Laparoscopic Repair of Incisional Hernia Versus Open Surgical Repair

Essay

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Introduction

Incisional hernia is one of the most common complications of abdominal surgery, with a reported occurrence rate of up to 20% after laparotomy ***(Read and Yoder, 1989).***

The high incidence of hernia formation significantly contributes to both patient morbidity and health care costs ***(Beldi et al., 2006).***

The risk factors for the development of incisional hernia include obesity, diabetes, emergency surgery, postoperative wound dehiscence, smoking and postoperative wound infection **(*van't Riet et al., 2004).***

Incisional hernias enlarge over time, cause pain and/or aesthetic complaints. They can cause serious complications like bowel obstruction due to incarceration or strangulation. Patients suffer from these hernias and their quality of life aswellas their chances of employment are reduced ***(Den Hartog* et al.*, 2008).***

Improvement of the quality of life is the major reason to seek surgical care ***(Urbach, 2005).***

Although a variety of approaches have been described to repair these defects, the results have been historically disappointing.

Recurrence rates after primary repair have been reported to range from 24% to 54% ***(Read and Yoder, 1989).*** Risk

factors for recurrence include suture repair, infection, prostatism, and previous surgery for an abdominal aortic aneurysm ***(Luijendijk, 2000).***

The incorporation of prosthetic mesh improved the durability of the repair regardless of the size of the hernia but surgery still resulted in recurrence rates of up to 34% ***(Luijendijk, 2000).*** Repair of a recurrent incisional hernia has been associated with recurrence rates of up to 48% ***(Luijendijk, 2000).***

The recent advent of laparoscopic ventral hernia repair (LVHR) has offered promising outcomes by combining tension-free repair using a prosthesis with minimally invasive techniques, lowering reported recurrence rates to <10% ***(Anthony et al., 2000).***

Aim of the Work

Comparison between laparoscopic repair of incisional hernia versus open repair as regard indication, results, recurrence rate and risk of complications according to published data on international network.

Anatomy of the Anterior Abdominal Wall

The anterior abdominal wall is formed above by the lower part of the thoracic cage and below by three sheet –like muscles in separate layers, an outer external oblique, an middle internal oblique and inner transversus abdominis. Anteriorly they become aponeurotic, fuse and form the sheath around the rectus abdominis. In the lower part of the rectus sheath there may be small muscle called the pyramidalis. The anterior abdominal wall is made up of skin, superficial fascia, and muscles and lined by extra peritoneal fat and parietal peritoneum ***(Snell, 1995).***

Layers of Anterior Abdominal Wall

1. The Skin:

The skin of the abdominal wall varies in texture, tending to be thin anteriorly and thick posteriorly. Distribution of hair varies with sex, age and race. Natural tension lines of the skin are very constant and are of tremendous importance to the cosmetic appearance of healed incisions ***(Sinnatamby, 1999).***

An incision along a tension line will heal as a hair line scar, virtually invisible. While an incision across the lines will tend to heal with either a wide or a heaped up scar. The tension lines run almost horizontally around the body wall ***(Sinnatamby, 1999).***

2. Superficial Fascia:

The superficial fascia of the abdominal wall consists, for the most part, of a single layer that contains variable amounts of fat. In the lower part, however, particularly in obese individuals the fascia differentiates into a superficial and deep layer, between which are superficial vessels, nerves and the superficial inguinal lymph nodes ***(Peter et al., 1999).***

Either of these layers may be multiple, but the extent and significance of subdivisions is disputed. The superficial layer is thick areolar in texture and contains a variable amount of fat in its meshes ***(Peter et al., 1999).***

Inferiorly it passes over the inguinal ligament to merge with the superficial fascia of the thighs. In the man this layer continues over the penis and outer surface of the spermatic cord in the scrotum, where it changes in character becoming thin devoid of adipose tissue and pale reddish in colour. In the scrotum it also contains smooth muscle fibers which form the dartos muscle ***(Peter et al., 1999).***

From the scrotum it may be traced backwards into continuity with superficial fascia of the perineum. In the female it continues from the abdomen into the labia majorum and the perineum ***(Peter et al., 1999).***

3. Deep layer:

The deep layer of fascia is more membranous than the superficial, and contains elastic fibers. The membranous layer is thin and fades out laterally and above, where it becomes continuous with the superficial fascia of the back and thorax, respectively. Inferiorly the membranous layer passes onto the front of the thigh, where if fuses with the deep fascia one finger breadth below the inguinal ligament ***(Snell, 1995).***

In the midline inferiorly, the membranous layer of fascia is not attached to the pubis but forms a tubular sheath for the penis or clitoris. Below in the perineum it enters the wall of the scrotum or labia majorum. From there it passes to be attached on each side of the margins of the pubic arch. Posteriorly it fuses with the perineal body and posterior margin of the perineal membrane ***(Snell, 1995).***

Clinicians often refer to the fatty layer of the superficial fascia as the fascia of Camper, the membranous layer where it is situated on the anterior abdominal wall, as Scarpas; and the membranous layer in the perineum, as Colle's fascia ***(Snell, 1995).***

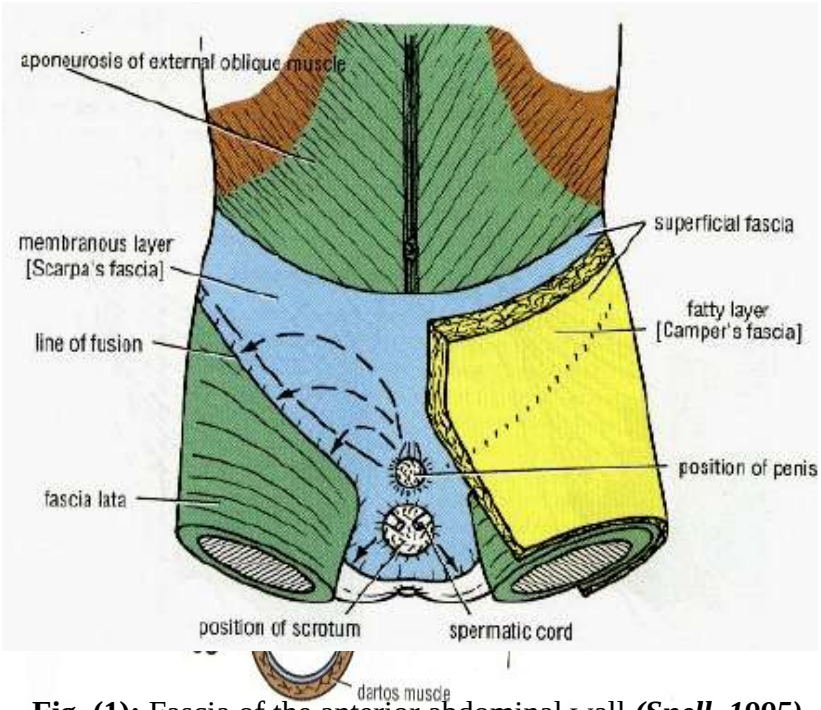

Fig. (1): Fascia of the anterior abdominal wall ***(Snell, 1995).***

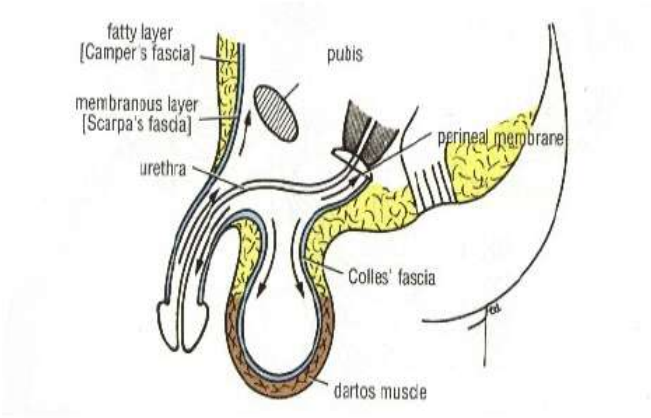

Fig. (2): Arrangement of fatty layer and membranous layer of the superficial fascia in the lower part of anterior abdominal wall ***(Snell, 1995).***

Blood supply, nerve supply and lymphatic drainage of the skin and subcutaneous tissue:

- **Blood supply:**

The skin near the midline is supplied by branches of the superior epigastric artery, a branch of the internal thoracic artery, and the inferior epigastric artery, a branch of the external iliac artery. The skin in the flanks supplied by branches from the intercostals, lumbar and deep circumflex iliac arteries ***(Snell, 1999).***

The venous return from the subcutaneous tissue does not follow the arteries. The blood collected by the anastmosing network of veins that radiate away from the umbilicus. Below this level they pass to the great saphenous vein in the groin; above the umbilicus they run up to the lateral thoracic vein and so to the axillary vein ***(Sinnatamby, 1999).***

From the umbilicus a few paraumbilical veins accompany the ligamentum teres and drain to the left branch of the portal vein; they may distend in portal obstruction, giving rise, if the distension spreads to subcutaneous veins, to the caput medusa ***(Sinnatamby, 1999).***