Original Research Paper Microbiology

LIFE SAVING PROCEDURE : ROLE OF INTERNAL ILIAC ARTERY LIGATION IN CONTROL OF POST PARTUM HAEMORRHAGE

Dr. Uma N. Wankhede	Associate Professor ,Department of Obstetrics and Gynaecology, B. J. G. M. C. & S. G. H. Pune.
Dr.Abhijeet Wadate	Assistant Professor ,Department of Obstetrics and Gynaecology, B. J. G. M. C. & S. G. H. Pune.
Dr. Sonali S. Jakhade	Department of Obstetrics and Gynaecology, B. J. G. M. C. & S. G. H. Pune, Maharashtra, India - Corresponding Author

ABSTRACT

Objective: To study the role of internal iliac artery ligation in PPH

Study design: Retrospective study of cases of internal iliac artery ligation performed over a 3 year period at Sasoon General hospitals ,Pune

Method : Bilateral internal iliac artery ligation was performed by intraperitoneal route in all cases

Outcome Complications,need for hysterectomy

Results: Out of 28 women who underwent internal iliac ligation in a 3 year period 16 women underwent it for atonic PPH,4 for rupture uterus 6 for placenta praevia and 2 for abruption placenta.4 women required subsequent hysterectomy ,2 for uterine rupture one each for placenta praevia and atonic PPH. Failure to control haemorrhage by IIAL was evident immediately, and bleeding arrested by IIAL did not recur to require later laparotomy in any woman.There were no complications in this study group.

Conclusions :IIAL is useful in the treatment and prevention of PPH from any cause. Early resort to IIAL effectively prevents hysterectomy in women with atonic PPH. In traumatic PPH, IIAL facilitates hysterectomy.

KEYWORDS : Internal iliac artery ligation,PPH .

Introduction

Post partum haemorrhage is a major cause of world wide maternal mortality ranging from 13% in developed countries to 34 % in developing countries[1] like India. It is responsible for over 1,25,000 maternal deaths each year and is associated with morbidity in 20 million women per year[2]. Major PPH i.e.loss of blood over 1000 ml of blood occurs in 1-5% of deliveries. Uterine atony is the most common cause of PPH that accounts for 80% of cases3.Others are retained placental fragments,lower genital tract lacerations and uterine rupture. Known risk factors for occurrence of atonic PPH include a history of PPH,history of retained placenta,placental abruption, placenta praevia,uterine fibroids,hydramnios,multiple pregnancies, augmentation of labour,prolonged labour and instrumental delivery.Although an assessment of risk factors is important, PPH typically occurs unpredictably and no parturient is exempt from the risk of PPH.When PPH continues despite aggressive medical treatment,early consideration should be given to surgical intervention.The choice of procedure will depend on the parity of the women and her desire for childbearing ,the extent of haemorrhage and most importantly, the experience and the judgement of the surgeon.In most catastrophic situations ,hysterectomy is preffered in order to arrest further blood loss and compromise with certainty. Although a life saving procedure ,it may not be appropriate for women who need to preserve their reproductive potential.Haemostatic procedures that preserve the uterus includes the uterine cavity tamponade,selective uterine artery embolization,uterine artery ligation and uterine brace sutures. Internal iliac artery ligation(IIAL) is one of the life saving and fertility preserving procedures in control of severe postpartum haemorrhage. The rationale for this is based on the haemodynamic studies of Burchell4,which showed that IIAL reduced pelvic blood flow by 49% and pulse pressure by 85%,resulting in venous pressures in arterial circuit thus promoting haemostasis. Reported success rate of IIAL varies from 40 to 100%5 and the procedure averts hysterectomy in only 50% of cases. Failure were more evident in atonic PPH than in other causes of PPH.Internal iliac artery ligation6 was first performed by Sir Howard Kelly in 1893 .Despite aggressive medical treatment for control of PPH,if PPH is not controlled then internal iliac artery ligation done.

OBJECTIVE

The study aimed at evaluating:

- Risk factors for postpartum haemorrhage
- Rate of success of internal iliac artery ligation in control of severe postpartum haemorrhage
- Rate of reduction in maternal mortality after internal iliac artery ligation[7].
-

MATERIALS & METHODS

- Retrospective study was conducted between May 2014 to June 2017,3 years
- All patients with uncontrolled PPH both from hospital and referred from other health care centers who were subjected to internal iliac artery ligation8 were included in this study. DATA

Total 28 patients underwent bilateral internal iliac artery ligation in the study period.

TABLE 1:Percentage of booked and unbooked cases

Registered	Cases	Percentage
Booked	4	14.28
Unbooked	24	85.7

TABLE 2:Agewise distribution-Majority are in the age group of 26-30 years

AGE	CASES	PERCENTAGE
Less than 20yrs	1	3.57
20 -25yrs	10	35.57
26-30yrs	14	50
31-35yrs	2	7.14
More than 35 yrs	1	3.57

Table 3 Distribution according to parity

Gravida	Cases	Percentage
Primi	12	42.85
Second	15	53.57
Third	1	3.57

Table 4 Causes of PPH

CAUSES	CASES	PERCENTAGE
ATONIC PPH	16	57.14
PLACENTA PRAEVIA	6	21.42

RUPTURED UTERUS	4	14.28
ABRUPTIO PLACENTA	2	7.14

Women with atonic PPH at vaginal delivery or caesarean section were initially treated with massage and uterotonics such as oxytocin infusions and carboprost injections 250 mcg at appropriate intervals .Failure to restore the uterine tone and arrest the blood loss despite these measures led to the decision to do IIAL.During caesarean section for 6 cases of placenta praevia,failure to control bleeding from the placental bed by pressure or by under running the bleeding sites with absorbable sutures led to the decision of IIAL.2 cases of placental abruption had undergone caesarean section and developed atonic PPH that failed to respond to uterotonics and hence were subjected to IIAL.4 cases of uterine rupture were underwent the procedure IIAL and thus helped in conserving the uterus .

TABLE 5-APPROXIMATE BLOOD LOSS

BLOOD LOSS	Cases	Percentage
1.5 litres	12	42
2 litres	16	58

TABLE 6 Following medical management tried before taking the decision of IIAL

Conservative Management	Number of cases	Percentage
IM OXYTOCIN	28	100
IM 15 METHYL PGF2 ALPHA	28	100
IV OXYTOCIN DRIP	28	100
BIMANUAL COMPRESSION	28	100
AORTIC COMPRESSION	28	100

Table 7 OTHER SURGICAL MANAGEMENT

Surgical interventions	Cases	Percentage
Uterine artery ligation	28	100%
Stepwise devascularisation	28	100%
B Lynch Compression sutures	6	21%
Condom tamponade	0	0%
Obstetric Hysterectomy	4	14%

Table 8 Numbres of HRBC transfusion

Units of HRBC transfusion	Cases
1	0
2	2
3	8
4	8
5	10

Table 9 Number of blood products transfusion

Blood products	Units	Cases
FFP	4	26
Platelets	4	6
Cryoprecipitates	2	2

Table 10 Numbers of days of ICU admission

Numbre of days	Number of patients
1	0
2	4
3	10
4	11
More than 5	3

Table 11:Postoperative complications

Complication	Cases
Wound Infection	4
UTI	5
FEVER	5
Secondary PPH	0
DIC	2
ARF	2
Death	2

DISCUSSION & RESULTS:

The most frequent indication for PPH was found to be uterine atony. 50%cases were in the age group of 26-30years.Most cases were second gravida in study.Out of 28 patients,24 cases were referred ,rest 4 cases were booked from our hospital.Postpartum haem orrhage was successfully arrested in all cases.High success rate was observed in our study due to,timely intervention, availability of blood & blood products and Intensive postoperative monitoring. Stitch removal done on postoperative day 7 , wound was healthy , except 4 cases where wound infection occurred, wound gaped, resuturing was done ,suture removal done on postoperative day 14 wound healthy .$_2$ out of 28 cases died in ICU due to cardiorespiratory arrest with DIC on POD5.

Thus every obstetrician should be well versed in performing this procedure.Bilateral internal iliac artery ligation reduced maternal morbidity ,mortality and preserved uterus.The analysis of indications of internal iliac artery ligation helpful for improving awareness among populations & antenatal care will definitely improve outcome.

Life saving technique of IIAL is underutilised in the management of PPH ,probably due to fear of injuries to iliac veins.Thorough knowledge of retroperitoneal anatomy and meticulous operative technique can minimise these complications .The internal iliac vein lies directly posterior to the internal iliac artery ,passing the right-angled clamp in a controlled manner in close proximity to the posterior wall of the artery prevents perforating the underlying internal iliac vein. It is imperative to dissect the internal iliac artery completely from the surrounding fascia for the passage of right-angled clamp without resistance.Resistance to the passage of the right-angled clamp implies inadequate dissection around internal iliac artery . Forceful passage of clamp in such a situation incurs the risk of injury to the adjacent vein . It is safer to withdraw the clamp ,complete the dissection of fascia around the artery and then pass the clamp under the artery.While passing the right-angled clamp beneath the internal iliac artery ,the operator has better control at the point of entry than at the point of exit.Hence we believe that passing the clamp from lateral to medial side is safer.If clamp is passed from medial to lateral side,the tip of clamp may injure the laterally located external iliac vein.Ideally the internal iliac arteries should be ligated distal to the posterior division to get optimum decrease in pulse pressure in uterine circulation .However ,in emergency situations ,it is not advisable to try locating the posterior division as this could be time consuming and may injure the internal iliac vein. Since the posterior division is given off within 3 cm from the bifurcation,most of the times what is ligated beyond 3cm from bifurcation is the anterior division of internal iliac artery.Selective arterial embolization is an option in managing PPH if the woman is hemodynamically stable. Current indication include haemorrhage due to vaginal or cervical lacerations or persistent bleeding after hysterectomy. The B-Lynch suture9,10 has been reported to successfully control refractory uterine bleeding in several case series. The suture envelops and compresses the uterus ,producing a result similar to manual compression ,but failures can occur for various technical reasons ,with severe uterine atony and in presence of coagulopathy. Delayed ischemic necrosis of the myometrium has been recently reported even after applying sutures correctly.The uterine brace compression sutures can be used only for achieving haemostasis in atonic PPH and are less useful in placenta praevia, also it is not useful in uterine rupture and vaginal lacerations bleeding. IIAL prevents the hysterectomy and also facilitates it in cases of trauma by decreasing the bleeding and clearing the operative field and thus enabling the surgeon to avoid blindly clamping and ligating tissues submerged in pool of blood.It is helpful in reducing the risk of ureteric injury.Prophylactic IIAL preffered in cases like placenta praevia,placental abruption,HELLP syndrome, ITP and infective hepatitis undergoing caserian section in which there is high risk of PPH.

Conclusion

Thus early resort to IIAL is the key to prevent hysterectomy in

women with uterine atony.In traumatic PPH ,IIAL facilitates repair or hysterectomy when indicated and prevents reactionary haem morrhage.

References:

1 Khan KS,Wojdyla D,Say L,Gulmezoglu AM,Van Look PF.WHO analysis of causes of maternal death:a systemic review.Lancet 2006;367:1066-74.

2 Selo-Ojeme DO.Primary post partum haemorrhage.J Obstet Gynecol 2002;22:463-9

3 Arulkumaran S,De Cruze B.Surgical management of severe post partum haemmorrhage.Curr Obstet Gynecol 1999;8:101-5

4 BurcheII,R.C.(1964) Internal iliac artery ligation: Haemodynamics. Obstet. Gynaecol.,24,737.

5 Vedantham S ,Godwin SC,McLucas ,Mohr G.Uterine artery embolization : an underused method of controlling haemorrhage.Am J Obstet Gynaecol 19907, 176:938-48

6 Kelly,H.(1894)Ligation of both internal iliac arteries for haemorrhage in hysterectomy for carcinoma uteri

7 Rajaram,P.,Raghavan,S.S.,Bupathy,A. et al(1993) Internal iliac artery ligation in obstetrics &Gynaecology .Ten years experience Asia-Oceania J.obstet.Gynaecol.,29, 22-25.

8 Purandhare C.N.Internal iliac artery ,Journal Obst.Gynae.India 2002;52(4):21-22

9 B-Lynch C.Partial ischemic necrosis of the uterus following a uterine brace compression suture(letter).BJOG 2005;112:126-7

10 B-Lynch CB ,Coker A ,Lawal AH ,Abu J,Cowen MJ.The B-Lynch surgical technique for control of massive postpartum haemmorrhage :an alternative to hysterectomy ?Five cases reported.Br J Obstet Gynecol 1997;104:372-6.