

BILATERAL UTERINE ARTERY LIGATION : AN ALTERNATIVE TO HYSTERECTOMY FOR CONTROL OF NON-TRAUMATIC POST-PARTUM HAEMORRHAGE

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SUMMARY

Non-traumatic postpartum haemorrhage (PPH) occurring after spontaneous vaginal delivery or after caesarean section is a known complication of parturient and has always posed a formidable challenge to the clinician how to save the uterus. For this bilateral uterine artery ligation (UAL) is an effective and simple technique. No complication has occurred and the survival rate is found to be 100%.

INTRODUCTION

Postpartum haemorrhage (PPH) occurring as a result of uterine atony or placental pathology is a well known complication occurring at the time of child birth. Usually this is controlled by uterine massage, evacuation, intra-venous oxytocin or prostaglandin injection. But sometimes these conservative measures fail and emergency hysterectomy

has to be performed to save the life of the patient. Bilateral internal iliac artery ligation has also been done to control PPH with great success along with saving of the uterus (Clark et al 1985). But it needs a lot of expertise to perform this operation with great speed & to avoid injury to ureters, whereas uterine arteries are easily identified, needs less dissection and less time. Bilateral Uterine Artery Ligation (UAL) has provided equally good results along with preservation of uterus (O'Leary et al 1974).

ANATOMY AND BLOOD SUPPLY

Uterine artery is a branch of anterior division of internal iliac artery. During pregnancy 90% of blood supply to uterus comes from the uterine arteries with minimal blood flow from ovarian, cervical and vaginal vessels, (Tsirulhikov 1962). Therefore, it is very logical that bilateral UAL will reduce blood flow and produce ischaemia resulting in haemostasis. This blockage of uterine blood supply is a temporary procedure, recanalization is almost a rule and normal uterine circulation is established in due course of time, thus preserving various uterine functions like menstruation and pregnancy (Layten K. 1968).

METHOD

Bilateral uterine artery ligation is a simple as well as good technique for control of non-traumatic PPH in those cases in which usual conservative methods (manual massage, exploration of uterus, removal of retained placental bits, administration of ergometrine, oxytocin or prostaglandin injection) has failed to control the bleeding. For ligation of left uterine artery, the Obstetrician stands preferably on the right side of patient, uterus is grasped elevated anteriorly and to the right side by the left hand with fingers put posteriorly to the broad ligament in pouch of Douglas and thumb anterior to the ligament. Then a large Mayoneedle with No. 1 chromic catgut is passed into and through the myometrium from anterior to posterior, 2-3 cms medial to uterine vessels, then brought forward through the avascular area of the broad ligament, lateral to

uterine artery and vein and suture is tied.

Similar procedure is repeated on right side. Following ligation of both uterine arteries myometrium assumes pinkish hue secondary to ischaemia and uterine tone may be increased, sometimes uterus will remain atonic, yet bleeding will be controlled. These vessels are not divided and only a single ligature is placed on each side along with substantial amount of myometrium.

There is no concern for ureteral damage because when the operation is performed in cases of uterine atony after normal delivery it is not necessary to mobilise the bladder as the sutures are not placed that low and ureters enter the trigone well below the ligation site, whereas in cases of PPH occurring after caesarean section sutures will be placed below the uterine incision beneath the reflected flap of peritoneum.

OBSERVATION AND DISCUSSION

This study was conducted on 82 patients from Jan 1984, to Dec. 1995. Table I shows various indication for bilateral UAL.

Table II shows distribution of cases on the basis of age, parity and mode of the delivery is depicted .

The age of the patients ranged from 24-32 years and the mean age of the patients for different indications were comparable. 23 cases were primi, 59 were multigravida. 52 patients had vaginal delivery and 32 had undergone caesarean section operation.

Out of these 82 cases bilateral UAL was effective in controlling PPH in all

Table I
INDICATIONS FOR UTERINE ARTERY LIGATION

S. No.	Indication	Number of patients
1.	Atony of uterus	60
2.	Placenta previa	14
3.	Abruptio placentae	4
4.	Couvelair uterus	3
5.	Placenta accreta	1
Total		82

Table II
**INDICATIONS FOR UTERINE ARTERY LIGATION IN
RELATION TO AGE, PARITY AND MODE OF DELIVERY**

S. No.	Indication	Mean Age (Years)	Parity		Mode of Delivery	
			Primi	Multi	Vaginal	LSCS
1.	Atony (n=60)	29.2	16	44	48	12
2.	Placenta previa (n=14)	26.4	5	9	3	11
3.	Abruptio (n=4) placentae	28.4	1	3	1	3
4.	Couvelair (n=3) Uterus	28.3	1	2	-	3
5.	Placenta accreta (n=1)	29	-	1	-	1
Range		24-32	23	59	52	30

the cases except two cases; one each of central placenta previa and placenta accreta (97.56% effectiveness). In placenta previa bilateral internal iliac ligation was performed to control bleeding. Reason of failure is that in placenta

previa a significant portion of blood supply comes from cervical and vaginal arteries and these arteries are located below ligature sites. For preservation of uterus one must try to ligate internal iliac arteries bilaterally, if UAL fails. In case of placenta accreta hysterectomy had to be performed to save the life of patient. Fahmy (1966), O'leary et al (1974), Druzen (1989) have also noted the failure to control PPH in some cases of placenta previa & accreta. Fahmy (1966) and O'leary et al (1974) had performed hysterectomy to save the patients whereas Druzen (1989) successful in controlling PPH by doing uterine packing to avert the hysterectomy. Abdrabbo (1994) also reported the inability to control the PPH in 4 cases (2 placenta previa & 2 accreta). But he was able to save the uterus by ligation of the uterine vessels very low, 3-5 cm below the upper ligature i.e. after its cervico-vaginal branch has turned abruptly upwards to extend along uterus margins.

In rest 80 cases the procedure was fully effective. O'leary et al (1974) : Fahmy (1987) : Abdrabbo (1994) have also found that the bilateral UAL was 100% effective in all cases except those of the placenta previa and accreta where failure rate ranged 8-20%. In the present study mortality from this procedure is nil.

O'leary et al (1994) have reported 2 cases of broad ligament haematoma, but this can be easily avoided by choosing avascular area in the broad ligament. This complication has not occurred in any of the cases in the present study.

Howard (1968) in his study of 6 cases reported arteriovenous fistula formation in one of his patients. This complication has not been reported by any other surgeon and it can be easily avoided by using absorbable chromic catgut : avoiding figure of eight stitch and including substantial amount of myometrium. None of our cases developed any complications like arteriovenous fistula, uterine necrosis or ureteric injury.

All these patients were followed up for atleast 6 months. Menstruation started in all the cases and were regular in frequency and normal in amount. 38 patients had planned for pregnancy : 32 conceived within one year. Out of these 28 have already delivered, 26 had normal vaginal delivery, and two patients have undergone LSCS one for scar tenderness and other for uncontrolled preeclamptic toxemia, preoperatively, none of them were found to have any abnormality regarding uterine vessel, recanalisation had occurred. None of them had any PPH.

CONCLUSION

As uterine arteries are easy to identify and ligate, its ligation is safe and excellent for the management of nontraumatic PPH where all conservative methods have failed. This technique should be taught to all the residents. Although in the present study this measure has failed in 2 cases, but it was 100% successful if we exclude placenta previa & accreta cases. So one must always try uterine artery

ligation whenever indicated as internal iliac artery ligation requires more dissection and expertise and exposure of internal iliac artery is more difficult with a large boggy and bleeding uterus.

Hysterectomy should be avoided as far as possible as it leaves a bad physical and psychological scar on the patient.

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