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Emergency Internal Iliac Artery Ligation for Obsterical and Gynaecological Haemorrhage

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Summary

Bilateral internal iliac artery ligation is safe, and effective way of controlling bleeding from uterus and lower genital tract. We performed 36 cases of emergency ligation of bilateral internal iliac artery during a period of 6 years from 1.4.94 to 31.3.2000. Indications were to control intraabdominal or external bleeding mainly following gynaecological and obstetrical operation and P.P.H. It was done extra-peritoneally in seven cases and intra-peritoneally in others. Associated operation like ovarian vessel ligation, uterine artery ligation, hysterectomy and excision of L.S.C.S. scar were done according to situation. We performed straight way hysterectomy in 9 cases along with ligation of internal iliac artery as situation demanded. We succeeded in 30 cases to control haemorrhage. Other 6 cases were managed by ligation of ovarian arteries, hysterectomy, vaginal packing and radiotherapy according to indications. There were 3 deaths in our study, one due to hepatic coma and others could not be revived from shock, as majority of the cases were brought from outside in a very poor condition. There were no major complications in other cases.

Introduction

Internal iliac arteries arise from bifurcation of common iliac arteries and form major arterial supply of pelvic organs. One of the safe, rapid and effective way of controlling bleeding from uterus and lower genital tract is bilateral ligation of internal iliac artery. This technique may also prove useful for controlling bleeding in patients with large haematoma of the broad ligament or a lacerated artery that has retracted into broad ligament, such vessels or active bleeding sites are often difficult to identify. The most important mechanism of action is reduction of pulse pressure by 85% and blood flow by 48% in the distal vessels (Burchell, 1968); although extensive collateral blood flow to the distal internal iliac artery persists. Thus turning an arterial pressure system into one with pressure approaching those in the venous circulation is more amenable to haemostasis via simple clot formation. Bilateral internal iliac artery ligation does not appear to interfere seriously with subsequent reproduction.

Material and Methods

Thirty six cases of emergency bilateral internal iliac artery ligation were performed in Obstetrics & Gynaecology Department of N.R.S. Medical College & Hospital, Calcutta during a period of 6 years from 01.04.1994 to 31.03.2000. These operations were done as a life saving measure to control intraperitoneal or extraperitoneal haemorrhage following both obstetrical and gynaecological complications. These operations were performed both intraperitoneally or extraperitoneally as and when indicated. Associated operations like ovarian vessels ligation, hysterectomy and excision of infected scar were performed to minimize morbidity and mortality of patients. Patients were analysed in terms of failure rate, associated complications and death.

Observation and Results

Emergency bilateral internal iliac artery

ligations were done in 36 cases. Indications are analysed in table I. In 22 cases it was done to control haemorrhage following obstetrical and gynaecological operations and rupture uterus. Majority of these cases were transferred from outside. Haemorrhage was followed by atonic P.P.H or secondary P.P.H. following L.S.C.S. and it was due to carcinoma of cervix. Most of the cases were performed through intraperitoneal route while 7 were performed extraperitoneally (Table II). Both routes were safe, rapid and effective in majority of the cases. Associated operations like ovarian vessels ligation, uterine artery ligation, hysterectomy and excision of infected L.S.C.S. scar were done in some cases (Table-III). Ovarian vessels ligation was done in all cases of haemorrhage following Ward-Mayo's operation, as it was very difficult to assess the site of haemorrhage. Ovarian vessels were also ligated medial to ovary in 3 cases of P.P.H. where only internal iliac artery ligation failed to control bleeding. Hysterectomy was done mainly to remove injured and infected uterus. Excision of infected L.S.C.S. scar and repair were performed in 4 cases of secondary P.P.H. following L.S.C.S. We succeeded in controlling haemorrhage in majority of the cases except 6, where in 2 cases of atonic P.P.H. we ligated ovarian arteries, hysterectomies were done in 3 cases of secondary P.P.H. following L.S.C.S. and packing and radiation were given in one case of carcinoma cervix.

Table I
Causes of Emergency Internal Iliac Artery Ligation

Type of Haemorrhage	Primary Case	
Intra-Abdominal bleeding with or without broad ligament haematoma following	Abdominal hysterectomy	4
	Ward Mayo's operation	6
	D.E. (Criminal)	4
	Hysterotomy	1
	Rupture Uterus	4
	Pelvic Floor Repair	1
	Myomectomy	1
	Forcep's delivery	1
Vaginal bleeding	Atonic P.P.H.	4
	Secondary P.P.H. following L.S.C.S.	7
	Carcinoma cervix	3
	Total	36

Table II
Routes of Operation

Route	Primary Case	No.
Extraperitoneal	Ward Mayo's operation	4
	Carcinoma Cervix	3
Intraperitoneal	Others	29

Table – III
Associated Operations

Type of operation	Primary Case	No.
Ovarian Vessels ligation	Ward-Mayo's operation	6
	Atonic P.P.H.	2
	Post L.S.C.S. secondary P.P.H.	1
Uterine Artery ligation	Atonic P.P.H.	2
	Post C.S. Secondary P.P.H.	1
Hysterectomy	Post C.S. Secondary P.P.H.	3
	Rupture Uterus	4
	Pelvic Floor Repair	1
	Abortion	4
Excision of Infected L.S.C.S. scar	Post C.S. Secondary P.P.H.	4

There were 3 deaths out of 36 cases in our study. One case had atonic P.P.H. and hepatic coma one case following abdominal hysterectomy and one following Ward-Mayo's operation could not be revived from shock. There were no major complications in the rest of the cases.

Discussion

Bilateral ligation of internal iliac artery can effectively control significant bleeding and thus prevent need for hysterectomy in many cases and save life of the patient. Ligation of the internal iliac artery was first performed by Kelly in 1894. O'Leary and O'Leary (1974) reported 90 cases who underwent uterine artery ligation (30 for uterine atony). There was failure in 6 cases (7%). There were no major complications and 95% success rate. Clark et al (1985) reported successful control of bleeding in 42% cases who underwent internal iliac artery ligation. Indications were uterine atony, lateral extension of low transverse incision and placenta accreta. But we performed 36 cases having obstetrical and gynaecological indications and we succeeded in 30 cases giving a success rate of 83.3%. But it should be remembered that out of 36 cases we performed straight away hysterectomy in 9 cases along with bilateral ligation of internal iliac artery without waiting for result as situation demanded (Table-II). We performed ovarian vessels ligation to preserve uterus in 3 cases. However it must be pointed that bilateral ligation of these arteries does not appear to interfere seriously with subsequent reproduction. Mengert et al (1969) documented successful pregnancies in 5 women after bilateral ligation of internal iliac artery in 3 of whom ovarian vessels were also ligated.

Conclusion

Bilateral internal iliac artery ligation is safe, rapid and effective way of controlling bleeding from uterus and lower genital tract. Both the decision and performance of bilateral internal iliac artery ligation should be the responsibility of obstetrician and should not be delegated to the vascular surgeon and procedure should be taught to all the trainees (Maier 1993).

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