Mesh Fixation versus Non Fixation in Laparoscopic Transabdominal Preperitoneal Repair of Inguinal Hernia

Thesis

Submitted for Partial Fulfillment of Master Degree in
General Surgery

Presented By
Taher Saad Elsayed Alsawaf
M.B.B.Ch

Under Supervision of
Prof. Dr. Hafez Mohammed Hafez
Professor of General Surgery
Faculty of Medicine – Cairo University

Dr. Sherif Emad Yossef Khalifa
Fellow Assistant Professor of General Surgery
Faculty of Medicine– Cairo University

Dr. Doaa Ahmed Mansour
Lecturer of General Surgery
Faculty of Medicine – Cairo University

Faculty of Medicine
Cairo University
2015

بِسْمِ ٱللَّهِ ٱلرَّحْمَٰنِ ٱلرَّحِيمِ

قَالُواْ سُبْحَٰنَكَ لَا عِلْمَ لَنَآ إِلَّا مَا عَلَّمْتَنَآ ۖ إِنَّكَ أَنتَ ٱلْعَلِيمُ
ٱلْحَكِيمُ ﴿٣٢﴾

صَدَقَ ٱللَّهُ ٱلْعَظِيمُ

Acknowledgement

*Firstly, thanks to **ALLAH**, who gave me the power to finish this work.*

*Words can never express my heartily thanks to **Prof. Dr. Hafez Mohammed Hafez** Professor of General Surgery, Faculty of Medicine, cairo University, for his meticulous supervision, constructive criticism, and continuous encouragement throughout the whole work.*

*I am extremely grateful to **Dr. Sherif Emad Yossef Khalifa** fellow assistant Professor of General Surgery, Faculty of Medicine, cairo University, for his scientific help, kindle supervision, valuable advices and honest assistance in every step of this work.*

I would like to express my sincere appreciation to
Dr. Doaa Ahmed Mansour

Lecturer of General Surgery, Faculty of Medicine, cairo University, for her continuous support, valuable assistance, best supervision and co-operation in all stages of this work.

taher saad elsayed alsawaf

List of Contents

[redacted]

List of Abbreviations .....

List of Tables ..... **ii**

List of Figures ..... **iii**

Introduction **1**

Aim of the work **3**

Review of literature

- Anatomy of the inguinal region..... 3
- Laproscopic anatomy of inguinal region 15
- Pathophysiology of inguinal hernia..... 27
- Diagnosis of inguinal hernia..... 32
- Laparoscopic repair of inguinal hernia..... 36
- Complications of laparoscopic repair of inguinal hernia 50

Patients and Methods..... **58**

Results **65**

Discussion **71**

Summary **76**

Conclusion..... **78**

References **79**

Arabic summery **89**

List of Tables

Table No.	Title	Page No.

Table (1): Nyhus classification 31
Table (2): Comparison between group I and group II as regard sex..... 65
Table (3): Comparison between group I and group II as regard age. 66
Table (4): Comparison between group I and group II as regard intra operative time: 67
Table (5): Comparison between group I and group II as regard length of stay.....68
Table (6): Comparison between group I and group II as regard post-operative compilication 69
Table (7): Comparative data—recurrence. 74

List of Figures

Fig. No.	Title	Page No.

Fig. (1): Representation of the layers of the lower abdominal wall and the inguinal area.....4
Fig. (2): Hesselbach Triangle 9
Fig. (3): Left superficial inguinal ring, after removal of the external spermatic fascia which is continuous with the margins of the ring 10
Fig. (4): Section of inguinal canal at rest 11
Fig. (5): Spermatic cord and its contents 12
Fig. (6): Left testis and coverings of the spermatic cord. 13
Fig. (7): The spermatic cord and the inguinal rings 14
Fig. (8): Laparoscopic anatomy of the inguinal region 16
Fig. (9): The anterior abdominal wall seen from within the abdomen on the left side 19
Fig. (10): The triangle of doom on the right side 20
Fig. (11): The triangle of pain on the left side 21
Fig. (12): Deep inguinal vasculature in Bgro's space 24
Fig. (13): Nerves prone to injury during laparoscopic inguinal herniorrhaphy . 25
Fig. (14): Anatomical Landmarks 26
Fig. (15) : Preperitoneal laparoscopic hernial orifices (international scientific journal from jaypee) 27
Fig. (16): Bubonocele Funicular Complete: Types of oblique inguinal hernia. 31
Fig. (17): Positioning of the patient and team. 38
Fig. (18): Triangulation of ports 39
Fig. (19): Laparoscopic view of a normal left internal ring 43

Fig. (20): Initial transverse incision into peritoneum to commence repair..... 44

Fig (21): Starting peritoneal incision for the TAPP repair..... 47

Fig (22): Right inguinal area after raising the peritoneal flap..... 47

Fig (23): The mesh completely spread out and fixed in place..... 48

Fig (24): Approximation of peritoneal flaps to extra-peritonealise the prolene mesh. 48

Fig. (25): Reduction of hernia sac and lipoma with upward traction..... 61

Fig. (26): Introduction of the mesh. 61

Fig. (27): Mesh overlying the defect..... 62

Fig. (28): Comparison between group I and group II as regard sex. 65

Fig. (29): Comparison between group I and group II as regard age..... 64

Fig. (30): Comparison between group I and group II as regard intra operative time. 67

Fig. (31):..... Comparison between group I and group II as regard length of stay. 68

Fig. *(32):* *Comparative study between both groups regarding postoperative complication using bar graph* ……*70*

Key Words : TAPP , Hernia , Mesh , Fixation , Non- fixation ,

Laparoscopic , Inguinal .

Abstract

Inguinal hernia repair is one of the oldest and most common operations in the history of medicine. Recent studies from the national center for health statistics show that approximately 750,000 groin herniorraphies are completed annually in the United States. More than 80% of these operations involve the use of mesh prosthesis and are performed on an outpatient basis (Rutkow, 1998).

Laparoscopic inguinal hernia repair have been proved to be safe and effective, with less postoperative pain and less use of analgesics and faster return to normal function status (Vel, 2010).

Laparoscopic repair of inguinal hernia follows some principles that have already proven its efficacy (Cohen et al.,1999)..

Fixation of the mesh when the trans-peritoneal technique is employed.it developed a preperitoneal pocket to approximate the size of the patch and simply place the patch in the pocket, the peritoneum is closed over the prosthesis, their results suggest that this method is sufficient although follow up is limited (Schultz et al., 1990).

There are reports of tacker related complications of adhesions, pain, intestinal obstruction and perforation of the bowel or urinary bladder (Ladurner et al., 2012).

Different complications, such as neuralgia or meralgia-paresthetica by nerve entrapment or osteitis, can be avoided by not fixing the prosthesis

Controversy exits regarding whether it is necessary to secure the mesh prosthesis during laparoscopic TAPP inguinal hernia repair. It is unknown whether stapling the mesh affects recurrence rate or the incidence of neuralgia in a port-site hernia.(Abdelhamid., 2011).

the effect of non-fixation of mesh during TAPP on the recurrence rate and

chronic pain needs to be further investigated.

Introduction

Inguinal hernia repair is one of the oldest and most common operations in the history of medicine. Recent studies from the national center for health statistics show that approximately 750,000 groin herniorraphies are completed annually in the United States. More than 80% of these operations involve the use of mesh prosthesis and are performed on an outpatient basis ***(Rutkow, 1998).***

Laparoscopic inguinal hernia repair have been proved to be safe and effective, with less postoperative pain and less use of analgesics and faster return to normal function status ***(Vel, 2000).***

The two most common techniques for laparoscopic inguinal hernia repair involve the insertion of mesh into the preperitoneal space; one makes use of a transabdominal preperitoneal (TAPP) approach, the other a totally extraperitoneal (TEP) approach ***(Van Der Hem et al., 2001).***

Both approaches would appear to offer potential advantages, such as reduced postoperative pain and shortened recovery. In practice, however, the advantages are not invariably realized; a laparoscopic approach is not always minimally invasive, and various disadvantages accrue from the current requirement for general anesthesia, the need to traverse the abdominal cavity in the TAPP technique, and the increase in operating room time and costs ***(Neumayer et al., 2004).***

Controversy exists regarding whether it is necessary to secure the mesh prosthesis during laparoscopic transabdominal preperitoneal (TAPP) inguinal hernia repair. It is unknown whether stapling the mesh affects recurrence rate, incidence of neuralgia, or port-site hernia**. (Smith AI, Royston CM, Sedman PC. 1999)**

There are rare reports of tacker related complications of adhesions, pain, intestinal obstruction and perforation of the bowel or urinary bladder ***(Ladurner et al., 2004)***.

Different complications, such as neuralgia or meralgia-paresthetica by nerve entrapment or osteitis, can be avoided by not fixing the prosthesis. Once the prosthesis is fixed by growth of fibrous tissue, recurrences will only appear if the position of the prosthesis is not anatomically correct, if the abdominal wall defect is too large in comparison to the size of the prosthesis

(the prosthesis will be torn from the abdominal wall) or if a new abdominal wall defect exists next to the prosthesis ***(Totte et al., 2005).***

Controversy exits regarding whether it is necessary to secure the mesh prosthesis during laparoscopic TAPP inguinal hernia repair. It is unknown whether stapling the mesh affects recurrence rate or the incidence of neuralgia ***(Abdelhamid, 2011)***.

Aim of the Work

The aim of this study is to compare mesh fixation versus non fixation in laparoscopic transabdominal preperitoneal repair of inguinal hernia
As regard:

- Mesh migration
- Recurrence rate
- Analgesic intake
- Nerve entrapment
- Mesh infection
- Length of stay
- Cost

Anatomy of the Inguinal Region

The groin has been defined by "Condon" as: "That portion of the anterior abdominal wall below the level of the anterior superior iliac spine" ***(Condon and Nyhus, 1995).***

The inguinal region is the area of the anterolateral abdominal wall that is limited by the inguinal ligament, the lateral margin of the rectus muscle, and horizontal line from the anterior superior iliac spine to the lateral rectus margin ***(Mc Vay, 1976).***

The layers of the abdominal wall in the inguinal region consist of:

- Skin.
- Subcutaneous fascia (Camper and Scarpa) containing fat (superficial fascia).
- Innominate fascia (Gallaudet). This may not always be recognized as a distinct entity.
- External oblique aponeurosis, including the inguinal, lacunar and reflected inguinal ligament.