REPAIR OF INGUINAL HERNIA

Essay

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GENERAL SURGERY

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قالوا سبحانك

لا علم لنا إلا ما علمتنا إنك أنت العليم الحكيم

سورة البقرة آية ٣٢

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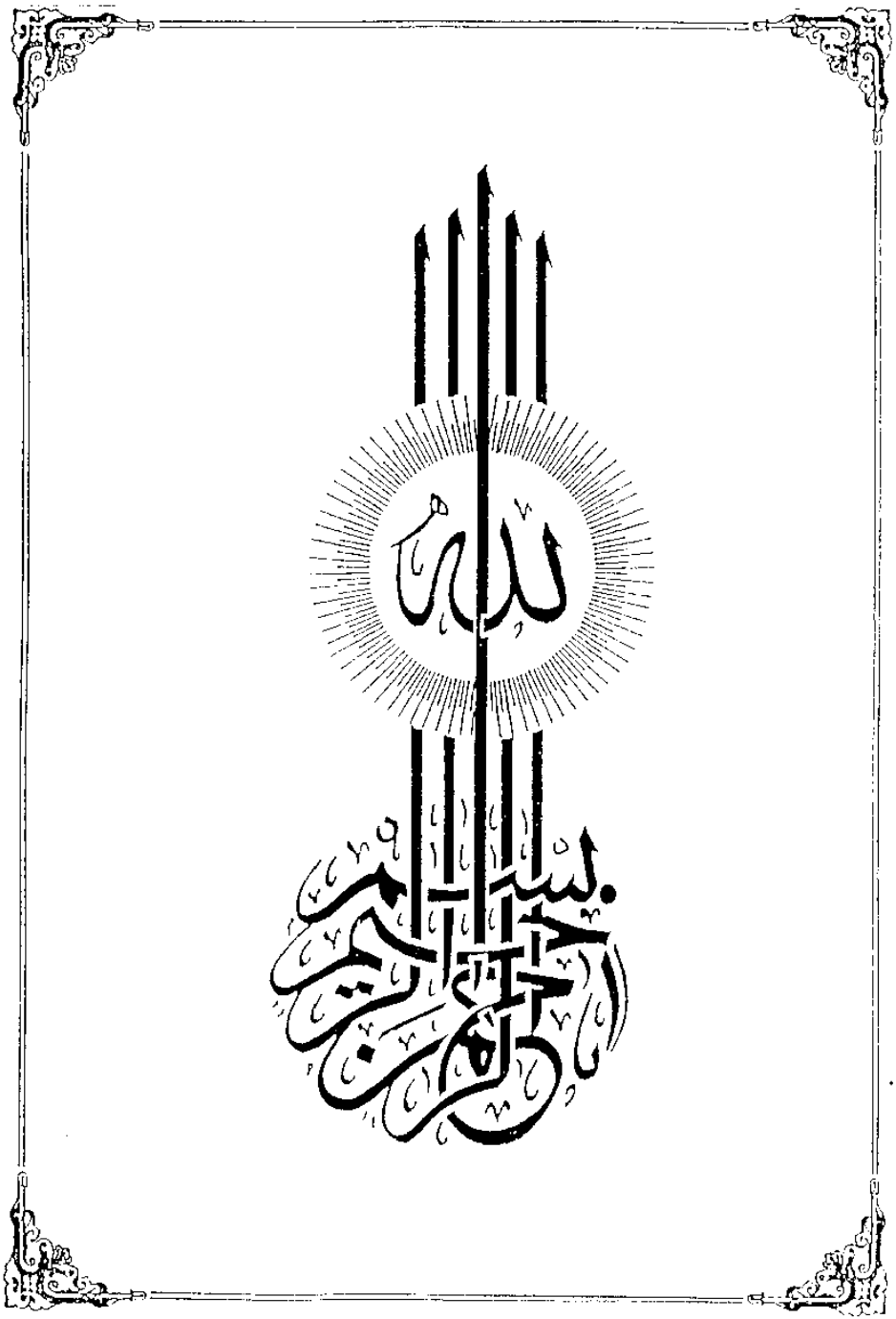

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Ashraf Metwally

CHAPTER I

INTRODUCTION

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Inguinal hernias produce a considerable morbidity with in the community and represent a great portion of many general surgeons practice . As modern surgical techniques evolved in the late 19th century, the principles of hernia repair were developed.

Marcy 1878 highlighted the importance of ligation the hernial sac and repairing the fascial defects at the internal ring.

Bassini 1887 stressed the importance of dividing the transversalis fascia and reconstructing the posterior wall of the inguinal canal by approximating the transversalis fascia and muscle to the upturned deep edge of inguinal ligament.

In attempt to reduce the recurrence rate modifications of Bassini's repair have been described by **Halsted 1893, McVay 1948, Shouldice 1969** and others.

In **1920 Cheatle** first proposed a preperitoneal approach to posterior inguinal wall, an approach which has recently been re popularized **Nyhus 1964**.

More recently some surgeons have advocated a tension - free repair of hernial defect using autogenous tissue e.g. fascia lata or more commonly inert foreign material such as polypropylene mesh.

With a tension free repair the 6 year recurrence rate can be reduced to 2.4% as supported by recent studies (**Lichtenstien, Shulman** and **Amid 1989**).

With the recent explosion of minimally invasive surgery involving abdominal cavity and the success of the laparoscopic eholecystectomy provided the stimulus for closer look at the treatment of hernias laparoscopically but with completely different Technique (**Ger 1991**).

The goal is to minimize the post operative morbidity and allow the patient to return to work earlier than after conventional inguinal herniorrhaphy (**Filipi 1992**)

CHAPTER II

ANATOMY

ANATOMY OF THE INGUINAL REGION

The abdominal wall of the inguinal region is composed from the following layers from outside inwards:

1- Skin.

2- Superficial fascia containing fat.

3- External oblique aponeurosis including the inguinal lacunar and reflected inguinal ligament.

4- Spermatic cord.

5- Internal oblique muscle, transversus abdominis muscle and also aponeurosis modified to conjoint tendon.

6- Transversalis fascia associated with transversalis fascia sling, the pectinate ligament (cooper) the ilio pubic tract and deep inguinal ring.

7- Pre peritoneal connective tissue and fat.

8- Peritoneum **(Mcvay, 1974)**.

The superficial fascia:

The superficial fascia is divided into poorly developed superficial layer called Camper's fascia and a deeper connective tissue layer called scarpa's fascia. The superficial fascia continues downward over the penis scrotum and perineum, thigh and buttocks as well as upwards on the abdominal wall. Scarpa's fascia extends from the lower abdominal wall to

the penis as Buck's fascia, to the scrotum as dartos and to the perineum as Colle's fascia. The Scarpa's fascia is attached to the deep fascia of the thigh (fascia lata) just below the inguinal ligament at the groin crease **(Ponka 1980)**.

External oblique aponeurosis:

The external oblique muscle is not present in the inguinal region only its aponeurosis extends downwards and medially to pass anterior to the rectus muscle. Here it joins the aponeurosis of the internal oblique muscle and that of the transversus abdominis to form the anterior layer of the rectus sheath. Between this attachment and an inferior attachment to the pubic bone lies a triangular hiatus called superficial inguinal ring through which the spermartic cord or the round ligament passes. The external aponeurosis like the muscle is covered on either surface by a sheet of fascia, the external one of which is the thickest and called the innominate fascia by Gallaudet **(Ponka, 1980)**.

Inguinal ligamnent (Poupart's ligament):

The inguinal ligament is the enrolled lower portion of the external oblique aponeurosis. Laterally its fibres attach to the anterior superior iliac spine. The middle one third has a free edge. The medial portion inserts on the superior ramus of the pubis and on the pubic tubercle **(Myhus, 1976)**.

Anson and Mc'vay (1960) claimed that a portion of the ligament continues on the lower portion of the rectus sheath as the reflected inguinal ligament.

Lacunar ligament (Gimberant's ligament):

The lacunar ligament is the most inferior portion of the inguinal ligament.

Reflected inguinal ligament (Colle's ligament):

The reflected inguinal ligament consists of aponeurotic fibres from the inferior crus of the external inguinal ring that extends to the linea alba **(Mc'vay, 1974)**.

Superficial inguinal ring:

The superficial inguinal ring is a rather triangular aperture in the external oblique aponeurosis, located in the medial; aspect of the inguinal canal. The superior and inferior crurae of the ring are held together by intercrural fibres and provide identification of the ring on digital examination **(Ponka, 1980)**.

The inguinal canal:

The inguinal canal is an oblique cleft about 4cm in length lying above the medial half of the inguinal ligament. It commences at deep inguinal ring ends at the superficial inguinal ring and transmits the spermatic cord in the male and the round ligament in female. The anterior wall of the canal is formed by the external oblique aponeurosis assisted laterally by a portion of the internal oblique muscle. The posterior wall is formed by the strong conjoint tendon medially and the weak transversalis fascia laterally. The roof is formed by the lower edges of the internal

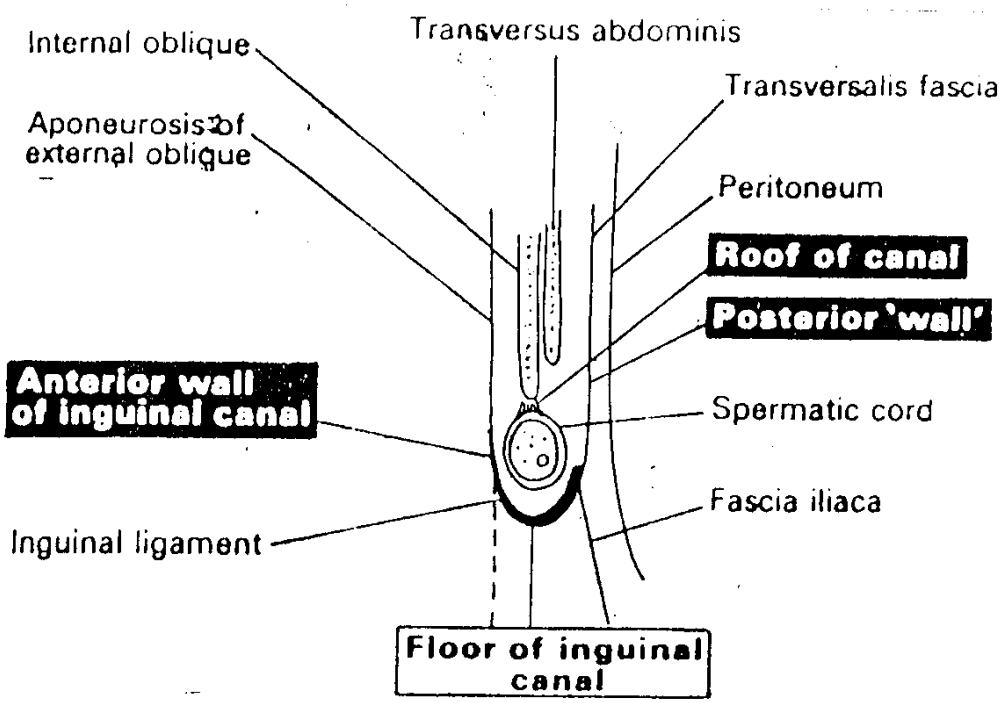

Fig. (1-1): Cross section of the inguinal canal shows its boundaries **(El-Rakhawy, 1983).**

oblique and transversus abdominis muscles with arch over from in front of the cord laterally to behind the cord medially. Where their conjoint aponeurosis constituting the conjoint tendon are inserted into the pectineal line of the pubic bone. The floor of the inferior surface is the enrolled edge of the inguinal ligament reinforced medially by the lacunar ligament **(Mcvay, 1974)**.

The content of the inguinal canal:

The spermatic cord of the male consists of a matrix of connective tissue continuous with the preperitoneal connective tissue above and containing the vasdeferens, three arteries, pampiniform plexus and two nerves all invested by three layers of fascia. The inguinal canal in the female is occupied by the round ligament of the uterus **(Ponka, 1980)**.

The three arteries are, the testicular arteries from the aorta, the artery of the vas arises from the inferior vesicular artery and the cremastric artery arises from the inferior epigastric artery. The pampiniform plexus of 10 to 12 veins forms two groups anterior and posterior. These are drained by three or four veins that become two above the internal inguinal ring. These two veins run extraperitoneally on either side of the testicular artery before becoming a single testicular vein. That on the right opens into the inferior vena cava, that on the left enters the left renal vein **(Nyhus, 1978)**.

The inguinal canal contains the genital branch of genitofemoral nerve. This serves the cremasteric muscle. The ilio-inguinal nerve passes down to the canal to emerge from the external inguinal ring to supply the

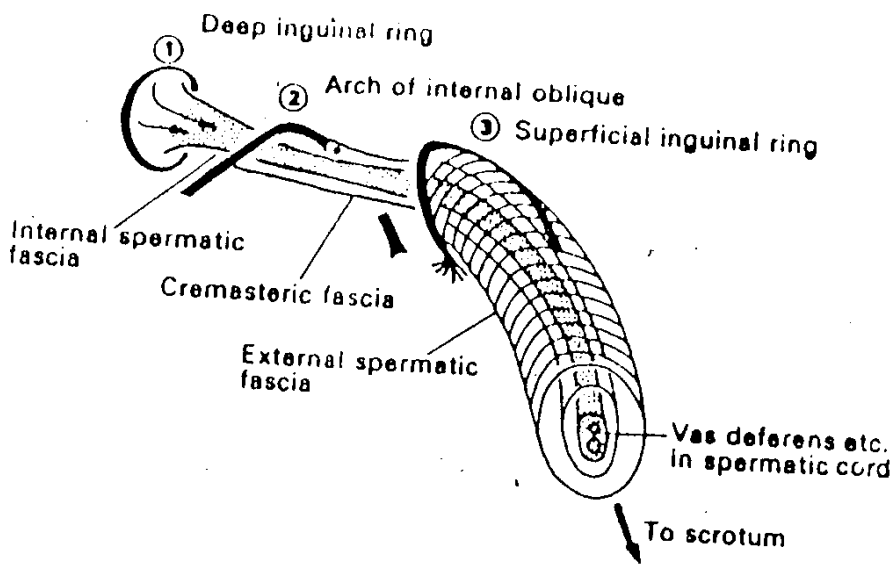

Fig. (1-2): The three covering of the spermatic cord are derived from layers of the anterior abdominal wall **(El-Rakhawy, 1983)**.