INTERNAL ILIAC ARTERY LIGATION

(Reports of 15 cases undertaken in critical circumstances)

by

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Ligation of internal iliac arteries not only constitutes an essential step in some of the major pelvic surgery but is also an important livesaving procedure in post-operative gynaecological and obstetrical bleeding emergencies. Its broad indications are (1) as a planned step during primary operations (Pelvic exenteration, Werthiem's and Mitra's operation, rupture of uterus), (2) as an emergency step in the postoperative period (following C.S., caesarean hysterectomy, subtotal and total hysterectomy, Fothergill's and Wardmayo's technique) and (3) as a pre-operative preparation (recurrent bleeding in cancer cervix prior to surgery or radio-therapy). In this series analysis of the indications and results of 15 cases have been presented.

Materials

This study is based on 15 emergency ligations during 1976-1979. Besides them, as a prophylactic measures and to stop bleeding in advanced carcinoma cases, elective ligations were carried out in 6 cases of Mitra's and 4 cases of Werthiem's operations.

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Case Reports

Case 1

Mrs. A.C. 27 years a 2nd gravida carrying a term post C.S. pregnancy, was admitted in Eden on 11-3-76 at 7 P.M., with labour pains and underwent caesarean section on 12-3-76 at 2.50 A.M. At 1.00 P.M., slight vaginal bleeding occurred and she became restless. She was sedated with Pethidine. At 3.00 P.M. bleeding recurred along with passage of haemorrhagic urine for which blood, ergometrine etc. were given. At 5.00 P.M. a cystic mass the size of a foetal head appeared in the anterior pouch pushing the Cervix behind the symphysis pubis. Frank blood also drained out through urinary self retaining catheter. Laparotomy was undertaken with diagnosis of broad ligament and retrovesical haematoma.

On exploration, large haematoma was found at bladder base extending laterally on either side of broad ligament. Round ligaments were cut, broad ligaments were opened out, blood clots removed and transperitoneal ligations were undertaken along with subtotal hysterectomy. Uterus was flabby, enlarged and contained blood clots. She received 6 bottles of blood and was discharged home after 3 weeks.

Case 2

Mrs. N.D. 38 primigravida was admitted at 30 weeks with history of accidental haemorrhage and mild preeclampsia. She was discharged after conservative treatment for 2 weeks. She went in labour at 38 weeks with premature rupture of membranes. Emergency caesarean section was done, considering her an elderly primigravida. A small interstitial fibromyoma of the uterus was found. Placenta wa removed easily manually. After 6 hours sh

had a sharp bout of bleeding which could be controlled by ergometrine, syntocinon and blood, but recurred at 24 hours postoperative, when emergency total hysterectomy was done. On the following day she had again vaginal bleeding controlled by plugging but next day catastrophic bleeding occurred from the vault and emergency bilateral extraperitoneal ligation of internal iliac arteries were undertaken. She received 12 bottles of blood and was discharged well after 36 days.

Case 3

Mrs. S.P. 32 years para 3 + 0 was admitted with painless bleeding at 37 weeks and was diagnosed as placenta praevia. The bleeding ceased after conservative treatment but recurred after 24 hours when examination under anaesthesis revealed type III placenta praevia. Emergency caesarean section was done. Six days later she had secondary P.P.H. which could not be controlled, hence abdominal hysterectomy was undertaken. After 24 hours vaginal bleeding restrated and plugging was done. The bleeding continued when vaginal vault was sutured on the 8th day following hysterectomy but oozing could not be checked. Bilateral extraperitoneal ligation was undertaken on the 8th day. The patient thus could be saved with 28 bottles of blood and 36 days of hospitalisation.

Case 4

Mrs. B.S. 18 years primigravida was admitted at term in labour. Uncomplicated caesarean section was undertaken. After 4 hours, a suprapubic swelling not reducible by catheterisation appeared along with signs of internal haemorrhages. Blood stained urine appeared through catheter. Abdomen was opened and huge blood clots were found behind bladder base. Right broad ligament was distended by extension of haematoma. Subtotal hysterectomy was performed and blood clots removed. Bilateral transperitoneal ligation of arteries were done. She received 8 bottles of blood.

Case 5

Mrs. S.D., 23 years primipara was admitted in a nursing home at term and L.U.C.S. was undertaken. After 24 hours P.P.H. occurred and was controlled by blood, vaginal plugging and syntocinon. The bleeding recurred after a day and hysterectomy was carried out. Uterus contained a fibroid. Again bleeding occurred from vaginal vault when extraperitoneal ligation of arteries were undertaken. She received 20 bottles of blood and was discharged on 12th day.

Case 6

Mrs. S.L. 22 years admitted in a nursing home and caesarean section was undertaken for prolonged labour. After 24 hours hysterectomy was undertaken for severe P.P.H. However, continuous oozing persisted inspite of plugging and other measures. Attempts Transperineal ligation of internal iliac arteries was attempted on 14th day following hysterectomy. Patient's condition became low after attempt on the left side and bleeding persisted. On 23rd day extraperitoneal bilateral ligation were carried out. The patient survived after 4 laparotomies and 4 bottles of blood.

Case 7

Mrs. B.K. 41 years para 4 + 1 was admitted for abdominal hysterectomy for menorrhagia, which was carried out and uterus showed no abnormality either macroscopically or microscopically. From 7th day bleeding started which became severe on 13th day and could be controlled by vault stitching. On 24th day bleeding reourred and on 26th day it became severe when extraperitoneal ligation of internal iliac arteries was undertaken with 2 bottles of blood. Ultimately she was transferred to haematology dept. for correction of anaemia.

Case 8

Mrs. P.D. 42 years para 2 + 0 underwent abdominal hysterectomy for menorrhagia due to fibromyoma of uterus at a nursing home. On 6th day vaginal bleeding started which became severe on 9th day when vaginal vault was stitched. On 13th day she was brought to Eden Hospital in a stage of shock following profuse bleeding. After resuscitation, extraperitoneal ligations were done along with blood transfusion, she was discharged after 10 days.

Case 9

Mrs. S.D., 42 years para 3 + 0 was admitted on 2-1-76 with uterine prolapse, hypertrophied elongated cervix, cystocele, and rectocele. She had right sided salpingo-oophorectomy 8 years ago. Ward-Mayo's vaginal hysterectomy with pelvic floor repair was done on 10-2-76 easily, but on 20-2-76 suddenly a rapidly increasing

suprapubic lump appeared which on aspiration showed foul smelling altered blood. She was examined under anaesthesia on 21-2-76. Vaginal vault was opened and foul smelling blood was drained out. On pressing the abdomen foul discharge came out but mass remained unaltered. Bilateral extraperitoneal ligation was carried out and she was discharged well on 4-3-76.

Case 10

Mrs. W.D. 50 years, para 3 + 0 underwent total abdominal hysterectomy with bilateral salpingo-oophorectomy for fibromyoma of uterus in a nursing home. On the 9th, 18th and 26th day she was having vaginal bleeding which could be controlled by plugging, suturing of vault and other measures. However, on 28th day severe uncontrollable bleeding occurred, when as a desperate measure extraperitoneal ligations were undertaken. She received 2 bottles of blood. Postoperatively she had urinary infection but was discharged home well.

Case 11

Mrs. L.D. 32 years para 2 + 0 was referred from radiology Dept. and was admitted on 8-3-76 for vaginal bleeding. She had abdominal hysterectomy for uterine fibromyoma and cervicitis at Chandannagore on 30-1-76. Histology revealed epidermoid carcinoma cervix and was referred to radiology Dept. Vaginal examination showed a friable proliferative growth infiltrating on both sides up to lateral pelvic wall. Biopsy confirmed epidermoid carcinoma. She had vaginal bleeding on 8-3 and 10-3-76 but could be controlled. On 18-3, the bleeding was severe and extraperitoneal bilateral ligations were undertaken. Some difficulty was encountered in identifying the right artery as lymph nodes were adherent. She was referred to radiology again after discharge.

Case 12

Mrs. R.D. 55 years para 2 + 0 was admitted on 19-3-76 with severe vaginal bleeding following biopsy in a nursing home for postmenopausal bleeding. Vaginal examination showed excavating type of ulcer involving whole of cervix and upper 1/3rd of vagina.. Parametrium was involved on both sides upto lateral pelvic walls (Cancer cervix stage III parametrium). Biopsy showed squamous cell carcinoma. She had 2 bouts of vaginal bleeding on 21-3 and 25-3-76 which could be controlled temporarily but on 27-3 the bleeding became profuse and the patient became exsanguinated. Emergency bilateral extraperitoneal ligation of internal iliac arteries was carried out alongwith bilateral ligation of ovarian arteries, as this was a case of advanced cancer cervix. She received 3 bottles of blood and afterwards was referred to radiology.

Case 13

Mrs. S.L. 38 years had abdominal hysterectomy in nursing home for dysfunctional uterine haemorrhage. Bleeding started from 10th postoperative day and recurred on 17th day which could be controlled by vaginal plugging, vault suturing etc. However, on 21st day the bleeding became so profuse that emergency bilateral extraperitoneal ligation had to be undertaken. She received 16 bottles of blood and had an uneventful recovery.

Case 14

Mrs. S.B. 35 years had subtotal hysterectomy in a nursing home for fibroid uterus and endometriosis. On 10th postoperative day she had vaginal bleeding which could be controlled by plugging and blood transfusion. On 12th day the bleeding became very severe when emergency extraperitoneal bilateral ligation of internal iliac arteries had to be undertaken. She received 12 bottles of blood and developed haemolytic jaundice probably due to mismatched blood transfusion. She was discharged well after 21 days.

Case 15

Mrs. M.R.S. 50 years had abdominal panhysterectomy in a nursing home for dysfunctional uterine haemorrhage. On 10th, 18th and 26th day recurrent vaginal bleeding occurred but could be controlled by plugging, replugging, vault stitching along with blood transfusion. On the last day after 2nd episode of severe bleeding emergency extraperitoneal bilateral ligation internal iliac arteries were undertaken.

Morbidity and mortality: In this series 3 patients had urinary tract infection and 1 Jaundice. There was no immediate mortality amongst these 15 cases, but 1 case of emergency and 2 other patients of elective group died later on, all due to advanced carcinoma of the cervix.

Discussions

Fifteen cases of emergency ligation of bilateral internal iliac arteries have been presented. Besides this 15 cases there were another 10 cases of elective ligation during this period. Amongst these 15, in 14 the operation was undertaken in the postoperative period (including 1 case of post biopsy bleeding) as a life saving measure and in the remaining case, to control life threatening bleeding from the carcinomatous mass. Reich *et al* (1965) reported 61 emergency arterial ligations with comparable encouraging results. The indications here were obstetrical (6) and gynaecological (9). Obstetrical causes were broad ligament haematoma 2 cases and severe P.P.H. 4 cases. Gynaecological causes were (1) secondary haemorrhage following abdominal hysterectomy 6 cases, (2) following vaginal hysterectomy 1 case, (3) haemorrhage from vault recurrence following abdominal hysterectomy in a case of undiagnosed (till operation) cancer cervix 1 case and (4) uncontrollable bleeding from cancer cervix following biopsy, 1 case. amongst these 6 cases of abdominal hysterectomy, 3 had fibroid 1 had fibroid and endometriosis conjointly and 2 were suffering from dysfunctional uterine haemorrhage. Vaginal hysterectomy was undertaken in a case of prolapse.

In this series in 13, extraperitoneal approaches were made and in 2 transperitoneal. Although Coco and Frank (1966) has strongly advocated the transperitoneal route, the other method possesses the following advantages as an emergency approach (1) less shocking, (2) intestinal coils are not handled, abdominal cavity is not opened at all, so immediate postoperative complications like peritonitis, intestinal obstructions, etc. are much less and (3) quicker and more direct approach. Blood vessels also seem to be more superficial in comparison to transperitoneal approach. However, the extraperitoneal route has its own disadvantage as two incisions are necessary. Exploration of the pelvic cavity is not possible as in transperitoneal route. In the present series in 2 cases transperitoneal routes were selected for thorough exploration of pelvic pathology with the suspicion of broad ligament and retrovesical haematoma following caesarean section. Whatever may be the route, identification and accurate palpation of the iliac arteries are essentials. It is often difficult to identify the arteries when these vessels remain eclipsed by huge broad ligament haematoma. Inadequate anaesthetic relaxation is another factor which adds to difficulties for identifications of vessels. Extraperitoneal approach under such circumstances seems to be easier and safer. After ligation of these arteries extensive collateral circulation is established preventing sloughing of the important organs e.g. bladder and rectum.

This operation apart from saving the patients from immediate catastrophic haemorrhage possesses several advantages. In the advanced cervical carcinoma cases, haemorrhages can be lessened with fewer transfusions, thus lessening the chances of transfusion reaction and tumor growth may be slowed down by reducing blood supply. In obstetric cases it has an advantage of preservation of the uterus and possibility of fertility as well. In primigravida in case of bleeding following caesarean section, this procedure may serve as an alternative to hysterectomy. However, Burchell and Olson (1967) did not advocated this procedure.

Early diagnosis and prompt decision for this procedure would reduce the

death from pelvic haemorrhage yet morbidity, and mortality as observed in this series and as reported by Binder and Mitichett (1960) are not considerable after this operation.

Lastly it should be emphasized that not all cases of severe haemorrhage, especially in obstetric can be controlled by this technique. The possibility of development of afibrinogenaemia and other coagulation disorders should be kept in mind. The Universal and unselective use of this procedure may be disastrous at times.

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