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A STUDY OF INTRASCROTAL SWELLINGS

THESIS

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INTRODUCTION AND AIM OF WORK

The scrotum is an important region in the body. With its contents, it is responsible for the generative power due to the presence of the testis and its reproductive tubules. The testis, epididymis, and other intrascrotal contents have their specific diseases which may end in loss of the generative and reproductive functions. These diseases may be congenital, inflammatory, traumatic or neoplastic, or may be due to endemic diseases. The pampiniform plexus especially on the left side is the seat of dilatation and tortuosity which leads to primary varicocele which may cause subfertility with a social and psychological problem. So my aim in this work under the faithful directions and kind supervision of Prof. Dr. RAOUF GUINDY ABC SEIF is to review the subject and to discuss the ideal management for facing every type of intra-scrotal swellings by the possible means.

At the last, an applied practical part to what I had seen and practised in Damerdash Hospital in 112 patients suffering from different types of intra-scrotal swellings.

REVIEW
OF
LITERATURE

THE SCROTUM :-

The scrotum is a cutaneous pouch containing the testis, epididymis, and the lower part of the spermatic cord, all within their coverings.

It is divided on its surface into a right and left portion by a raphe.

ANATOMY OF THE INTRA-SCROTAL STRUCTURES :-

The testes are the reproductive glands in the male and are suspended in the scrotum by the spermatic cords, the left testis hanging somewhat lower (about 1 cm) than the right side. The testis is a smooth, ovoid structure. The average length being 4 to 5 cm, the breadth about 2.5 cm and is 3 cm in anteroposterior diameter, its weight varies from 10.5 to 14 gm. Each testis projects into a closed serous sac called the tunica vaginalis.

So that only the posterior part of the testis is not covered by a double layer of tunica.

The parietal and the visceral layers are usually separated from each other by only a thin film of fluid. The testis and the tunica vaginalis are attached to the lower part of the scrotum by a fibrous condensation called

the scrotal ligament which is derived from the gubernaculum. (Romanes, 1972).

The coverings of the testis are several because in the course of development of the scrotum, extensions from the layers of the abdominal wall are carried down to the scrotal sac, with the exception of the tunica vaginalis which is related only to the testis and epididymis.

THE COVERINGS FROM THE ABDOMINAL WALL :-

The coverings of the testis are the same as those which invest the spermatic cord and they are from within outwards as follows:-

- The tunica vaginalis derived from the peritoneum.
- Internal spermatic fascia from the transversalis fascia.
- The cremasteric muscle and fascia from the internal oblique muscle.
- External spermatic fascia from the external oblique aponeurosis.
- Membranous layer of the superficial fascia (Fig. 1).

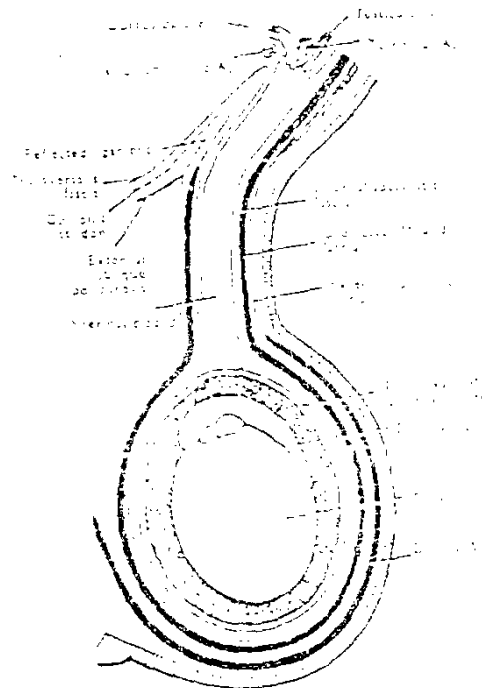


Fig. (1): A coronal section through the spermatic cord and scrotum.
(After Romanes; 1972).

THE SPECIFIC COVERINGS OF THE TESTIS :-

- Parietal layer of the tunica vaginalis.
- Visceral layer of the tunica vaginalis.
- The tunica albuginea.
- The tunica vasculosa. (Davies, 1967).

a) THE TUNICA VAGINALIS:-

Is the lower part of the processus vaginalis of the peritoneum which in the foetus, preceeded by the descent of the testis from the abdomen down to the scrotum.

As mentioned before the tunica vaginalis may be described as consisting of a visceral and parietal layers, the visceral layer covers the lateral and the medial surface and the anterior border of the testis.

At the medial side of the posterior border, it is reflected forwards to become continuous with the parietal layer. (Romanes, 1972).

The parietal layer is more extensive than the visceral layer, the inner surface of the tunica vaginalis is a smooth and covered with a layer of the mesothelial cells. (Luis C. Junqueira, 1977).

At the lateral side of the posterior border it is reflected on the medial aspect of the epididymis, lining the sinus of the epididymis and then over its lateral aspect as far as its posterior border, where it is reflected forwards to become continuous with the parietal layer. (Romanes, 1972).

b) THE TUNICA ALBUGINEA:-

Form a fibrous covering for the testis. It is a dense membrane of a bluish-white colour, composed of interlacing bundles of white fibrous tissue. It is covered with the visceral layer of the tunica vaginalis, except at the head and tail of the epididymis, and along the posterior border of the testis where the testicular vessels and nerves enter the gland. The mediastinum testis is a thickened part of the tunica albuginea that projects from the posterior border of the testis to the interior of the gland and extends from the upper to near the lower end of the gland is wider above than below.

The septa divide the testis incompletely into cone-shaped lobules, about two or three hundred in number. The base of the lobules are at the surface of the testis and their apices converge to the mediastinum. They contain the convoluted seminiferous tubules, which are lined with thick multi-layered germinal epithelium that produces immature spermatozoa.

The convoluted tubules join each other and become straighter (straight seminiferous tubules), they discharge the spermatozoa into the rete testis. (Fig. 2) (Romanes, 1972).

c) THE TUNICA VASCULOSA:-

Is the vascular layer of the testis, consisting of a plexus of blood vessels held together by a delicate areolar tissue, it lines the tunica albuginea and clothes the septa. (Romanes, 1972).

STRUCTURE OF THE TESTIS :-

Each testis is completely invested by a dense white inelastic capsule, the tunica albuginea, which projects into the testicular substance at the posterior surface of that organ to the mediastinum testis.

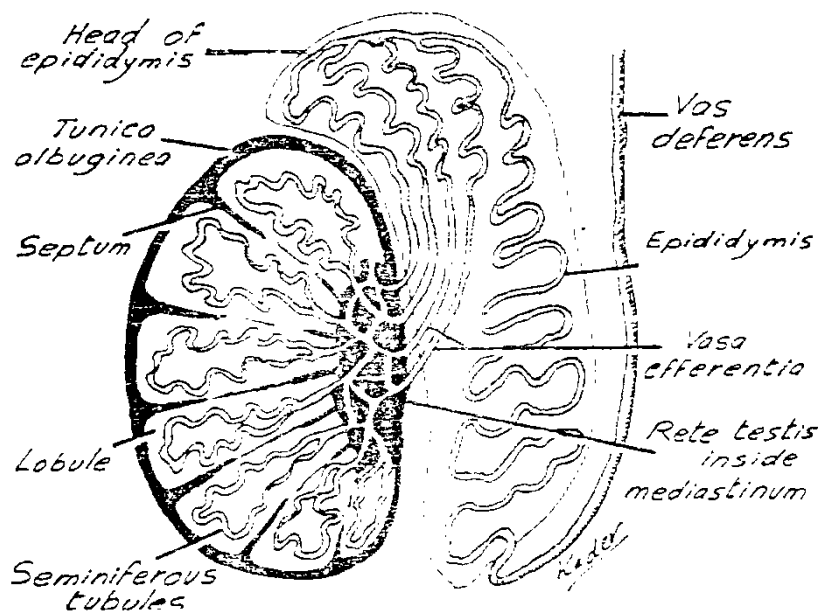


Fig. (2): Diagram of the stroma of the testis.
The epididymis and the beginning of
the vas deferens are shown.

From the mediastinum, where the testis is penetrated by its vessels and nerves, radiate a series of thin septa which reach out to the inner surface of the tunica and divide the testis into 250 conical compartment of lobes of the testis and these containing the seminiferous tubules. (Romanes, 1972).

Each seminiferous tubule is highly coiled, and when teased out is about 70 cm long. The seminiferous tubules are coiled in such a way that both ends join a series of about thirty short straight tubules which converge on a network of vessels lying in the mediastinum, the rete testis within each lobe, the seminiferous tubules are embedded in a delicate connective tissue which contains polyhedral cells (Leydig cells) some of which are swollen with lipids, these are the source of testicular androgens. They are closely applied to capillaries and both are separated from the wall of an adjoining seminiferous tubule by a lymphatic space, this arrangement properly assists the passage of male hormone from Leydig cells into the seminiferous tubules by exposing most of the latter's walls to lymph containing a high concentration of androgens.

Each seminiferous tubule has a basement membrane on which are set cells which are arranged in three irregular layers:-

- 1- An outer layer of cubical cells, with small nuclei, some of these enlarged to become spermatogonia.
- 2- Larger polyhedral cells with clear nuclei, arranged in two or three layers, these are the intermediate cells or spermatocytes.
- 3- The next layer of cells consists of the spermatids each of which become a spermatozoon. (Fig. 3).

In addition to these three layers of cells, others termed the supporting cells or cells of Sertoli are seen, they are elongated and columnar, they may be the source of oestrogens produced by the testis.

In the apices of the lobules, the tubules become less convoluted and assume a nearly straight course, (straight seminiferous tubules). These enter the fibrous tissue of the mediastinum and pass upwards, forming a close network of anastomosing tubes lined by flattened epithelium, the rete testis. (Luis C. Junaueira, 1977).