

Management of Severe Postpartum Haemorrhage with Bilateral Ligation of Internal Iliac Artery in Secondary Care and Tertiary Care Hospital; 4.5 Years Experience

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ABSTRACT

Objective: Is to describe effectiveness of bilateral ligation of internal iliac artery in severe PPH with benefit of preserving fertility.

Study Design: Prospective case series study.

Place and Duration of Study: This study was conducted at DHQ Hospital Bagh and C.M.H, Muzaffarabad Azad Kashmir from September 2008 to November 2013.

Materials and Methods: In fifty one patient bilateral ligation of internal iliac artery was done to control severe PPH after failure of conventional therapy (medical and other surgical measure bilateral uterine artery ligation and B lynchstich).

Results: Among those 50 patients the success rate was 88% and incidence of hysterectomy was 12%.

Conclusion: This procedure is successful in controlling haemorrhage preserving fertility with less morbidity.

Key Words: Postpartum hemorrhage, Bilateral ligation of internal iliac artery, Tertiary, Hysterectomy.

Citation of article: Saeed S, Ahmad A, Khan Z. Management of Severe Postpartum Haemorrhage with Bilateral Ligation of Internal Iliac Artery in Secondary Care and Tertiary Care Hospital; 4.5 Years Experience. Med Forum 2016;27(12):74-76.

INTRODUCTION

Postpartum hemorrhage is still leading cause of maternal mortality worldwide with an overall prevalence of approximately 6%. Africa has highest frequency of about 10.5%.¹ In countries with very high maternal mortality rate including Africa and Asia, PPH account for more than 30% of all maternal death.² In developing countries 14 million cases dying of PPH worldwide each year.³ Primary post-partum hemorrhage is loss of >500ml from genital tract within 24 hours after birth of baby.⁴ PPH can be minor 500-1000ml or major >1000ml major could be divided to moderate 1000-2000ml or severe >2000ml. Treatment option for PPH include conservative management with uterotonic drug, external compression, with uterine suture (B-Lynch) and intrauterine packing.⁵ However when conservative method have failed to control haemorrhage bilateral ligation of internal iliac artery should be considered immediately. It is a safe rapid and effective method of controlling PPH from genital tract, massive broad ligament haematoma, or even after peripartum hysterectomies.

Following bilateral ligation of internal iliac artery, there is 25% reduction in pulse pressure and 48% in blood flow in arteries distal to ligation.⁶

Timely intervention may not only save the life of patient but also her uterus. There are several reports of full term pregnancies after this procedure.⁷ Little morbidity has been observed if the procedure is performed appropriately.^{8,9,10}

MATERIALS AND METHODS

This is a prospective case series study conducted on 51 patients who underwent bilateral internal iliac artery ligation for persistent and severe obstetrical haemorrhage from September 2008 to November 2013 at two different institutes i.e. DHQ Hospital Bagh and Sheikh Khalifa Bin Zayed Al-nahyan Hospital Muzaffarabad AJK. All the procedures were performed by same consultant Gynecologist and Consultant Urologist. All the patients with severe PPH (uterine atony, major degree placenta previa, abruption-placenta, rupture uterus and cases of peripartum hysterectomy with persistent profuse bleeding even after hysterectomy) who failed to respond with medical management and B. lynchstich were included in this study. Postpartum hemorrhage due to coagulopathy and HELLP syndrome were excluded from study.

Demographic feature like, age of patient, parity, mode of delivery and place of delivery were recorded.

Number of blood transfusion, surgical time and hospital stay of patient complication of PPH like renal failure,

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Received: September 09, 2016; Accepted: October 23, 2016

DIC and wound infection were recorded. Follow up of patient after 2 week and 4 weeks time after discharge were also recorded on pre-design proforma.

RESULTS

Fifty one women underwent internal iliac artery ligation. Cause of hemorrhage was uterine atony 86% (n=22), placenta previa increta percreta 8% (n=4), uterine rupture 16% (n=8), placental abruption 18% (n=9) one case of broad ligament haematoma 2% (n=1), patient following peri-partum hysterectomy 14% (n=7). Forty-four patients underwent internal artery ligation as primary surgical intervention. The bleeding was controlled in 42/44 patients (95%) and only 2 women (4.5%) showed unsuccessful management and hysterectomy was urgently performed before closure of abdomen. After obtaining adequate hemostasis with internal artery ligation, none require laparotomy in postoperative period. Seven women with persistent bleeding following peri-partum hysterectomy were also treated with internal iliac artery ligation (as a secondary intervention) all were successful. In our study there were no intra-operative or postoperative complication related to procedure. Average age of patients was 30 years. The mean parity was 4 and mode of delivery was normal vaginal delivery in 24 (54%) cases while L.S.C.S in 20 cases (45%), blood transfusion was performed in all cases. Hypovolemic shock in 18 cases (35%) while coagulation disorders were observed in 7 cases (13%). ARF was observed in 6 cases (12%) which were recovered. No maternal death was recorded in these cases.

DISCUSSION

Peri-partum uterine hemorrhage is always a life threatening concern in obstetrics because it is associated with severe morbidity and mortality.¹¹⁻¹² To control the obstetrical, gynecological hemorrhage and to prevent the hysterectomies bilateral internal iliac artery ligation was first performed by Kelly in 1894. He found it effective and safe method without any major complication with the success rate of 95%.¹³ In our study bilateral internal iliac artery ligation was performed in 51 cases in series of 4 years. In 44 cases it was done as primary surgical intervention. In 42 out of 44 (95%) we were successful in controlling haemorrhage. In two (5%) patients we did hysterectomy peri-operatively before closing the abdomen and no major complication was observed in these patients. In remaining seven patients we performed internal artery ligation after hysterectomy due to persistent bleeding and were successful in controlling haemorrhage in all patients.

Mukerjee et al¹⁴ performed 36 cases of bilateral II-A ligation with success rate of 83.3% in duration of 6 years.

In the study of Papa Thanasiouk et al³, 10 out of 11 cases (91%) haemorrhage was controlled with bilateral II A ligation and in only one case emergency hysterectomy was performed after artery ligation. In some other studies similar results were observed.^{15,16}

In the study of Papp et al¹⁷ the internal iliac artery ligation has been introduced as a routine method to manage the profuse pelvic haemorrhage refractory to conservative methods in their institutions. We have also started in our training modules for the trainees.

In our study uterine atony was the main cause of PPH i.e. 86%. In the study Hueseyin et al¹⁸, the most common cause of PPH is uterine atony. Similar results were observed in the study conducted in Turkey, uterine atony was the main cause (22 out of 33 patients) develop PPH due to uterine atony. But in few studies placenta accreta is the most common cause of intractable PPH.^{19,20} There are several report of pregnancies carried to full term after bilateral ligation of hypogastric artery.²¹⁻²³ As we did not have long term follow up so long term follow up is required to evaluate this aspect. Blood transfusion performed in all cases and average blood transfusion was 3.55 pints while coagulation disorder was observed in 17.5% cases. In the study of Mahlouthi et al²⁵ coagulation disorder was almost same i.e. 20.7%, while in the study of Even et al²⁶ coagulopathy was develop in 49.1%. Pelvic ischemia due to bilateral internal artery ligation was one of fear. It has been shown that little morbidity results in short term and long term if the procedure performed timely and appropriately.²⁷⁻²⁹ The primary object of this procedure is to prevent the massive bleeding rather to save the uterus. We are totally agree with Reich and Nechtow et al³⁰ that main pitfall with internal artery ligation is delay in performing this procedure either due to lacking in technique or taking time in decision making. The basic anatomic knowledge is the most crucial thing in learning bilateral internal iliac artery ligation; better understanding of retroperitoneal structures must be an integral part of gynecological and obstetrical training programme. At the tertiary care center one experienced person must be included in every on call team who has been trained to ligate the bilateral internal arteries; this will definitely reduce the mortality due to hemorrhage. In our study there were no intra-operative or post-operative complications related to procedure. We have much better success rate as same gynecologist and urologist transplant surgeon involve in this case series who has better understanding of retroperitoneal anatomy. So we suggest that internal artery ligation should be included in the training module of gynecology and obstetrics.

CONCLUSION

In obstetric emergencies caused by massive bleeding ligation of bilateral internal iliac artery should be considered as a first step during laparotomy with a

primary goal to control bleeding. Learning this procedure should be integral part of obstetric and gynecological training program.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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