INTERNAL ILIAC ARTERY LIGATION

Essay

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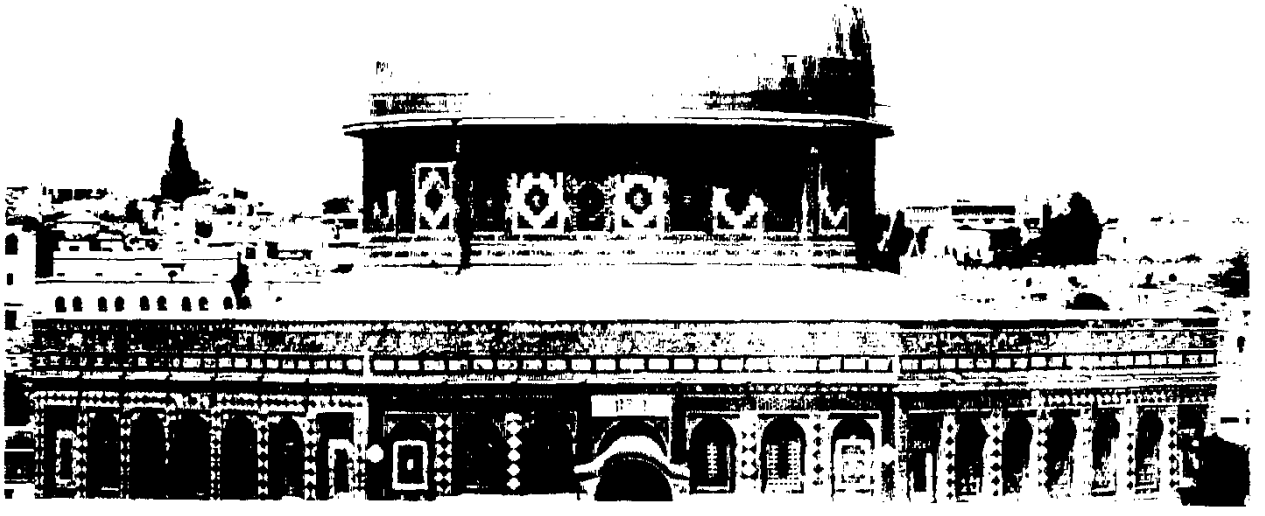
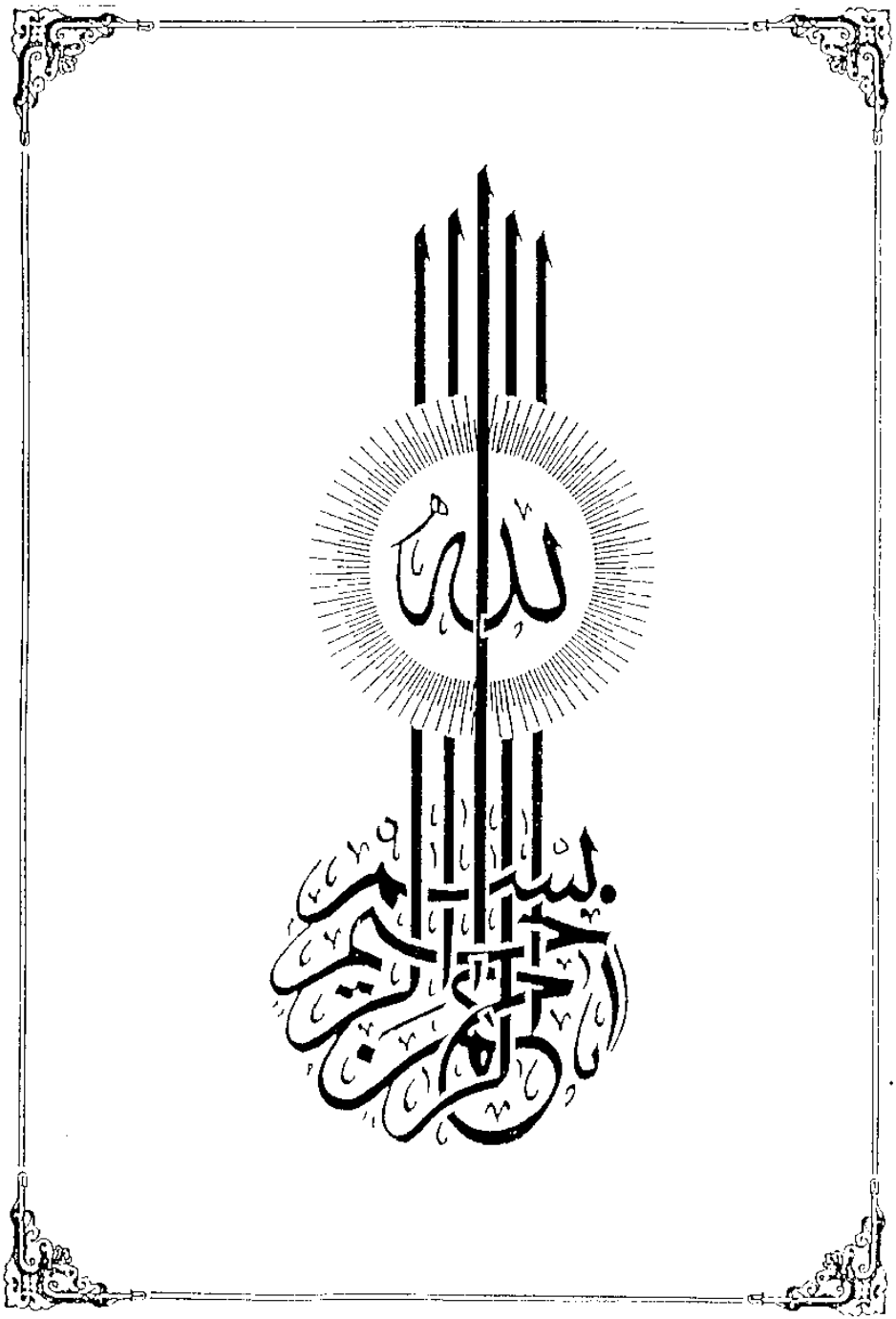
بسم الله الرحمن الرحيم

"سبحان الذى أسرى بعبده ليلاً من المسجد الحرام الى المسجد الأقصى
الذى باركنا حوله لنريه من آياتنا انه هو السميع البصير"

صدق الله العظيم

سورة الإسراء
آية رقم ١





To My Parents
The First Teacher in My Life

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INTRODUCTION AND AIM OF THE ESSAY

INTRODUCTION

Obstetrics and gynaecology is a bloody business. Despite the ready availability of banked blood and blood products, postpartum and operative haemorrhage remain major causes of maternal morbidity and mortality. Approximately one-third of maternal deaths are due to haemorrhage.

Pelvic haemorrhage demands immediate control. Bilateral ligation of the internal artery iliac arteries has been recommended when conventional methods are of no avail in controlling spontaneous operative or post-operative haemorrhage, and also prophylactically to ensure a decreased blood loss when operative haemorrhage and technical difficulties are anticipated, as in operations of female genital tract tumours. The safety and effectiveness of therapeutic hypogastric artery ligation as a life saving measure is well established, as well as preservation of uterus and ability to conceive later on.

AIM OF THE ESSAY

The role of internal iliac arteries ligature in control of pelvic haemorrhage as prophylactic and curative procedure in gynaecologic and obstetric practice.

HISTORY OF THE PROCEDURE

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Since the early 1800's bilateral hypogastric artery ligation has been used with varying frequency to aid in diminishing blood loss in extensive operations upon the pelvic area (*Evan and Mc Shane, 1985*).

The first unilateral hypogastric artery ligation for a gluteal aneurysm was performed in 1812 and bilateral ligation for hemorrhage secondary to carcinoma of the uterine cervix was done in 1888.

The first hypogastric artery ligation reported in the United States was performed on 5 March 1894 by Dr. Howard Kelly of the Johns Hopkins Hospital. He ligated both internal iliacs 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 the inoperable cases to cause tumor shrinkage (*Le Coq, 1966*).

In 1902, Kronig in Germany, recommended bilateral internal iliac and ovarian arteries ligation to control the intractable hemorrhage of advanced cervical cancer and reported three cases.

ANATOMY OF PELVIC CIRCULATION

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While the principle source of blood to the pelvis is the internal iliac "hypogastric" artery, lesser arterial sources include the ovarian, inferior mesenteric, middle sacral, inferior hypogastric and external pudendal artery.

INTERNAL ILIAC ARTERY

Embryology

In the fetus, the internal iliac artery is twice as large as the external iliac and is the direct continuation of the common iliac artery. It ascends on the back of the anterior wall of the abdomen to the umbilical opening, the two arteries now termed umbilical, they enter the umbilical cord, where they are coiled round the umbilical vein and ultimately ramify in the placenta.

At birth when the placental circulation caeses, only the pelvic portion of the artery remains patent as internal iliac artery and the first part of the superior vesical artery of the adult, the remainder of the vessel becomes a fibrous cord termed the medial umbilical ligament, raising the peritoneal medial umbilical fold which extends from the pelvis to the umbilicus (*Williams and Warwick, 1980*).

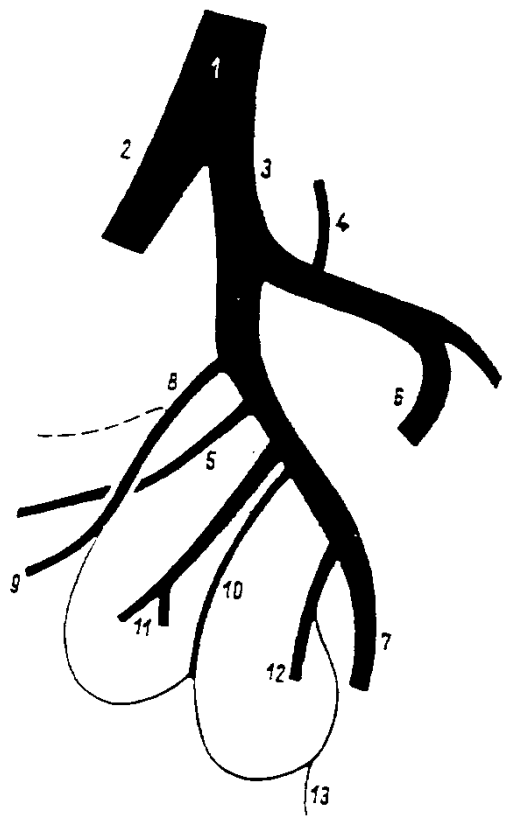
Each internal iliac artery arises at the bifurcation of the common iliac artery, level with the lumbosacral intervertebral disc and in the front of the sacroiliac joint, it descends to the upper margin of the greater sciatic

foramen, where it divides into an anterior trunk which continues in the line of the patent vessel towards the spine of the ischium, and a posterior trunk, which passes backwards towards the foramen. The stem of hypogastric artery is short, it varies from 2.5-7.5 cm being frequently on the right side, longer than on the left (*Shafiroff, 1959*).

Internal iliac artery is related anteriorly to the ureter, crossing from the lateral to medial side over the internal iliac artery.

Anteromedially it is related to parietal peritoneum separating it from the terminal part of the ileum on the right side and sigmoid colon on the left side. Posteromedially, it is related to the internal iliac vein. Posterolaterally, it is related to external iliac vein. Laterally it is related near its origin to external iliac veins and lower down to the obturator nerve.

Branches of the Internal Iliac Artery



Branches of the internal iliac artery. *(1)* Common iliac artery; *(2)* external iliac artery; *(3)* internal iliac artery; *(4)* iliolumbar artery; *(5) obturator artery; (6)* superior gluteal artery; *(7)* inferior gluteal artery; *(8)* umbilical artery; *(9)* superior vesical artery; *(10)* vaginal artery; *(11)* uterine artery; *(12)* internal pudendal artery; *(13)* middle rectal artery.

Quoted from Luzsa (1974).

Branches from the Anterior Trunk of the Internal Iliac Artery

Superior vesical artery

The first part of the superior vesical artery is the proximal patent section of fetal umbilical artery. It passes medially to reach the side of the bladder. This artery communicates with the middle and inferior vesical arteries and also gives a branch to the distal part of the ureter.

Inferior vesical artery

Frequently arise in common with the middle rectal artery and is distributed to the fundus of the bladder.

Middle rectal artery

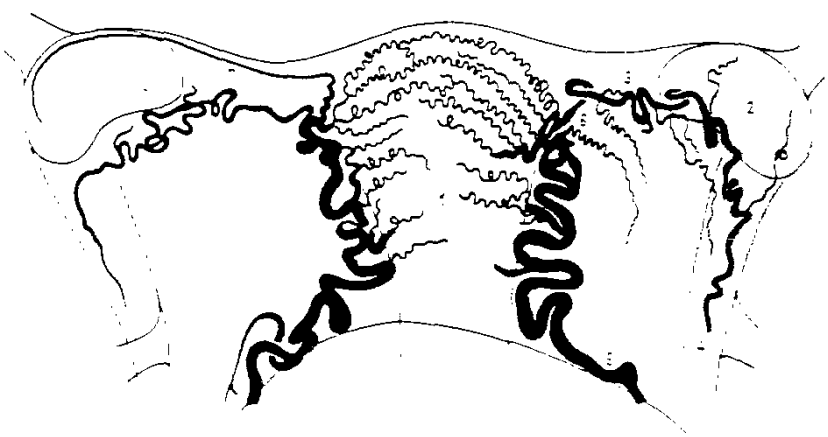
Variable branch of internal iliac artery that passes medially to supply the lower part of the rectum and the vagina. It communicates with superior rectal artery from inferior mesenteric and with inferior rectal artery from internal pudendal artery.

Uterine artery

Largest branch of the anterior trunk of internal iliac artery, in men it corresponds to the artery of ductus deference. Its course is at first downward and forward until it reaches the base of the broad ligament (parametrium) where it turns medially towards the uterus. It crosses over the ureter in its canal, 2 cm lateral to the cervix and above the lateral vaginal fornix, to reach the uterus at the level of

the internal os, where it turns upward at right angles and follows a tortuous course along the lateral border of the uterus to the region of the uterine cornu. Here it sends branches to supply the fallopian tube, round ligament and cornu, and anastomoses with the ovarian artery (*Borell and Fernstorm, 1953*).

This characteristic tortuosity is lost when the uterus enlarges during pregnancy.



The uterine artery and its branches. Anatomical preparation. Anteroposterior view. *1.* uterus; *2.* Ovary; *3.* Uterine tube; *4.* Ligament of ovary; *6.* Ovarian branch; *7.* Tubal branch; *8.* Ovarian artery.

Quoted from Luzsa (1974).

At the level of the internal os, the uterine artery gives off a descending branch to supply the lower cervix as well as a circular branch that anastomoses with its partner from the opposite side and from which arises the anterior and posterior azygos arteries of the vagina.