PRACTICAL TRAINING ON HYPOGASTRIC ARTERY LIGATION "HAL" IN GYNECOLOGY & OBSTETRICS

THESIS

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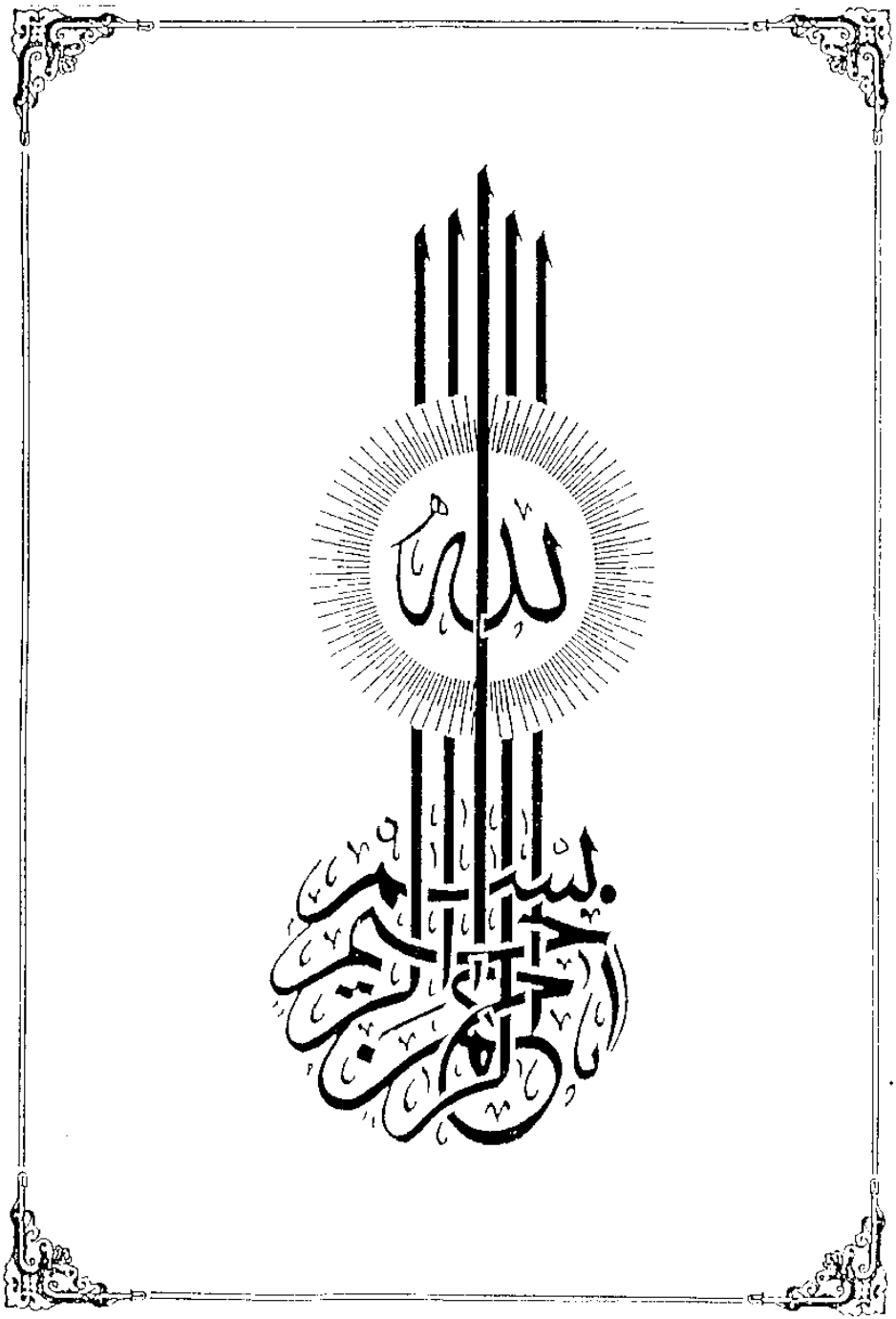

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INTRODUCTION

Ligation of the hypogastric artery in the control of severe spontaneous or operative hemorrhage is little known and seldom performed in the present day practice of gynecology and obstetrics. This is not because the procedure is ineffective , dangerous or even difficult to do , but it's simply because most practitioners don't know enough about it. Many women deaths from pelvic hemorrhage , may be safely prevented by doing "HAL".

Bilateral "HAL" in gynecologic surgery is not new , it is more than 90 years old. Howard Kelly of Baltimore in 1893 ligated both hypogastric arteries and both ovarian arteries during abdominal hysterectomy for a bleeding cervical cancer with extensive broad ligament involvement.

"HAL" may be done prophylactically when hemorrhage is anticipated (e.g. radical surgery) or when uterine preservation is desirable. It may become necessary when uncontrollable hemorrhage secondary to conization , cervical laceration , uterine atony , expanding broad ligament hematoma or attempts to remove the placenta in abdominal surgery occurs. It is also valuable

in excessive bleeding due to advanced carcinoma of the cervix , carcinoma of the endometrium , vaginectomy or pathology in a pelvic organ , that is supplied by the hypogastric artery.

We feel it is timely and important to define the place of hypogastric artery ligation in clinical practice. Therefore , we are trying to tailor a training programme for practitioners in gynecology and obstetrics on hypogastric artery ligation.

Review of Literature

HISTORY

Aulus Cornelius Celsus of Rome ligated vessels as a means of arresting hemorrhage in the beginning of the Christian era. Up to that time , the only way to obtain hemostasis was to press a cloth soaked in cold water on the bleeding area and to use vinegar. Rufus from Ephesus (98 - 177 A.D.) is also said to have attempted to stop hemorrhage by ligating vessels. (A.C. Papaloucas 1971).

As early as (1629) Johann Mays had advised attack of tumors by ligation of their blood supply. Harvey (1651) observed a regression in the size of tumors following ligation of their blood supply (Michael L. Leventhal et al. , 1938).

In 1886 , W.R. Pryor , Professor of Gynaecology at the New York Poli-clinic Hospital had noted the use of this procedure by surgeons in other specialities. He described a case of bilateral gluteal aneurysms in which the arteries were ligated but which terminated fatally due to the suppression of urine. He also noted the use of the procedure for prostatic hypertrophy without evidence of bladder slough (Frank Le Cocq , 1965).

According to Haggard , the first ligation of the hypogastric artery for gluteal aneurysm by the extraperitoneal route was performed by Stephens of Vera Cruz in 1812 (Michael L. Leventhal et al., 1938).

Baumgartner , in 1888 , was the first to employ bilateral hypogastric artery ligation for inoperable carcinoma of the cervix. His patient lived two years after the operation (Michael L. Leventhal et al., 1938).

Howard Kelly of the Johns Hopkins Hospital in Baltimore in 1893 ligated both hypogastric and both ovarian arteries during abdominal hysterectomy for a bleeding cervical cancer with extensive broad ligament involvement. In 1896 Pryor of New York advocated bilateral ligation in inoperable cases to cause tumor shrinkage and the following year he reported a case in which this was done. Independently , Kronig , in 1902 , in Germany recommended bilateral hypogastric and ovarian artery ligation to control the intractable hemorrhage of advanced cervical cancer and reported 3 cases (Peter Siegel et al., 1961).

In the American literature , Massart in 1920 recommended the ligation of the hypogastric arteries during the abdominal operation for cancer of the cervix

or corpus uteri. In a report published in 1924 Taylor and Peightal mentioned one case in which cautery of the primary lesion and ligation of both hypogastric arteries was done with no evidence of the growth 4 years later. They did not indicate whether the ligation was transperitoneal or extraperitoneal (Michael L. Leventhal et al., 1938).

Asteriades (1924) collected 42 cases(including one of his own) of severe hemorrhage from inoperable carcinoma of the uterus treated by transperitoneal hypogastric ligation. In his own case , there was a cessation of hemorrhage and pain , regression of the tumor and a 14 month survival. Orthner , in 1923 , described a technique for the extraperitoneal ligation of the hypogastric arteries which he considered ideal for haemorrhage and fetid discharge in advanced cancer of the cervix (Michael L. Leventhal et al., 1938).

Hartung's experience in 23 cases , published in 1931 , further demonstrated the absence of mortality and of impairment of function of any of the pelvic organs. He recommended the procedure :

(1) as a preliminary step to the Wertheim operation to allow for a more radical removal of tissue with less hemorrhage.

(2) following exploratory laparatomy when inoperable carcinoma of the cervix was found , and

(3) as an extraperitoneal operation for severe hemorrhage (Michael L. Leventhal et al., 1938).

In 1933 , Haupt reported a large series of 67 cases. In all but a few of these cases the bleeding was controlled. In 7 cases in which bleeding continued he ligated the ovarian arteries through the same extraperitoneal approach and achieved control of the bleeding. In 3 additional cases he ligated the round ligaments through the same extraperitoneal route. Tubas , in 1933 , reported 14 cases of inoperable cancer of the cervix in which this operation was performed and followed by x-ray therapy. He had the impression that in some cases the tumor diminished in size. Frommolt , in 1934 , employed the intraperitoneal liagtion method to control haemorrhage in 3 cases of advanced carcinoma of the cervix. The author does not record any follow up made in these cases (Michael L. Leventhal et al., 1938). Further mention of this procedure was infrequent untill 1954 when Hecht and Blumenthal described the technique for recurrent bleeding from the vaginal vault following total abdominal hysterectomy. In 1955 , its use in postoperative

hemorrhage was likewise noted by Decker and in 1960 for postpartum hemorrhage by Sagarra , Glaser and Stone. Daro and associates , described its use in 18 cases of bleeding cervical carcinoma with control of hemorrhage and Binder and Mitchell reported the use of this surgical technique in 4 cases and his paper included an excellent detailed anatomical discussion. Tajes noted a case of abdominal perineal resection in a 58-year-old woman in whom the internal iliac arteries were ligated. Necrosis of the buttocks developed in the areas supplied by the superior and inferior gluteal arteries. This suggested that the inferior mesenteric anastomosis through the superior hemorrhoidal arteries are vital to the prevention of a gluteal slough (Frank Le Cocq, 1965).

In 1961 , Reich and Nechtow reported 9 cases of the use of hypogastric artery ligation , displayed an exhibit and produced a teaching film on this subject (Frank le Cocq , 1965).

A most complete study of the subject in 1961 described the use of the operation in 60 cases. The study grouped patients into 5 categories useful for study and discussion. These included 32 patients with spontaneous pelvic hemorrhage from far advanced cervical

carcinoma ; 13 patients with severe postoperative hemorrhage ; 9 patients upon whom the procedure was performed for control of hemorrhage during operation; 4 patients on whom the procedure was performed prophylactically in anticipation of extensive pelvic surgery ; and 2 patients upon whom the procedure was used for teaching purposes (Peter Siegel et al., 1961).

In 1964 , Shinryo Shinagawa gave a remarkable case report of a woman who had a normal pregnancy and delivery by cesarean section 15 months later following bilateral ligation of the hypogastric ligation for uncontrollable postpartum hemorrhage. Dissection of the hypogastric arteries at this surgery proved them to be obliterated (Shinryo Shinagawa , 1964).

In 1964 , R. Clay Burchell made a research study of the hemodynamic effects of bilateral ligation of the hypogastric artery. He noted that blood continued to flow from the cut ends of the uterine arteries following hypogastric artery ligation. This pressure was measured directly at surgery with the conclusion that the continuous flow with low arterial blood pressure is due to the extensive collateral circulation. With the absence of pulsation clotting develops and