direct branch of anterior division of internal iliac artery.[2]

In complete placenta previa, the placental site receives a significant proportion of its arterial supply from descending cervical and vaginal arteries. These arteries continue to perfuse the lower segment even after uterine artery ligation, which fails to control hemorrhage.[8] In these circumstances, IIAL is more effective by diminishing blood flow in the uterine, cervical, and vaginal vessels. This technique of stepwise evascularization of uterus which includes bilateral uterine and ovarian artery ligation is effective in decreasing the blood loss, but uterine ischemia followed by synechiae formation, premature ovarian failure, and secondary amenorrhea has been reported subsequent to this procedure.[9]

Angiographically directed arterial embolization has also been reported to be very effective in controlling hemorrhage, but this modern facility is not available in most of our country. We were able to control the hemorrhage in all 45 cases. However, even when the uterus is preserved, ligation of these arteries does not hamper future reproductive function.[10] Wagaarachchi and Fernando observed future pregnancy in 50% of the cases following bilateral ligation of internal iliac artery.[11]

In our study, we have analyzed 18 cases of IIAL over a period of 2 years with a uterine salvage rate of 77.77%. Bangal et al. had done an analysis of 54 cases over a period of 15 years in a tertiary care center, Loni.[12] Mukherjee et al. performed 36 cases of IIAL with a success rate of 83.3% in 6 years.[13] Joshi et al. did a study on 110 women who had undergone bilateral IIAL over a period of 13 years with a uterine salvage rate of 60.7%. [2]

In recently conducted study including 58 patients, Unal et al. reported effectiveness of the method as 87.9 percent.[14] Similarly, in their review of the results of retrospective studies encompassing 52 patients who had undergone internal artery ligation, Chelli et al indicated a 82.45% success rate.[15] Within the frame of literature findings, and results of our study, we think that BIIAL is a life-saving method with smaller number of side effects in obstetrical bleeding refractory to medical treatment.

CONCLUSION

Internal iliac artery ligation (IIAL) is an effective and safe procedure to control postpartum hemorrhage. It is a fast procedure and with proper training and experience the procedure will can be completed in a short time. It is an efficient technique for uterine salvage. Hence, acquaintance to this technique is a must for all pelvic surgeons in the coming days.

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