Ain Shams University
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ABDOMINOPLASTIC REPAIR VERSUS PRIMARY REPAIR FOR VENTRAL HERNIA, RESULTS AND COMPLICATIONS

THESIS

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Abbreviations

ACS : American college of surgeons

ASA : American society of anesthesiologists

ASIS : Anterior superior iliac spine

BMI : Body mass index.

CT : Computerized Tomography

DR : Diastasis recti

DVT : Deep vein thrombosis.

EPTFE: Expanded polytetrafluroethylene

FGF : Fibroblast growth factor

FS : Fibrin salants

LDH : Lactate dehydrogenase

LVHR: Laparoscopic ventral hernial repair

MRI : Magnetic resonance imaging

NIH : National Institute of Health.

NPY : Neuropeptide Y.

OR : Operation room.

PE : Pulmonary embolism

PUH : Paraumblical hernia

RFF : Rectus femoris flap

SAL : Suction assisted lipectomy

SH : Spigelian hernia

TEP : Totally extraperitoneal

TFL : Tensor fascia lata (flap)

US : Ultrasound.

VH : Ventral hernia.

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INTRODUCTION

Ventral hernia is a very common problem encountered by surgeons**.** In the United States approximately 1 million hernia operations are performed each year. Because hernias are far less age-dependent than other conditions, a large proportion of the patients undergoing hernia repair are relatively young ***(Kling and Binnebosel 2006).***

Using a strict definition of ventral, any hernia of the entire abdomen would qualify including those of the diaphragm, pelvic floor and lumbar areas ***(Nyhus and Condon, 2010).*** By common convention, ventral hernia is a protrusion of abdominal viscera through the anterior abdominal wall other than the inguinal and femoral openings and is divided into two classes, spontaneous (primary, true) and incisional hernias ***(Read, 2000).***

The basic problem with repair of ventral hernia is an absolutely large recurrence rate which approximately approaches 50 percent with primary repair ***(Luijendijk et al., 2000).*** Although several personal series have recurrence rates of less than 10 percent ***(Cassar andMunro 2007).***

Multiple techniques exist for repair of ventral hernias. Laparoscopic ventral herenia repair as well as sliding myofascial rectus flap ventral hernia repairs (the separation of parts technique)have received recent attention for low recurrence and low complication rates .These solutions are dramatically opposed solutions to the same clinical problem .No one technique is the best procedure for all patients. Knowledge of the wide variety of surgical options will be of benefit to all patients with ventral hernias ***(Dumanian,and Denham 2004).***

The objectives of abdominal hernial repair are to reconstruct the structural integrity of the abdominal wall while minimizing morbidity. Current techniques include primary closure, staged repair, and the use of prosthetic materials ***(Robertson et al., 2003).***

Anatomic cadaveric studies have shown the necessity of one-stage abdominoplasty during herniotomy for ventral hernias. An original method of hernioplasty was developed. It is demonstrated that abdominoplasty in all the cases reduces tension of tissues with maximal effect in defects of the anterior abdominal wall from 32 to 150 cm^2 and subcutaneous fat thickness more than 3 cm ***(Timerbulatov et al., 2006).***

A new technique combines abdominoplasty with hernia repair ***(Borud et al., 2007)*** from which obese patients with recurrent large abdominal hernias and skin laxity could benefit ***(Guneren,et al 2005).***

The technique was modified to include abdominal wall plication above and below the repaired hernia defect and the use of an absorbable mesh on lay ***(Borud et al., 2007).***

Techniques for abdominoplasty include the use of the transverse lower abdominal incision and the resection of excess skin. By incorporating these aspects into hernial repairs, the procedures are made safer and the results are improved. It is particularly helpful in obese patients, in patients with multiple hernias, and in those patients with recurrent hernias ***(Robertson et al., 2003).***

The repair of a ventral hernia in an obese patient presents an interesting clinical challenge . From this experience, it is evident that simultaneous ventral hernia repair and panniculectomy is a safe and

efficacious approach to these problems so commonly found in the obese patient ***(Giordano, et al 2006).***

Complications and revision rates in patients undergoing intra-abdominal procedures combined with abdominoplasty were not significantly different from those patients undergoing abdominoplasty alone ***(Hensel,and Lehman 2001).***

These data substantiate that the development of a ventral hernia is a challenge to the surgeon, and the subject of ventral hernia repair is still opened for further evaluation of different techniques ***(Dumanian,and Denham 2004).***

Although abdominal dermolipectomy is a frequently performed procedure, a few publications have reported on the safety of the procedure in the scarred abdomen ***(Elkhatib, 2004).***

Aim of work

In our study we try to compare abdominoplastic repair with primary repair for ventral hernias considering the results and complications especially for those with multiple, recurrent or giant defects.

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ANATOMY OF THE ANTERIOR ABDOMINAL WALL

A detailed knowledge of the normal anatomy and the functions of each structure are necessary to the surgeon treating hernias. Hernia surgeon knows that the anatomy is not constant indeed sometimes he is operating on anatomic variants of the normal rather than for pathologic processes disorganizing the normal. Philosophically the surgeon who seeks to make success of hernia repairs should optimize anatomic variations. Today the surgeon should particularize his operation for the anatomy encountered (***Devlin and Kings,1999)***.

Multiple options exist for managing complex abdominal wall defects. These options range from the use of autologous tissue with rearrangement procedures to the use of prosthetic or bioprosthetic materials. All options rely on a thorough understanding of the structural and functional anatomy of the abdominal wall and the relationship of varying anatomical structures to provide the optimal reconstructive procedure. A successful reconstruction is achieved when the structural anatomy is integrated with understanding the dynamic function of the abdominal wall **(*Grevious and Shah* 2006)**.

The anatomic characteristics of the anterior abdominal wall allow the harvesting of various types of flaps, some of them with considerable volume. These flaps are used mainly for reconstruction of the female breast, thoracic wall, and perineal or ilioinguinal region. Even though general donor site morbidity is low, hernias and "bulging" can occur due to the harvest of muscle and fascia, which leads to a weakening of the abdominal wall. Hernias and bulging appear mostly after harvest of

classic flap types, which include removal of the rectus abdominis muscle. Further refinements of these flaps, i.e. microvascular flaps, in particular perforator flaps, lead to a marked reduction in donor site morbidity **(*Germann* et al 2006)**.

General description of the anterior abdominal wall:

The anterolateral abdominal wall covers a region defined cranially by the xiphoid process and ribs, laterally by the medial axillary line, and caudally by the anterior ilium and pubic bone. Knowledge of the various parts of the abdominal wall is essential to the surgeon for effective laparotomy and primary and secondary hernia care ***(Flament 2006)***.

The anterior abdominal wall may be considered to have two parts: an anterolateral portion composed of the external oblique, internal oblique, and transverses abdominis muscle, and a midline portion composed of the rectus abdominis and pyramidalis muscle (***Skandalakis* 1999)**.

In addition to skin and fat, the abdominal wall comprises several muscles and fascial structures that allow it to function as the protector of intra-abdominal organs and to flex and extend the trunk and support the back. In describing the anterior abdominal wall components by location from superficial to deep, the abdomen is composed of (1) skin, (2) subcutaneous tissues, (3) superficial fascia (Scarpa fascia), (4) anterior rectus fascia, (5) rectus abdominus muscle, (6) posterior rectus fascia, (7) extraperitoneal adipose, and (8) peritoneum. Other abdominal wall structures located lateral to the rectus abdominus muscles are the external oblique fascia and muscle, internal oblique fascia and muscle, and transverses muscle and transversalis fascia ***(Wilhelmy 2003)***.