Surgical Management of Male Infertility

Essay

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In
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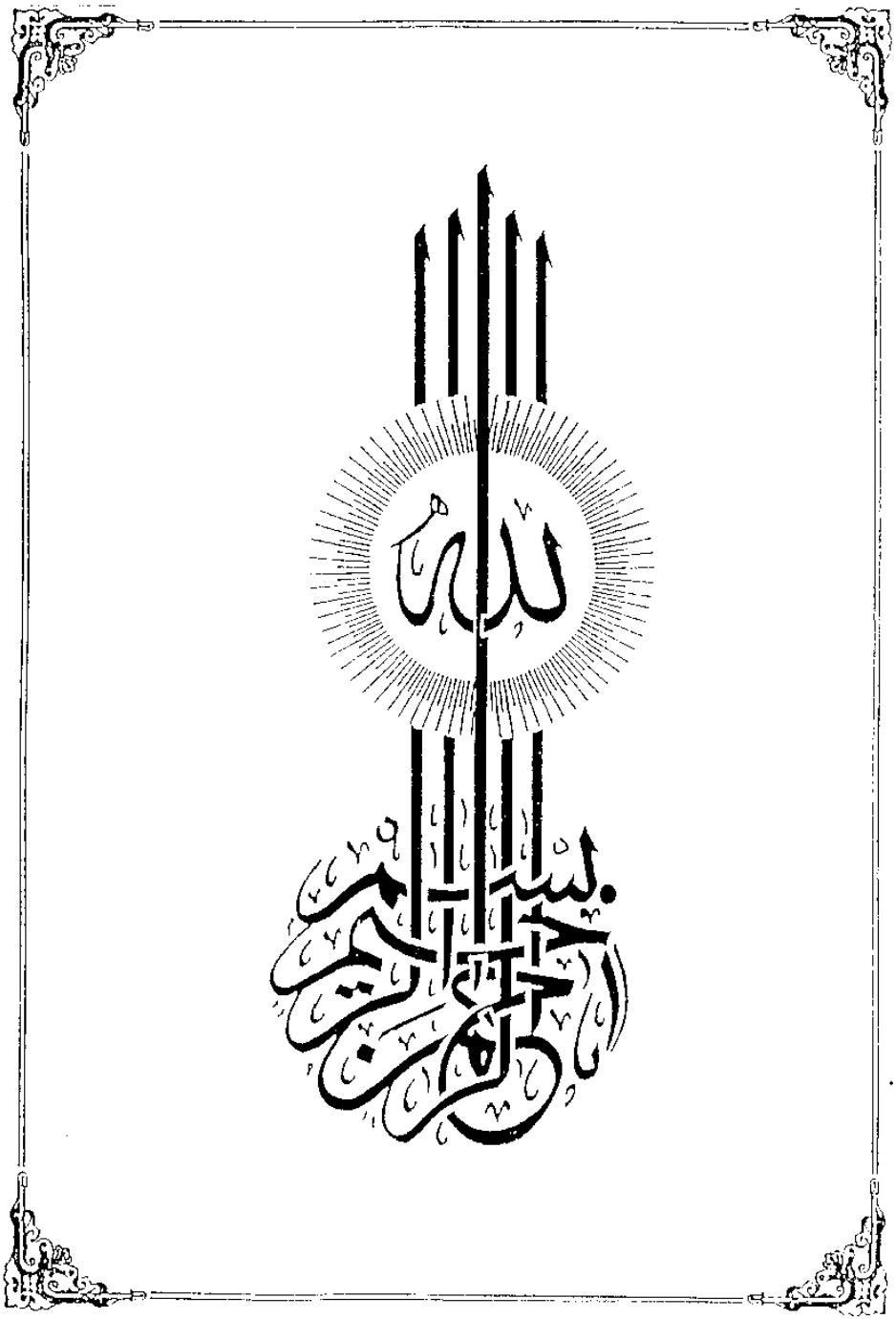

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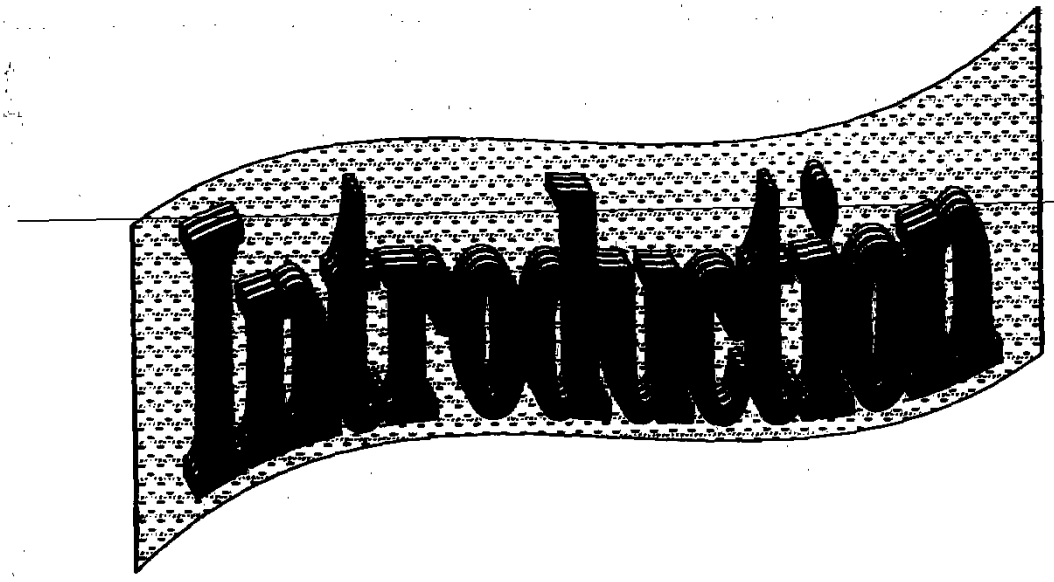

Introduction :

Data have determined that approximately 20% of cases of infertility are entirely due to a male factor, an additional 30% of cases, involves both male and female factors ***(Mosher, 1985).***

Varicocele and ductal obstruction are the most common surgically correctable causes of male infertility.

The aim of this study is to spotlights on the diagnosis and treatment of male infertility.

Anatomy of Male Genital Tract

Anatomy of the Male Genital System

The male genital system includes the testes, epididymides vasa deferentia, ejaculatory ducts and penis, together with a certain accessory glands; the prostate, seminal vesicles and bulbo-uretheral glands.

The Scrotum :

A pouch partitioned into two sacs by a partial median septum. Each sac consists of skin, darots muscle, thin lamina of external spermatic fascia, slips of cremasteric fascia, internal spermatic fascia and inner lining derived from parietal peritoneum. Each sac contains the male gonads and its associated epididymis as well as the lower portion of the spermatic cord with its coverings*(Tanagho, 1992).*

Blood supply :

- From the external pudendal artery which is branch of the femoral artery (anteriorly).
- Branches of internal pudendal artery (posteriorly).
- Branches from cremasteric and testicular arteries.

Lymphatic drainage :

- To the superficial inguinal lymph nodes *(Tanagho, 1992)*.

The adult testes :

- The primary reproductive organs in the male are suspended in the scrotum by structures forming the spermatic cord and by the scrotal tissues especially the non striated dartos muscles. The left testis usually hangs about 1 cm lower than its fellow. Each testis is an ellipsoidal form and has an oblique position in the scrotum.

The average dimensions of the testis a 3.7 - 4.2 cm in length 1.7 - 2.0 cm in breadth, and 2.5 - 2.8 cm in antroposterior diameter *(Williams and Warwick, 1980)*.

The testis is invested by three tunics :

1. The tunica vaginalis :

A closed sac, the testis, is invaginated into it. It is reflected on the internal surface of the scrotum and hence it consists of visceral and parietal layers.

The visceral layer invests the anterior border, the medical and lateral surfaces and the extremities of the testis.

The potential space separating the two layers containing serous fluid allowing smooth gliding of the testis.

2. The tunica albuginea :

Forms a tough fibrous covering of the testis and gives off numerous incomplete septa which divide the testis into a number of cone shaped lobules.

3. The tunica vasculosa :

It is consists of a plexus of blood vessels held together by delicate alveolar tissue and extend over the internal aspect of the tunica albuginea and cover the septa ***(Williams and Warwick, 1980).***

Structure of the testis :

Beneath the white outer capsule of the testis, seminiferous tubules are separated by fibrous septa into as many as 400 lobules, each of which is occupied by two or more highly convoluted seminiferous tubules, 30-60 cm in length with both ends

terminating in a straight tubules called canaliculi resti fig. (1). The seminiferous tubules have a central lumen, a stratified epithelium (four to eight cells) in thickness composed of sertoli cells and spermatogenic cells ***(Tanagho, 1986).***

The interstitial tissue between the tubules is composed of leydig cells, blood vessels, fibroblastic supportive cells, extensive lymphatic channels, mast cell and numerous macrophages.

Sertoli cells :

Tall columnar cells extend radially from just within the basement membrane towards the lumen of the seminiferous tubules.

Functions :

(1) Maintenance of the blood testis barrier.

(2) Secretion of the testicular fluid and androgen binding protein.

(3) Participation in the release of sperms, Fig. (2).

Germinal epithelium :

The spermatogenic cells are arranged in an orderly manner from the basement membrane to the lumen.

Spermatogonia lie directly on the basement membrane next are primary spermatocytes, then secondary spermatocytes, finally the spermatid.

Leydig cells :

- Small groups from 5-20 cells in the loose C.T stroma between the tubules, they constitute about 12% of the testicular volume.
- They are the primary source of testosterone production ***(Williams and Warwick, 1980).***

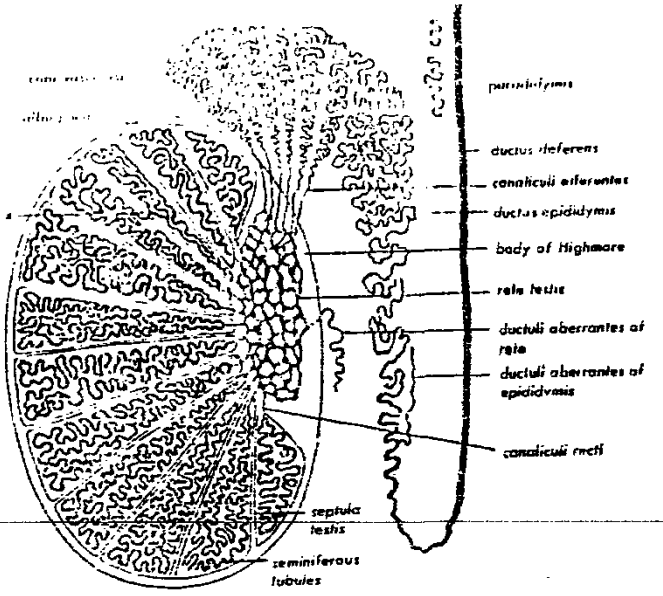

Fig. (1) : Diagram of arrangement of seminiferous tubules and excretory ducts in the testis and epididymis.
[Tanagho, 1986]

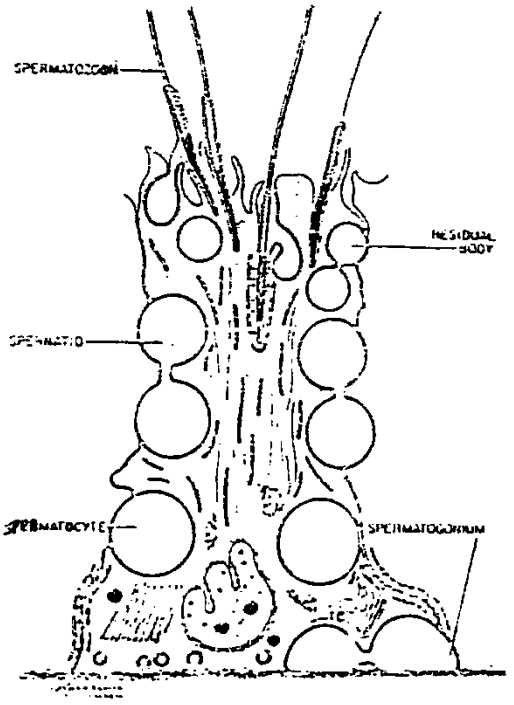

Fig. (2) : Fine structure of the sertoli cell.
[Williams and Warwick, 1990]

Blood supply of the testis :

(A) Arterial supply :

Derived from three main sources. Fig. (3)

1. Internal spermatic artery : which arises from the aorta.
2. Deferential artery : which arises from the inferior vesical artery.
3. Cremasteric artery : which arises from inferior epigastric artery.

A single artery enters the testis in 56% of cases, two in 31% and three or more in 13% of cases ***(Kormas and Svoranka, 1971).***

(B) Venous drainage :

Can be divided into anterior and posterior system :

I. The anterior veins drain to the femoral and iliac veins.

II. The posterior system is composed of the pampiniferm plexus which empties into the external and internal spermatic veins. These drain into the iliac vein and left renal vein or inferior vena cava, respectively.

The internal spermatic vein (ISV) is single in 40-50% of the time on the left and 50-60% of the time on the right. Two or more

branches are noted in the remainder of cases ***(Wildus and Mitchell, 1990).***

Potential ISV collaterals can be divided into five major groups : Parallel channels originate and terminate within the gonadal vein, having multiple anastomoses along their course. Retroperitoneal and lumber vein collaterals are frequent and most common in the upper third of the ISV.

Hilar renal collaterals communicate between capsular veins or renal vein, often in internal position, and the upper to mid ISV.

The colic and low retroperitoneal branches join the ISV in the pelvis, Fig. (4).

Transcrotal venous anastomoses may be a cause of recurrent varicocele after one side has been ligated or embolized ***(Tjia et al., 1982).***

Wishahi, (1991) reported that the spermatic vein has a fixed unique course where it divides into two branches at L4, medial and lateral.