A STUDY OF THE INCIDENCE OF LOCAL COMPLICATIONS AFTER ABDOMINAL SURGERY

THESIS

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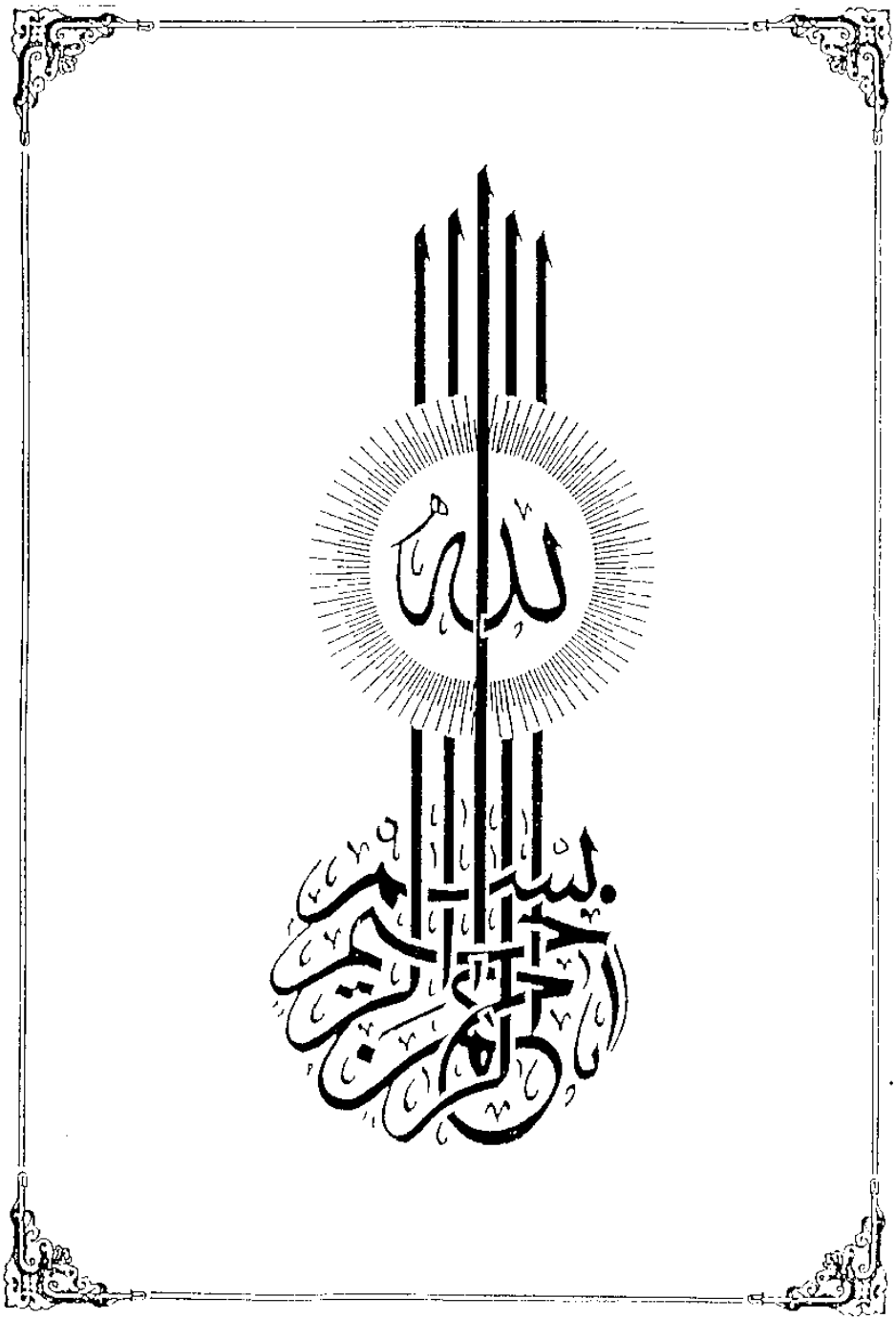
IN THE MEMORY OF
MY FATHER



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INTRODUCTION AND AIM OF THE WORK

It was noticed that the local complications after abdominal surgery is a continuing problem that costs much time and money. It adds morbidity and stress and delays the turn-over of beds.

The aim of this work is to study the local complications in 100 cases after abdominal incisions to reveal the incidence of these complications.

It is an attempt towards restricting this problem to the inevitable or nonpreventable complications that may possibly occur.

ANATOMY OF THE ANTERIOR ABDOMINAL WALL

The skin varies in texture, tending to be thin in front and thick behind. Distribution of hair varies with sex , age and race. Natural lines of cleavage of the skin are very constant, and are of tremendous importance to the cosmetic appearance of healed incisions.

The subcutaneous tissue is the same as else where in the body. Fat is contained in loculi, whose fibrous wall connect the overlying dermis to the underlying deep fascia. There is an exception over the dilatable part of the body wall, namely the anterior abdominal wall and lower part of the thoracic wall in front of the midaxillary lines. Here the fibrous septa of the subcutaneous tissue are condensed beneath the fat into a thin but strong membrane, the fascia of scarpa.

The muscles of the anterior abdominal wall:

The three muscle layers of the body wall are separated in the flanks, where they are known as the external oblique internal oblique and transversus abdominis muscles. The layers fuse together ventrally to form the rectus abdominis muscle.

External oblique muscle:

Origin: The muscle arises by eight digitation, one from each of the lower eight ribs at their anterior angles.

Insertion: The posterior fleshy fibres are inserted to the anterior half of the outer lip of the iliac crest. The aponeurosis of the external oblique passes medially to decussat with the opposit one forming the linea alba which extent from the xiphoid cartilage to the symphysis pubis. The lower border of the aponeurosis is folded backward and upward upon itself forming the inguinal ligament.

The inguinal ligament (Poupart's ligament) extends from the anterior superior iliac spine to the pubic tubercle. Its adge is rolled inwards to form a gutter; the latral part of this gutter gives origin to part of the internal oblique and transversus abdominis muscles.

Just above and latral to the pubic tubercle is an oblique v-shaped gap, the superfacial inguinal ring, in the aponeurosis. This gap extends down to the pubic crest, medial to the tubercle; the aponeurosis is attached to the pubic crest only in its medial part, a longside the symphysis pubis. From the medial end of the inguinal ligament the lacunar ligament (Gimbernat's ligament) extends

backwards and upwards to the pectineal line. Its crescentic free adge is the medial margin of the femoral ring.

Internal Oblique Muscle:

The fleshy fibres arise from the whole length of the conjoined lamellae of the lumbar fascia, from the intermediat area of the anterior two-thirds of the iliac crest and from the lateral two-third of the linguinal ligament. From the lumbar fascia the muscle fibres run upwards along the costal margin to which they are attached, becoming aponeurotic at the tip of the 9 th costal cartilage. Below the costal margin, the aponeurosis splits around the rectus muscle, the two lamellae rejoining at the linea alba. At a point an inch below the umbilicus the posterior lamella ends in a curved free margin, concave downwards, the semicircular fold (of Douglas). Below this point, the aponeurosis passes wholly in front of the rectus muscle, to the linea alba.

The muscle fibres that arise from the inguinal ligament are continued into an aponeurosis that is attached to the crest of the pubic bone and, more laterally, to the pectineal line. The internal oblique has thus a free lower border, which arches over the spermatic cord-laterally the margin consists of muscle fibres in front of the cord,

medially the margin consists of tendinous fibres behind the cord. The flat tendon, attached to the pectineal line, is fused with a similar arrangment of the transversus aponeurosis to form the conjoint tendon.

Transversus abdominis muscle:

The muscle has a very long origin, in continuity from the whole costal margin, lumber fascia, iliac crest and inguinal ligament. From the costal margin a fleshy slip arises inside each costal cartilage, interdigitating with the costal origin of the diaphragm; in continuity with the lowest costal fibres the muscle arises from the conjoined lamellae of the lumbar fascia latral to the quadratus lumborum, then from the internal lip of the iliac crest in front of this the anterior two-third of the crest" from the fascia over iliacus and from the lateral half of the inguinal ligament, deep to the internal oblique. The muscle fibres become aponeurotic and pass behind the rectus to fuse with the internal oblique aponeurosis into the linea alba. Below the semicircular fold of Douglas the aponeurosis passes wholly in front of the rectus muscle, behind the aponeurosis of the internal oblique, which it accompanies laterally as the conjoint tendon on the pubic crest and along the pectineal line behind the spermatic cord.

The neurovascular plane:

The abdominal wall is supplied segmentally by all the lower six thoracic nerves and the first lumbar nerve. The intercostal nerves pass behind the costal margin between the interdigitations of the diaphragm and the transversus abdominis muscle and pass around to pierce the posterior rectus sheeth. Each nerve is accompanied by its collateral branch in the neurovascular plane, but only the main nerve itself gives off a lateral cutaneous branch.

The external oblique is muscular in only its upper part and is supplied segmentally by the 7 th to 11 th intercostal nerves. The other two muscles are supplied by all six lower thoracic nerves (7th to 12th inclusive)and also by L_1 via the both iliohypogastric and ilioinguinal nerves, the lastnamed supplying the lower border of each muscle where it arches over the spermatic cord into the conjoint tendon. The rectus abdominis receives no L 1 fibres, being supplied segmentally by the lowest six thoracic nerves (7th to 12 th inclusive). Branches of the musclo-phrenic artery and, lower down, the lumbar arteries, accompany the nerves in the flanks. The nerves and vessels run in the plane between transversus and internal oblique muscles. The vessels supply only the flank muscles - the

rectus abdominis has its own vascular arrangment, the epigastric arteries.

Rectus abdominis muscle. The muscle arises by two heads, a medial from in front of the symphsis pubis and a lateral from the upper border of the pubic crest by a relatively small tendon; but the belly rapidly thickens. The two muscles lie adge to adge in the lower part, but broaden out above, and are there separated from each other by the linea alba. They are inserted into the thoracic cage. the bulk of the muscle passes in front of the costal cartilage and is attached to the 7 th, 6 th and 5 th cartilages. Typically three tendinous intersections are found in the muscle, one at the umbilicus, one at the xiphisternum and one between these two. There is no connexion posteriorly between the muscle and its sheeth.

Rectus Sheeth:

The aponeurosis of the internal oblique splites to enclose the rectus muscle. Thus the external oblique aponeurosis is directed in front and the transversus aponeurosis behind the muscle. They fuse to form its sheeth. An inch below the umbilicus this arrangment ceases, and from this level downwards all three aponeurosis pass infront of the muscle. There is thus a free lower margin

to the posterior sheeth; the semicircular fold of Douglas. Below the umbilicus the aponeurosis of internal oblique and transversus fuse completely in the sheeth, but that of external oblique fuses only over the medial part of the sheeth and lies free over the linea semilunaris. Above the costal margin there is no posterior sheeth, the rectus adhering to the underlying costal cartilage, and in this area the anterior sheeth consists of the external oblique aponeuroses only. Between the two recti all three aponeuroses fuse into the linea alba. The splitting of the internal oblique aponeurosis along the lateral border of the rectus muscle forms a relatively bloodless line known as the linea semilunaris. It curves up from the pubic tubercle to the costal margin at the tip of the 9 th costal cartilage in the transpyloric plane.

The linea alba lies in the midline of the anterior abdominal wall. It is a strong fibrous structure formed by the fusion of the aponeuroses of all three muscles of the abdominal wall. Above the symphysis pubis it is very narrow, for here the two recti are in contact with each other behind it. From just below the umbilicus to the xiphisternum it broadens out between the recti.

The linea alba is strongly attached below to the symphysis pubis and above to the xiphisternum.

Blood supply of the rectus Muscle:

The superior epigastric artery, one terminal branch of the internal thoracic, enters the rectus sheeth by passing between the xiphisternal and highest costal fibres of the diaphragm. It supplies the muscle and anastomoses in it with the inferior epigastric artery. Veins accompany these arteries, to the internal thoracic and external iliac veins respectively. Tissue fluid from the rectus abdominis is drained via lymphatics that accompany the arteries to the anterior intercostal nodes above and the external iliac nodes below.

The pyramidalis muscle arises from the pubic crest between the rectus abdominis and its sheeth. It converges with its fellow into the linea alba an inch or more above its origin. It is innervated by Th 12 It is often absent.

The inguinal canal :

Is about 4 cm in length , runs obliquely between the muscles, aponeuroses and fascia of the abdominal wall above the medial half of the inguinal ligament. It commences at the deep inguinal ring, an opening in the transversalis fascia ½ inch above the mid-inguinal point, and immediately lateral to the inferior epigastric vessels, ends at the

superficial inguinal ring, atriangular aperture in the aponeurosis of external oblique just above and lateral to the pubic tubercle. The base of the ring is formed of bone, the pubic crest; its margins (crura) are sewn together at the apex by the inter-crural fibres.

The anterior wall: 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 borders of internal oblique and transversus, which arch over the canal before fusing together to form the conjoined tendon.

The floor: is the inrolled lower adge of the inguinal ligament and fusing more laterally with the transveralis fascia.

Contents: In the male the inguinal canal transmit - the spermatic cord, the ilio-inguinal nerve, and the genital branch of the genito-femoral nerve. In the female the round ligament replaces the spermatic cord.