# INCISIONAL HERNIA

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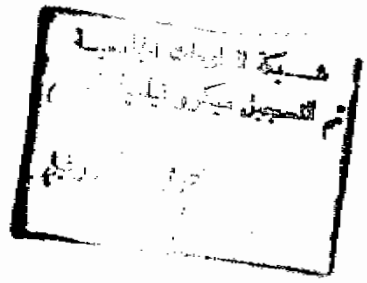

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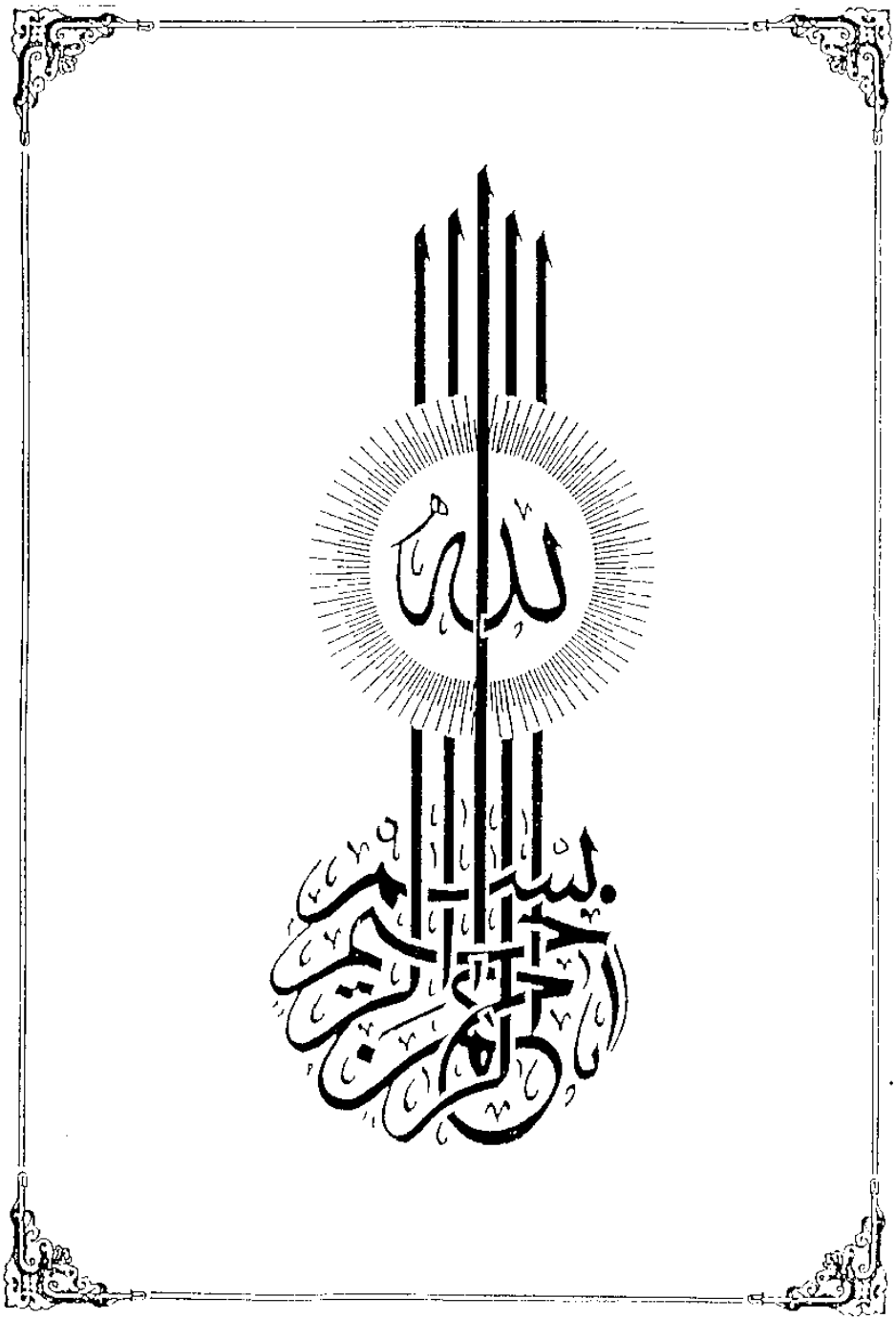

# Contents

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# INTRODUCTION

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Incisional hernias fall into the undersirable sequelae to surgery, since they must be considered largely as iatrogenic problems. It is a perfect example of the old aphorism that an ounce of prevention is worth a pound of cure (Ponka, 1980).

Incisions were at first designed simply to gain entry into the abdominal cavity, then surgeons became aware that certain incisions were followed by disruptions and incisional hernias. Because of this awareness more consideration was given to choice of incisions, suture selection, wound closure and wound healing (Ponka, 1980). Despite these advances incisional herniation continues to be seen sometimes years after the scar should have stabilized. A new type (Subxiphoid) has been described following heart surgery (Read and Yoder 1989).

**Definition:**

Incisional herniation was defined as a palpable defect or defects greater than 1 cm in diameter and in close proximity to the scar of a surgical incision through the thickness of abdominal wall through which bulging was either palpable or visible when patients coughed or rasied their legs from the examination cough (Read & Yoder 1989).

Only those with a narrow neck and large sac are at risk of strangulation. Those with a wide neck are a nuisance but not usually at a danger, also very rarely a particularly thin - walled large incisional hernia may actually ulcerate at its fundus so that omentum protrudes or there is even the development of an intestinal fistula. (Ponka, 1980).

The 2 terms ventral incisional and post operative hernia are used interchangeably, also 2 varieties of incisional hernias both congenital in origin should be mentioned for completeness. They are common diastasis of the rectus muscles (also seen as a consequence of pregnancy) and the Eagle-Barrett Syndrome in which the abdominal wall musculature is absent, often with associated abnormalities of the genitourinary tract. (Pollak & Nyhus 1985).

## Historical Summary

Incidence of incisional hernia has increased with each increment of abdominal surgical intervention. The development of abdominal surgery in the nineteenth century, the excision of an ovarian cyst by McDowell in 1809, partial gastrectomy by Billroth in 1881 and Cholecystectomy by Langenbuch in 1882 , had been followed by operations to manage the incisional hermias which followed along as

complications (Devlin, 1983).

Gerdy was recorded to repair an incisional hernia in 1836, Maydl was credited with an incisional hernia repair in 1886, Judd in 1912 and Gibson in 1920 both described repair techniques based on extensive anatomical dissection of the scar and adjacent tissues generously, relieving incisions were made vertically in the midportion of anterior sheath of the rectus abdominis permitting closure of the aponeurosis in the midline without tension (Devlin, 1983).

Maguire and Young (1979) also used lateral relieving incisions in the anterior of the rectus to decrease tension at the suture line following repair of epigastric incisional hernias. Their recurrence rate following repair was 16 percent.

Prosthetic Materials have played an important role in the surgeon's attempts to replace portions of the abdominal wall which have been weakened by infection or previously repeated surgical procedures. The use of reinforcing material to strengthen a weakened abdominal wall is a comparatively recent development, that was initiated during the present century (Ponka, 1980).

Autografts of fascia lata were employed by Kirschner in 1910. Gallie and Le Mesurier used autologous fascial strips in 1923. Tendons, cutis and whole skin grafts, both

homografts and heterografts have been advocated and found to have problems (Devlin, 1983).

Chaimoff and Dinstman (1973) utilized the anterior sheath of the rectus abdominis for repair of midline incisional hernais.

Also Harkins in 1943 reported on the use of a cutis graft in the repair of a large incisional hernia. Then Couris and Wylie (1964) reported a case in which a huge epidermal cyst developed 17 years and 9 months after it had been implanted by Harkins (Ponka, 1980).

Non-biological prosthetics such as stainless steel. Tantalum gauze,Marlex, Mersilene and Nylon were used in repair of incisional Hernia. Babcockc popularized the use of stainless steel in 1952, Haas and Ritter utilized a specially prepared stainless steel net for repair of huge incisional hernias in 1958,also Koontz initially utilized tantalum in the repair of incisional hernias in 1947 (Ponka, 1980).

Jacobs and Colleagues (1965) found knitted Marlex mesh to be useful in the repair of difficult incisional Hernias.

# ANATOMY OF THE ANTERIOR ABDOMINAL WALL

## Anatomy of The Anterior Abdominal Wall

**Superficial Fascia:**

This is similar to the superficial fascia elsewhere but the amount of fat is extremely variable and is usually greatest over the inferior half of the abdomen. Here the fascia is differentiated into 2 layers fatty and membranous layers. There is no deep fascia in the anterior abdominal wall thus allowing free movements which occur during respiration, after meals, during pregnancy....etc. (Romanes,1975).

Fasciae of Camper, Scarpa's and Colle's are names applied to superficial fascia of the lower part of the anterior abdominal wall and perineum. Mid-way between the umbilicus and pubis, the superficial fascia is condensed on its deep surface to form a membranous layer (Fascia of scarpa), between the skin and this layer is the fat which corresponds to and continuous with the subcutaneous fat of the body generally (Camper's fascia). Below the external inguinal ring scarpa's fascia gives dartos muscle of the scrotum which is like the platysma, a muscle of superficial fascia. On the penis it is ill-developed and called Buck's fascia, but as regard camper's fascia below the external inguinal ring there is no continuation as there is no subcutaneous fat in the penis or scrotum (Duplessis,1984).

The attachments of Scarpa's Fascia are:

1. **Above:** The fascia fades away mid-way between the pubis and umbilicus above and in lumbar region at the sides.

2. **Below:**

a) Medial: Just below the pubis the fascia changes its name to fascia of colle's this extends over the penis and scrotum giving a fascial covering to each it then covers the muscles in the superficial pouch.

b) Lateral: The fascia is attached to Fascia lata (deep fascia of the thigh) just below the inguinal ligament, this attachement is about 2 inches below the anterior superior iliac spine and just below the pubic spine, because of this attachment extravasated fluid tracking down from above under the superficial fascia cannot extend further into the thigh more than the line of this attachment (Du Plessis, 1984).

## Muscles of the anterior abdominal wall

These muscles are arranged in three layers, all are muscular posterolaterally but become thin, sheet-like tendons (aponeuroses) anteromedially, these aponeuroses partially surround a paramedian longitudinal muscle (rectus abdominis) and fuse with each other and those of the opposite side in the median (Linea alba) which is a fibrous strip extends from the Xiphoid process to the

pubic symphysis and contains the umbilicus. It consists of the interlacing fibres of the aponeurosis of the oblique and Transverse muscles of the two sides. The muscle fibres of the three layers run in different directions and thus strengthen the abdominal wall to resist the tendency of the abdominal contents to bulge through it when under pressure, the nerves and vessels run between the inner and middle layers as in the thoracic wall. (Romanes, 1975).

**External oblique muscle:**

**- Origin:**

By fleshy digitations from the lower 8 ribs at their anterior angles, the lower 4 slips interdigitate with the costal fibres of latissimus dorsi, the upper 4 with a corresponding number of the digitations of serratus anterior (Last, 1981).

**- Insertion:**

The fleshy fibres of the muscle form an aponeurosis which is inserted along a line into the xiphoid process, linea alba, pubic crest, pubic Tubercle, anterior superior iliac spine and the anterior half of the outer lip of iliac crest, the muscle has 3 borders lying free, a posterior muscular and a superior and inferior aponeurotic (Last, 1981).

The free upper border of this aponeurosis extending from 5th rib to the xiphisternum runs horizontally, it is

the only structure in the anterior sheath of the rectus muscle above the costal margin from it arise the lower most fibres of pectoralis major. The lower border lying between the anterior superior iliac spine and the pubic Tubercle forms the inguinal ligament (Poupart's ligament) where its edge is rolled inwards to form a gutter, from the medial end of the inguinal ligament the Lacunar (Gimbernat's) ligament extends backwards and upwards to the pectineal line, its cresentic free edge is the medial margin of the femoral ring, some of the fibres extends from the base of the lacunar ligament for a distance on the pectineal line, these fibres form the pectineal ligament (Cooper's lig.) (Last, 1981).

Superficial inguinal ring is an opening in the aponeurosis of the external oblique just 1 cm above and lateral to the pubic tubercle. It is triangular (V shaped) in shape, its sides are called crura (medial and lateral crus), it gives passage for the structures forming the spermatic cord in male or the round ligament of the uterus in female and the ilio-inguinal nerve (Romanes, 1975).

The fibres of the external oblique muscle is inserted into the iliac crest are fleshy fibres and form a free posterior border for the muscle which is separated from the anterior border of Latissimus dorsi by a triangular interval known as the Lumber Triangle of Petit (the site of rare lumbar hernia), the floor of this triangle is formed by