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Research Article

A COMPARATIVE STUDY ON THE ROLE OF BILATERAL INTERNAL ILIAC ARTERY LIGATION FOR ARRESTING THE OBSTETRIC HEMORRHAGE

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Abstract:

Objective: The aim of this study is to examine the role of the bilateral internal iliac artery ligation (BIAL) in controlling the sever haemorrhage after the birth of the child.

Methodology: This study was conducted at Jinnah hospital Lahore and almost completed in the duration of one and half year from July 2017 to December 2018. All the patients who are included in this study are those patients which are patients of sever obstetric haemorrhage and they are the patients who needs a BIAL, all the medical history and their details are recorded on the proforma. The major outcome measures to control the haemorrhage was the effectiveness, which we analyze by the per-operative assessment to stop the bleeding from vagina or intraperitoneal and if it is essential then additional hysterectomy will be carried out.

Result: In the duration of this study only eight patients passes through the process of BIAL, in which three of them due to atony were for PPH, two of them were for placenta Previa and one was for placenta increta, coagulopathy and rupture uterus. During the study there were three patients who needed surgery, I which one was underwent for the BIAL due to failure of control the bleeding, the failure rate of the bleeding was 16.66%. Disappointment in the control of the bleeding was instantly obvious and there was no patient who needed a re-laparotomy. Occurrence of one maternal death in two women developed wound infection due to coagulopathy and its complexities. During the patients stay in the hospital none of the patient have ischemia problem or any iliac vein injury.

Conclusions: In the conclusion of our study we have found out that the BIAL procedure is effective and safe for the treatment of the sever obstetric haemorrhage and protection of reproductive capacity in future.

KEY WORDS: Devascularization, Hemorrhage Rupture Uterus, Postpartum, Emergency Hysterectomy.

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INTRODUCTION:

The leading cause of the maternal death around the world is postpartum Hemorrhage (PPH) which frequency in the developed countries is 13% and in the developing countries its frequencies is 34%. Each year due to the postpartum hemorrhage, one lac and twenty-five thousand maternal deaths are occurred and also it is responsible for the twenty million morbidity in the womens each year. The common cause of the deaths in the obstetrics hemorrhage is uterine atony. recently when the medical treatment was fail in the treatment of postpartum hemorrhage then it was managed by stepwise uterine devascularization, uterine compression suture, arterial embolization and uterine balloon tamponade. The womens who do not agree for these treatment or they were not ready for these treatments than they underwent through a normal surgical treatment in which an emergency hysterectomy is to perform and in this treatment there was a possibility of the removal of the future fertility. The BIAL process is a very safe and effective substitute operational process in which the capacity of the re-productivity will be preserved. Due to the lack of experience and knowledge about this process there are only few obstetrics who use this process rather than to use the emergency hysterectomy.

American college of obstetrics and gynecology (ACOG) were in support of the BIAL process in the controlling of the intraoperative sever hemorrhage during the surgery of the pelvic or in the case of the obstetrics hemorrhage according to opinion of the authors all the obstetrics team should be trained about this process in any tertiary referral center. According to the Burchell hemodynamic studies in which he shows that during the BIAL process the flow of pelvic is reduced by 49% and the pressure of the pulse is 85% resulting in the pressure of the veins in the arterial circuit thus promoting hemostasis. Despite of this we searched thoroughly but could not found any local data which is published on the BIAL process in the management of the obstetrics hemorrhage. To show the effectualness of the BIAL process in the management of the life-threatening obstetrics hemorrhage whereas to preserve the capability of the future re-productivity.

METHODOLOGY:

Womens with obstetrics hemorrhage who underwent the BIAL process were the participant of this research. This research was conducted in Jinnah Hospital Lahore from July 2017 to December 2018. Complete data of the patients were collected and then entered into a Performa and then we thoroughly studied the completer data. There were two expert doctors

available in the hospital who perform these surgeries. During the period of this study only eight patients were go through to the process of this surgery. Their age, parity, duration of pregnancy, diagnosis, mode of delivery, cause of PPH, need of additional hysterectomy, number of blood transfused, recorded and complications noted were injury to iliac veins, postoperative development of fever, wound infection thrombophlebitis, paralytic ileus and ischemic complication and maternal death.

Womens with postpartum hemorrhage were underwent through the therapeutic BIAL which was done at different times either at a laparotomy or at cesarean section after the cesarean or vaginal delivery. Initially at the cesarean or vaginal section the womens with atonic postpartum hemorrhage were treated with uterotonics and massage as caboprost and oxytocin infusion injection. Brace sutures and uterine packing was used as a medical treatment for the disappointment to rejuvenate the uterine tone and to stop the loss of blood. Before the process of BIAL, uterine artery ligation was also tested. During caesarean section for placenta Previa failure to control bleeding from the placental bed by pressure or by under running the bleeding sites with absorbable sutures and uterine artery ligation led to the decision to do BIAL.

The patients which are the participants of our study has the BIAL by trans peritoneal method. A complete knowledge pelvic anatomy is very important before the process of BIAL. In this process a right angle clamp was passed under the internal iliac artery from the adjacent parts to central side about 4cm away from its origin. The ligature will be strongly tied which is place under the artery rather than cutting the vessels. The ligature placed under the artery was then tied doubly without cutting the vessel. Vicyl no.1 was used for ligation. Pulsation of the femoral artery and dorsalis pedis were identified after placing the ligature. after the completion of the BIAL process the bleeding will be controlled confirm and also the amount of the vaginal bleeding will also be reduced but the after this process if the bleeding is still continuing and did not stop than the hysterectomy decision was taken.

RESULTS:

In the duration of our study eight patients were the participants of our study and all of these patients went under the BIAL process. Complete information about these patients are to be displayed in the Table-1. the selected range of the ages was from 23 to 37 years of age but the mean age of the selected patients was 28

years while the means parity was three with a range from nulliparity to para 8. The common sign in the three cases was uterine atony which percentage was 37.5% and in the other three cases was placenta Previa which percentage was 37.5%. There were also three patients there in which one had placenta Previa, one placenta increta and one had traumatic postpartum hemorrhage case also grow coagulopathy. Excluding one patient all the participated patients had the cesarean section whereas the patients which had vaginal delivery in which due to uterine atony these patients had developed the sever postpartum hemorrhage which was not be able to control by the medical treatment, therefore the uterine artery ligation and uterine packing was applied and consequently the BIAL procedure was adopted. In the other three cases the Hysterectomy procedure was carried out in which one patient had placenta Previa and second patient had placenta increta with sever hemorrhage which was not controllable so consequently the registrar which was on duty in the emergency had performed the Hysterectomy, in spite of this the bleeding was continued which was arrested by the BIAL procedure. The third patient with the hysterectomy case had also somewhere else a cesarean section and also a BIAL

and haemoperitoneum procedure was also done but after the BIAL procedures the bleeding was not control therefore she needed an extra hysterectomy to arrest the blood. There were two patients in which one patient was multiparous and she needed a BIAL followed by a hysterectomy because due to coagulopathy she was bleeding from pedicles whereas the other patient who had the placenta increta and also had pelvic oozing followed by hysterectomy and which was stop by BIAL. There was also one nulliparous patient with rupture uterine which was repaired but due to repair there was oozing from the lower end therefore the BIAL procedure was conducted to save the uterus.

The BIAL procedure was primarily performed in our six patients at the cesarean section and the one patient which had the BIAL after two hours of the vaginal delivery by laparotomy and one patient was pass through the BIAL procedure and the patient already went through the cesarean section in the near about hospitals where the patients was presented in a very sever condition with haemoperitoneum.

Table- I: Detailed Characteristics of Cases

S. No	Age	Parity	Diagnosis (Including Duration of Pregnancy)	Causes of PPH	Hysterectomy Done Complications	Mode of Delivery	No. of Blood & FFP Transfused	Outcome
1	30	3+1	30 wks. pregnancy with P.P & 2 previous LSCS	Placenta increta	Yes	LSCS	9 Blood, 8 FFP	Wound
2	25	1+1	32 wks. pregnancy with P.P. type-II	Placenta Previa	No	LSCS	8 Blood, 6 FFP	Infection, fever
3	37	8+2	34 wks. pregnancy with P.P. type- IV	Placenta Previa and coagulopathy	Yes	LSCS	8 Blood, 4 FFP	Wound, infection, fever
4	26	1+0	38 wks. pregnancy with prolong labor	Atony of uterus	No	Vaginal delivery	6 blood, 4 FFP	Paralytic ileus
5	28	2+0	Post cesarean haemoperitoneum	Atony of uterus &	Yes (Post BIAL)	LSCS	14 Blood, 10 FFP	Paralytic ileus expired after 18

				oozing from C.S wound				hrs in SICU
6	26	1+0	37 wks. Pregnancy with BOH	Uterine atony	No	LSCS	7 Blood, 5 FFP	Fever
7	25	1+0	38 wks. pregnancy with type-III placenta Previa	Placenta Previa	No	LSCS	8 Blood, 6 FFP	Fever, Paralytic ileus
8	23	Primi gravida	40 wks. pregnancy with ruptured uterus & vaginal tear	Trauma to uterus	No	LSCS	10 Blood, 8 FFP	Wound, infection, fever

When the BIAL has done than the hemorrhage was control successfully and no women had the delayed hemorrhage issue which require re-laparotomy. But in one case the BIAL was fail to control the uterine bleeding which happened before the closure of the abdomen, and therefore a timely decision was taken and proceed for the hysterectomy. 5 units of blood transfusion and antibiotics was received by all the patients.

All of our patients were treated very carefully and none of our patient had internal iliac injury or anemia problems after the surgery period and also all of our patients were need to be admitted in the ICU. After both the procedure done than five of our patients had fever, three had high paralytic ileus and the three patients which wounds were infectious after the surgery in which one patient had died due to the late referral and bring to the hospital in a very serious condition despite that the BIAL and hysterectomy procedures were carried out and also a massive transfusion carried out but she succumbed to disseminate intravascular coagulation.

DISCUSSION:

In the postpartum hemorrhage the BIAL procedure is proposed to keep the uterus safe for future fertility but as substitute for saving the life of the patients the cesarean hysterectomy is carried out in the sever bleeding. In the current study 8 patients were the participants of this study and during this period the BIAL was performed on these patients to arrest the intractable hemorrhage whereas no prophylactic BIAL was performed while the reports shows the role of the

BIAL was poor in controlling the blood loss in the womens whose are at high risk of postpartum Hemorrhage (PPH) during the cesarean section, like HELPP Syndrome, Placental Abruption, Placenta Previa, infective Hepatitis and ITS. when the hemorrhage was control successfully with the BIAL procedure then no women patients had he delayed hemorrhage and do not required a re-laparotomy. In the duration of our study three of our patients underwent the hysterectomy in which one had after the BIAL and the other had before the BIAL. In our study the rate of failure of was one out of six was 16.66% whereas the other was stated as 68.8% and 29%. This might be because of low number of patients of atony of uterus and the prompt decision of the carrying out of BIAL in the duration of our study. The controlling of sever obstetric hemorrhage is very effective and only in few cases it is required to performed the hysterectomy needed and performed in time. A suitable surgical procedure for the treatment of the sever hemorrhage is very important but it is not enough to carry out only a surgery but the ability is to make a timely decision that this operation is very important.

The major reason of sever hemorrhage is placenta Previa which was found in three of our patients and one had placenta increta. In complete placenta Previa, the placental site receives a significant proportion of its arterial blood supply from the descending cervical and vaginal arteries. These arteries continue to perfuse the lower segment even after uterine artery ligation, which fails to control haemorrhage. The uterine brace compression sutures can be used only for achieving hemostasis in atonic PPH and are less useful in

placenta Previa. Therefore, in many cases the BIAL is very effective to reduce the flow of blood in the vaginal vessels, cervical and uterine. The basic mechanism is to create pelvic compartment hypotension without causing ischemia and tissue necrosis as three specific collateral arteries maintain the blood flow: Lumbar – ilio-lumbar, middle sacral – lateral sacral, and superior – middle haemorrhoidal arteries. For improving the effects of hemostatic some surgeons associate the BIAL with bilateral ovarian artery ligation but we did not carry out this surgery in our series of BIAL. In the duration of our study, in our department we have performed four times emergency hysterectomy for the life-threatening obstetric hemorrhage and a lot of them could be obviated if the experts are available at the right time. The BIAL procedure is not only for saving the future fertility but also connected with minimum postoperative morbidity if compared with emergency hysterectomy and also if the experts have some experience with this technique then also it has required less time for the operation. BIAL also contributes in the avoidance of hysterectomy but also makes the hysterectomy easier to reduce the blood loss whereas it cannot be possible in the cases of uterine trauma as we seen in one of our cases.

BIAL is only rarely associated with complications which can result from damage to uterine, iliac veins and accidental ligation of the external iliac artery. These complications can be avoided by appreciation of important surgical anatomy and meticulous dissection as fortunately we did not have any such complications perhaps surgery being performed by experienced consultants only. One study suggests that measuring a point approximately 4-4.5 cm from the sacral promontory or common iliac bifurcation and 3.5 cm away from the pelvic midline the accidental ligation of posterior division can be avoided. Rarely internal iliac artery aneurysm can develop therefore these patients need follow up by Doppler ultrasound in future. In the duration of our study we found out that once the bleeding of the uterine was controlled during the surgery then it did not occur again in any women in the postoperative period in whom the uterus was preserved and similarly the women which underwent the hysterectomy after the BIAL, there was no reactionary hemorrhage from the pedicles. The type of suture material used for BIAL does not seem to affect either the effectiveness of the technique or subsequent fertility although greater recanalization rates may be seen with absorbable suture materials. Even though we have limitations in our study due to the small numbers of patients but in the duration of our study the data which were available internationally also had similar numbers. And moreover all the on call obstetricians

should be trained and more familiarize with this technique.

CONCLUSION:

In our study we have found that the BIAL procedure is effective and safe for the treatment of the life-threatening obstetric hemorrhage with the conservation of the fertility in future and also to reduce the rate of hysterectomy, and also there should be more studies carried out to prove the effectiveness of the BIAL procedure. It should be the operation of choice to control severe bleeding in young woman of low parity. It is very important to train the younger generation of obstetricians and to familiarize them, to perform the BIAL procedure and also at every tertiary care center there should be one experience and specialist and trained of this procedure should be available on call in every team.

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