EVALUATION OF HYDROTUBATION AS A LINE OF TREATMENT OF BILATERAL TUBAL OBSTRUCTION IN INFERTILE FEMALES

THESIS

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PRESENTED By :

ALAA EL-DIN MOHAMMED OSMAN EL-BASHAARY

UNDER SUPERVISION OF

Assist. Prof. Dr.
SAIED MOHAMMED TOHAMY
Ass. Prof of Obstetrics & Gynaecology
Faculty of Medicine
Ain Shams University

Dr.
SAMEH MAHMOUD ABD EL-HAFEZ
Lec. of Obstetrics & Gynaecology
Faculty of Medicine
Ain Shams University

AIN SHAMS UNIVERSITY
FACULTY OF MEDICINE
Department of Obstetrics & Gynaecology

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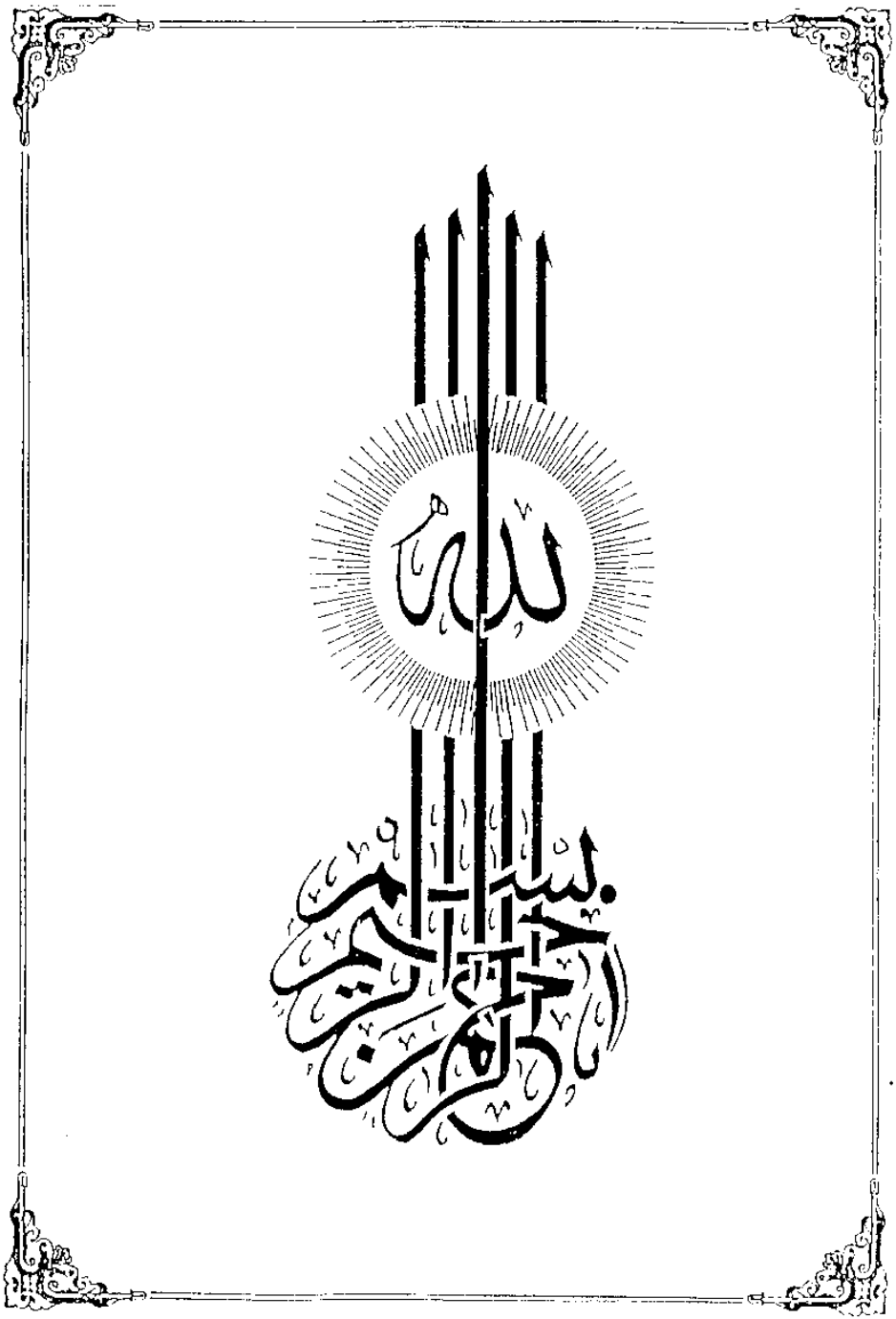

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INTRODUCTION

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Infertility is usually defined as failure to conceive after 1 year of regular coitus without contraception. The tubal factor is the most common cause of female infertility. It is 20 - 30 % of female infertility.

In general, infertility affects approximately 10 % of couples which makes it one of the more common problems for which people seek medical aid.

It is estimated that the male factor is implicated in 40 % of infertility problems, failure of ovulation in 10-15 %, tubal factor in 20 - 30 % cervical factor in 5 %.

The remaining 10 - 20 % of couples have no known cause for their infertility.

REVIEW OF LITERATURE

ANATOMY OF THE FALLOPIAN TUBES

Gross Anatomy

There are two Fallopian tubes situated in the upper margins of the broad ligaments which form their mesentery and meso-salpinx **(Davies and Davies, 1962).**

Each tube is about 10 cm long, its medial end opening into the superior angle of the uterine cavity, the lateral end into the peritoneal cavity close to the ovary. The uterine tube extends laterally as far as the medial "uterine" pole of the ovary, then ascends along the mesovarian border to the tubal pole over which it arches, and finally, it turns down words and ends in relation to the free border and medial surface of the ovary. The uterine ostium of the tube is very small and its internal diameter is about 1 millimeter. The opening into peritoneal cavity, when its muscular wall is relaxed has an internal diameter of about 3 millimeter. The abdominal ostium is situated at the infundibulum. The circumference of which is prolonged by a varying number of irregular processes called fimbriae, so it some times called the fimbrial end of the tube. One fimbria , longer and more deeply grooved is closely applied to the tubal extremity of the ovary and is named the fimbria ovarica. The infundibulum opens into the ampulla which is thin-walled and

tortuous. It represent about the lateral half of its length. The ampulla is leads into the isthmus which is round and cord-like. It forms the medial one-third of the tube. The part passing the wall of the uterus is about 1 cm long and it is called the interstitial part of the tube **(Warwick and Williams, 1978).**

Structure of the Tubes

The Fallopian tube consists of:

(1) Serosal Layer: It is the outer layer and represents a layer of peritoneal covering consisting of a flat mesothelial cells layer. It is deficient along the inferior surface of the isthmus. The underlying subserous layer of loose connective tissue continuous with that of the broad ligament **(Abd El Kader, 1974).**

(2) Muscular Layer: consists of external longitudinal and inner circular smooth non striated muscle fibres in addition to an internal longitudinal group of fibres in some parts of the tube. The isthmus has the thickest muscular layer of any part of the tube, there being a most marked reduction as the isthmus continuous into the ampulla. In the ampullary part the internal longitudinal muscle fibres are absent **(Warwick and Williams, 1978).**

(3) The mucous membrane: it consists of an epithelium and an underlying connective tissue containing the mucosal

blood vessels, lymph vessels and nerve fibers. The epithelium is columnar ciliated epithelium but at least 3 kinds of cell can be identified of which only one is ciliated and others being secretory and intercalary.

There are no glands in the tubes, but the secretory cells show variations during the menstrual cycle. During corpus luteum phase, their number is increased and also their activity is increased and probably they secrete nutrient material to sustain the ovum during its passage through the tube. The epithelium of the tube is invaginated into the lumen in a series of major folds each of which may give secondary or even tertiary projections **(Warwick and Williams, 1978).**

Blood and Nerve Supply

Arterial supply: Arterographic evidence show that uterine artery supplies the medial 2/3 of the tube. It arise from anterior division of internal iliac artery. The lateral 1/3 of the tube is supplied by ovarian artery which arise from aorta at the level of lumbar 3 **(Borell and Fernstrom, 1953).**

Venous drainage: The medial half of the tube drains by the uterine veins into the internal iliac vein, then the common iliac vein, then and finally into the inferior

vena cava.The lateral part is drained by the ovarian veins. The right ovarian vein drains directly into inferior vena cava, while the left vein drains into left renal vein. The lymphatic drainage follows the veins.

Nerve Supply

The tube has sympathetic and para sympathetic nerve supply along the ovarian and uterine arteries.

Function of the Tubes

The functional role of the tube is the transport of ova and spermatozoa and their joint product, the zygote and the pre-implantation morula into the uterine cavity. The ovum pick-up is either by chemotaxis or by the current produced by the tubal epithelial cilia towards the uterine cavity. The muscles of the tubes have a peristaltic activity towards the uterus, so the fertilized ovum is driven to the uterine cavity by both mechanisms **(Toppozada and Toppozada, 1969; Eddy et al., 1978).**

Embryology of the Tubes

Mullerian duct play an important part in the development of the female reproductive system. Each duct commences as a groove-like invagination of the coelomic epithelium (the female duct groove) on the lateral aspect of the mesonephric ridge near its cranial end and its blind end grows caudally in the ridge as a solid rod of cells

which acquires a lumen as it lengthens. Throughout the extent of the mesonephros, it is lateral to the mesonephric duct.

At the caudal end of the mesonephros which it reaches in the 8th week, the paramesonephric duct turns medially and crosses ventral to mesonephric duct to enter the genital cord where it bends caudally in close apposition with its follow of the opposite side. The two ducts reach the dorsal wall of the urogenital sinus during the third month, and their blind ends produce an elevation on it termed the sinus or Mullerian tubercle. Each duct consists of vertical cranial and caudal parts with an intermediate horizontal region. The cranial part forms the uterine tube and the original coelomic invagination remains as the pelvic opening of the tube. The fimbriae becoming defined as the cranial end of the mesonephros degenerates.

The caudal vertical parts of the two ducts fuse with each other to form the uterovaginal primordium which gives the lower part of the uterus and as it enlarges it takes in horizontal parts to form the fundus and most of the body of adult uterus **(Warwick and Williams, 1978).**

ETIOLOGY OF INFERTILITY

Infertility is an involuntary reduction of reproductive capacity. It affects approximately 10 - 15 % of couples **(Speroff et al., 1981; Keller et al., 1984 and Davajan, 1983).** The etiology of infertility can be divided into three major categories:

(1) Male factors

(2) Female factors

(3) Unexplained infertility

It is reported that approximately 40 % of infertility cases are due to male factors and 40 % are due to female factors while the remaining 20 % are due to unexplained infertility **(Templeton and Penney, 1982).** It has also been reported that in 35 % of infertile couples are due to multiple factors.

Male factors of infertility may be due to decreased production of spermatozoa, ductal obstruction, failure to deliver into vagina or due to abnormal semen **(Keller et al., 1984).**

Female factors of infertility may be due to ovulation causes (anovulation, inadequate corpus luteum or amenorrhea with low estrogen production), tubal or pelvic

factors, cervical and uterine factors or due to vaginal factors **(Keller et al., 1984).**

Unexplained infertility refers to a failure of the couple to concieve in whom no definite cause of infertility can be identified. This category may be due to:

* Unruptured dominant follicle in 5 - 9 % of cases **(Coulam et al., 1988; Daly et al., 1985).**
* Antisperm antibodies that prevent or decrease binding of sperm to zona pellucida. This may be presents in 5 % **(Bronson et al., 1984)** or 7 - 17 % **(Moghissi and Wallach, 1983).**
* Defect in sperm function that decrease the penetration power of sperm. It may be 34 % of cases **(Aitken et al., 1983).**