

Hanaa Mohammed



بسم الله الرحمن الرحيم

مركز الشبكات وتكنولوجيا المعلومات

قسم التوثيق الإلكتروني



Safaa Mahmoud



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قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
على هذه الأقراص المدمجة قد أعدت دون أية تغييرات





Comparative study between Onlay and Sublay placement of polyproline mesh in ventral hernia repair

Thesis

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Presented By

Bishoy Samir AbdAllah

M.B.B.CH

Faculty of Medicine – Ain Shams University

Supervised By

Prof. Dr. Ashraf Farouk Abadeer

Professor of General Surgery

Faculty of Medicine – Ain Shams University

Dr. Wadie Boshra Gerges

Assistant professor of General Surgery

Faculty of Medicine – Ain Shams University

*Faculty of Medicine
Ain Shams University*

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List of Contents

Title	Page No.
List of Tables	i
List of Figures.....	ii
List of Abbreviations	iv
Introduction.....	1
Aim of the Work.....	4
Review of Literature	
Anatomy	5
Pathophysiology of Hernia Formation.....	19
Management Principles	28
Treatment.....	36
Patients and Methods.....	48
Results.....	53
Discussion.....	66
Summary.....	73
Conclusion	72
References.....	73
Arabic Summary.....	---

List of Tables

Table No.	Title	Page No.
Table (1):	Demographic data and characteristics of the studied patients.....	53
Table (2):	Preoperative complications among all the studied patients	55
Table (3):	Hospital stay and amount of blood loss, drain removal and operative time among all the studied patients	55
Table (4):	Postoperative complications among all the studied patients	56
Table (5):	Comparison between group A and group B regarding age and sex of the studied patients	56
Table (6):	Comparison between group A and group B regarding preoperative complains	58
Table (7):	Comparison between group A and group B regarding drain removal and operative time	60
Table (8):	Comparison between group A and group B regarding postoperative complications	63

List of Figures

Fig. No.	Title	Page No.
Figure (1):	Transverse sections through the anterior abdominal wall, traditional view	9
Figure (2):	A, External oblique, internal oblique, and rectus abdominis muscles and anterior rectus sheath	10
Figure (3):	Lateral view of the internal oblique muscle	11
Figure (4):	A, Anterolateral view of the investing fascia of the transverses abdomens muscle and the muscle itself with the fascia removed(<i>inset</i>).	12
Figure (5):	(a) A 2 cm paraumbilical fascial defect is isolated after reduction of omentum.....	46
Figure (6):	Onlay mesh placement fixated with skin staples, fibrin glue, and running absorbable suture along the external oblique release	47
Figure (7):	Sublay hernioplasty a) dissection of the posterior rectus sheath and plication in the midline, b) mesh positioning in the retromuscular space.....	47
Figure (8):	Closure of anterior abdominal wall defect	50
Figure (9):	Onlay Fixation of polypropylene mesh	50
Figure (10):	Dissection of Retromuscular space	51
Figure (11):	After closure of posterior rectus sheath.....	51
Figure (12):	Fixation of polypropylene mesh in retro-muscular space	51
Figure (13):	Sex distribution among the studied patients.....	54
Figure (14):	Comparison between group A and group B regarding age of the studied patients	57
Figure (15):	Comparison between group A and group B regarding sex of the studied patients	57
Figure (16):	Comparison between group A and group B regarding preoperative main complain.....	59

List of Figures

Fig. No.	Title	Page No.
Figure (17):	Comparison between group A and group B regarding preoperative irreducibility.....	59
Figure (18):	Comparison between group A and group B regarding hospital stay	61
Figure (19):	Comparison between group A and group B regarding blood loss	61
Figure (20):	Comparison between group A and group B regarding drain removal	62
Figure (21):	Comparison between group A and group B regarding operative time.....	62
Figure (22):	Comparison between group A and group B regarding postoperative seroma	64
Figure (23):	Comparison between group A and group B regarding postoperative wound infection.....	64
Figure (24):	Comparison between group A and group B regarding postoperative recurrence	65

List of Abbreviations

Abb.	Full term
<i>BP</i>	<i>Blood pressure</i>
<i>CBC</i>	<i>Complete blood count</i>
<i>COPD</i>	<i>Chronic obstructive pulmonary disease</i>
<i>CXR</i>	<i>Chest x ray</i>
<i>ECG</i>	<i>Electrocardiogram</i>
<i>PC</i>	<i>Prothrombin concentration</i>
<i>PTEE</i>	<i>Polytetrafluoroethylene</i>
<i>US</i>	<i>Ultrasound</i>

INTRODUCTION

A hernia is defined as a protrusion of an organ through the wall of the cavity where it is normally contained (*Williams et al., 2015*).

Ventral abdominal hernias include all the hernias occurring through the anterior abdominal wall excluding groin hernias (incisional hernias, epigastric hernias, paraumbilical hernias, umbilical and lumbar hernia) (*Stoppa, 1989*).

Ventral hernia can also be categorized according to their characteristics into reducible, irreducible or incarcerated, strangulated and recurrent ventral hernia (*Abramson et al., 1978*).

The cause of a primary ventral hernia is far from completely understood, but it is undoubtedly multifactorial. Familial predisposition plays a role with increasing evidence of connective tissue disorders, they are considered as a leading cause of abdominal surgery and account for 2–10% of all abdominal wall hernias (*Stumpf et al., 2005*).

Most studies now support the theory that acute fascial separation occurs early in the postoperative period, leading to the delayed clinical development of abdominal wall incisional hernias (*Dubay et al., 2004*).

Clinical data show that 52% of incisional hernias occur within 6 months postoperatively as a result of excessive tension and inadequate healing of a previous incision (*Goda et al., 2014*).

Obesity, advanced age, malnutrition, ascites, pregnancy, and conditions that increase intra-abdominal pressure are factors that predispose to the development of an incisional hernia (*Malangoni et al., 2007*).

The history of prosthetic repair in abdominal wall hernias began in 1844 with the use of silver wire coils placed on the floor of the groin to induce an inflammatory fibrosis augmenting the repair (*Phelps, 1994*).

Many prosthetic materials have been tried in hernia repair, but the two most common in current use are polypropylene mesh and expanded polytetrafluoroethylene (*Murphy et al., 1989*).

The sought-after characteristics of polyproline mesh are inertness, resistance to infection, the ability to maintain adequate long-term tensile strength to prevent early recurrence, rapid incorporation into the host tissue, adequate flexibility to avoid fragmentation, non-carcinogenic response and the capability to maintain or restore the natural respiratory movements of the abdominal wall (*Pandit et al., 2004*).

The repair of ventral hernias varies from primary closure only, primary closure with relaxing incisions, primary closure

with an onlay mesh reinforcement, sublay mesh placement, and intraperitoneal mesh placement (*Millikan, 2003*).

Primary closure techniques are usually performed for small fascial defects less than 5 cm in greatest diameter. Even for small hernia defects, recurrence rates in excess of 50% have been reported (*Buerger et al., 2004*).

An onlay, usually of polypropylene mesh, is sutured to the anterior rectus sheath after the fascial defect has been closed primarily. This type of repair has the potential advantage of keeping the mesh separated from the abdominal contents by full abdominal muscle fascial wall thickness. The disadvantages of this repair include repair under tension, large subcutaneous dissection that allows for seroma formation, and mesh infection when the surgical wound becomes infected (*Jenkins, 2003*).

The sublay (retrorectus) placement of a mesh, more commonly used, became popular in the 1990s. The recurrence rates with this repair have been stated to be less than 10% (*Millikan, 2003*).

AIM OF THE WORK

The purpose of this study is to compare between two techniques of mesh placement in uncomplicated ventral hernias, onlay (mesh on external oblique) versus sublay (mesh in the retromuscular space) regarding complications (superficial skin infection, seroma collection, operative time, hospital stay and 18 months recurrence rate).

Chapter 1

ANATOMY

There are nine layers to the abdominal wall—skin, subcutaneous tissue, superficial fascia, external oblique muscle, internal oblique muscle, transversus abdominis muscle, transversalis fascia, preperitoneal adipose and areolar tissue, and peritoneum (*Thorek, 1962*).

Subcutaneous Tissues

The subcutaneous tissue consists of Camper's and Scarpa's fascia. Camper's fascia is the more superficial adipose layer that contains the bulk of the subcutaneous fat, whereas Scarpa's fascia is a deeper denser layer of fibrous connective tissue continuous with the fascia lata of the thigh. Approximation of Scarpa's fascia aids in the alignment of the skin after surgical incisions in the lower abdomen (*Thorek, 1962*).

Muscle and Investing Fascias

The muscles of the anterolateral abdominal wall include the external and internal oblique and transversus abdominis. These flat muscles enclose much of the circumference of the torso and give rise anteriorly to a broad flat aponeurosis investing the rectus abdominis muscles, termed the *rectus sheath*. The external oblique muscle is the largest and thickest of the flat abdominal wall muscles (*McVay, 1984*).

It originates from the lower seven ribs and course in a superolateral to inferomedial direction. The most posterior of the fibers run vertically downward to insert into the anterior half of the iliac crest. At the midclavicular line, the muscle fibers give rise to a flat strong aponeurosis that passes anteriorly to the rectus sheath to insert medially into the linea alba. The lower portion of the external oblique aponeurosis is rolled posteriorly and superiorly on itself to form a groove on which the spermatic cord lies (**Rath et al., 1996**).

This portion of the external oblique aponeurosis extends from the anterior superior iliac spine to the pubic tubercle and is termed the *inguinal* or *Poupart's ligament*. The inguinal ligament is the lower free edge of the external oblique aponeurosis posterior to which pass the femoral artery, vein, and nerve and the iliacus, psoas major, and pectineus muscles. A femoral hernia passes posterior to the inguinal ligament, whereas an inguinal hernia passes anterior and superior to this ligament (**Johnson et al., 2014**).

The internal oblique muscle originates from the iliopsoas fascia beneath the lateral half of the inguinal ligament, from the anterior two thirds of the iliac crest and lumbodorsal fascia. Its fibers course in a direction opposite to those of the external oblique that is inferolateral to superomedial. The uppermost fibers insert into the lower five ribs and their cartilages. The central fibers form an aponeurosis at the semilunar line, which, above the semicircular line (of Douglas), is divided into