



## Emergency internal iliac artery ligation - still a life saving procedure

*Partha Mukhopadhyay, Tapan Naskar, Samir Hazra, Debasis Bhattacharya*

*Department of Obstetrics and Gynecology, Burdwan Medical, College, West Bengal*

**OBJECTIVE(S) :** To find out the utility of emergency internal iliac artery ligation (EIIAL) in a busy gynecological and obstetric setup.

**MATERIAL AND METHOD(S) :** Between Jan 2002 and Dec 2003, a total of eight EIIAL were performed as life saving procedures along with either ovarian artery ligation or subtotal hysterectomy as and when required.

**RESULTS:** Except one patient, who died of renal failure, all could be successfully treated.

**CONCLUSION(S):** EIIAL still remains an important life saving procedure and should be taught to the postgraduates.

**Key words:** internal iliac artery ligation, emergency

### Introduction

Internal iliac artery supplies the pelvic viscera. Bilateral ligation of the internal iliac arteries is a safe, rapid and very effective method of controlling bleeding from genital tract. It is also helpful in massive broad ligament hematoma, in torn vessels retracted within the broad ligament, and even in postoperative hemorrhage after abdominal or vaginal hysterectomy where no definitive bleeding point is detectable. Bilateral ligation of internal iliac arteries is also helpful in controlling atonic postpartum hemorrhage. Following ligation of internal iliac artery, there is a reduction of 85% in pulse pressure and 48% in the blood flow in the arteries distal to the ligation<sup>1</sup>. Thereby the arterial pressure approaches the venous pressure and is rendered more amenable to hemostasis by a simple clot formation.

### Material and methods

A total of eight emergency internal iliac ligations (EIIAL) were performed during two years from January 2002 to December 2003. This was done as a life saving measure to

control hemorrhage, either intra-peritoneal or external or both. All cases were done via intra-peritoneal route. Associated operations like subtotal hysterectomy and ligation of the bilateral ovarian vessels medial to the ovary were done when indicated. Patients were analyzed in terms of death and associated complications. Types of hemorrhage and their primary causes are analyzed in Table 1. One case of ruptured uterus occurred in post-cesarean pregnancy and one other had a linear longitudinal injury in the postero-lateral border of lower segment following forceps delivery; most probably the injury was caused by a forceps blade. She was referred from outside without specifying the type of forceps delivery carried out. Both cases were associated with broad ligament hematoma. The criminal abortion case was associated with lacerated injury of the uterus and broad ligament hematoma. In another case there was uncontrolled hemorrhage following removal of a huge broad ligament fibroid along with the uterus. Associated subtotal hysterectomy were done in a case of multiple fibroids in ruptured uterus in a post-cesarean pregnancy and in a case of criminal abortion. Associated bilateral ligation of ovarian vessels were done in a case of multiple fibroids for uncontrolled hemorrhage during myomectomy besides in a case following vaginal hysterectomy where definite source of bleeding could not be found and in a case of ruptured uterus following forceps delivery, where the uterus was preserved (Table 2).

*Paper received on 17/10/2004 ; accepted on 26/12/2004*

Correspondence :

Dr. Partha Mukhopadhyay

Department of Obstetrics and Gynecology

Burdwan Medical College, West Bengal.

**Table 1. Type of hemorrhage and its cause.**

Type of hemorrhage	Primary cause	No
Intra-abdominal with or without broad ligament hematoma	Abdominal hysterectomy	2
	Vaginal hysterectomy	1
	Ruptured uterus	1
	Myomectomy (multiple fibroids)	1
	Removal of broad ligament fibroid	1
Both intra-abdominal and vaginal	Ruptured uterus during forceps delivery	1
	Criminal abortion	1

**Table 2. Associated operation.**

Type of operation	Primary case	No
Subtotal hysterectomy	Criminal abortion	1
	Rupture uterus in previous cesarean delivery	1
Bilateral ligation of ovarian vessels	Vaginal hysterectomy	1
	Myomectomy	1
	Ruptured uterus during forceps delivery	1

## Results

EIIAL was done in eight cases in two years to control obstetric and gynecological hemorrhage. All cases, except the cases following vaginal hysterectomy, myomectomy and abdominal hysterectomy for a huge broad ligament fibroid, were referred from outside. Internal iliac artery ligations were done even after hysterectomy or repair of injury to the uterus as the bleeding vessel had retracted within broad ligament hematoma. We were able to control hemorrhage in all the eight cases. Only one patient died in our series due to renal failure following vaginal hysterectomy. Other seven cases were discharged in good condition. Five patients came back for post-operative checkup after 6 weeks and all of them were without any major problem. Two patients were lost to follow up.

## Discussion

Bilateral internal iliac artery ligation is an effective life saving method to control obstetrical and gynaecological hemorrhage and a hysterectomy can often be avoided. Ligation of internal iliac artery was first performed by Kelly<sup>2</sup> with a success rate 95% and without any major complication. Mukherjee et al<sup>3</sup> performed 36 cases of internal artery ligation with a success rate of 83.3% in 6 years. We have a small series of only eight cases in two years because now a days internal iliac artery ligation is usually not required for atonic post partum hemorrhage as other simpler and effective methods are available. Step-wise devascularization of uterus and compression sutures of the uterus are found very effective<sup>4</sup>. 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 hemorrhage in all eight cases. However, even when uterus is preserved, ligation of these arteries does not hamper future reproductive function<sup>5</sup>. Wagaarachchi and Fernando<sup>6</sup> observed future pregnancy in 50% of the cases following bilateral ligation of internal iliac artery.

Bilateral ligation of internal iliac artery is a safe, rapid and effective way of controlling obstetric and gynecological hemorrhage. A plea is made for more frequent use of this simple operation, and for its routine teaching during the training of postgraduates.

## References

- Burchell RC Physiology of internal iliac artery ligation *J Obstet Gynaecol Br Common w* 1968;72:642-51.
- Kelly HA. Ligation of internal iliac arteries for hemorrhage in hysterectomy for carcinoma uteri. *Bull Johns Hopkins Hosp* 1894;5:53.
- Mukherjee P, Das C, Mukherjee G et al. Emergency internal iliac artery ligation for obstetrical and gynecological hemorrhage. *J Obstet Gynaecol. Ind* 2002; 52: 147-9.
- Mukherjee P, Biswas P. Compression suture in post partum hemorrhage. *J Obstet Gynaecol Ind* 2003;53:158-9.
- Oleszczuk D, Cebulak K, Skret A et al. Long term observation of patients after bilateral ligation of internal iliac arteries. *Ginekol Pol* 1995;66:533-6.
- Wagaarachchi PT, Fernando L. Fertility following ligation of internal iliac arteries for life-threatening obstetric haemorrhage: case report. *Hum Reprod* 2000;15:1311-3.