

INGUINAL HERNIA :
LAPAROSCOPIC TOTAL
EXTRA PERITONEAL REPAIR
VERSUS
OPEN REPAIR WITH MESH.

Thesis
Submitted for partial fulfillment of the
M.D. degree in general surgery.

By
IBRAHIM NABIL SALAMA EL-WARDANY
M.Sc.
Ain Shams University

Under supervision of

Prof. Dr. ALY SOLIMAN THABET
Professor of General Surgery
Faculty of Medicine Ain shams university

Prof. Dr. MOHAMED NAGUIB HASSAN
Professor of General Surgery
Faculty of Medicine Ain shams university

Ass. Prof. Dr. AMR KAMEL EL-FEKY
Ass. Professor of General Surgery
Faculty of Medicine Ain shams university

Faculty of Medicine
Ain Shams University
2009

Acknowledgements.

Thanks to **Allah** the Merciful the Compassionate without his help I could never complete this work.

I am greatly honored that I have worked under the supervision of **Prof. Dr. Aly Soliman Thabet**, Professor of General Surgery, Faculty of medicine, Ain Shams University. I want to express my eternal gratitude for his sincere guidance and kind help.

I am also very grateful to **Prof. Dr. Mohamed Naguib Hasan** Professor of General Surgery, Faculty of medicine, Ain Shams University, for his valuable guidance and advice.

My deepest gratitude to **Prof. Dr. Amr Kamel**, Assistant Professor of General Surgery, Faculty of medicine, Ain Shams University, for his fruitful suggestions and exceedingly helpful support to accomplish this work.

Lastly, **To my mother** heartfelt thanks for your words and immense impact on my life. Thanks also to my never endless supporting **wife and son**. Great appreciation to my trusty and affectionate "right hand", **my brother**.

*THIS WORK IS DEDICATED
TO MY **FATHER**
(GOD REST HIS SOUL).
HE WHO IMPRESSED UPON ME
THE IMPORTANCE OF FAITH,
PERSISTENCE AND HARD WORK
TO ACHIEVE ANY GOAL
THROUGHOUT MY LIFE.*

اعوذ بالله من الشيطان الرجيم
بسم الله الرحمن الرحيم

" نرفع درجاته من نشاء

و فوق كل ذي علم عليم "

صدق الله العظيم

سورة يوسف

الآية ٧٦

INTRODUCTION

Inguinal hernia repair accounts for approximately 15% of all elective general surgical interventions, making it one of the most common operations performed today (**Scheuerlien et al., 2003**).

For the symptomatic defects in (myopectinal orifice) no surgical gold standard has become established during a period of more than 100 years (**Tamme et al., 2003**).

In the 1980s, Lichtenstien & Shulman developed tension free hernioplasty using a polypropelene mesh implanted anteriorly not only for recurrent hernia, but also for repair of primary hernias (**Lichtenstein et al. 1986**).

Whereas open anterior inguinal herniorhaphy is a time tested, safe, and well understood operation with a high success rate (**Pawanindra et al., 2003**). The conventional open approach is being increasingly supplemented or even replaced by minimally invasive procedures. Of the latter, the transabdominal preperitoneal patch repair (**TAPP**) and totally extraperitoneal repair (**TEP**) are performed approximately equally (**Dirksen et al., 1998**). However, laparoscopic totally extraperitoneal repair (**TEP**) has gained popularity in recent years because peritoneal sanctity is maintained (**Fitzgibbons et al., 1995**).

So we believe that TEP ideally should be compared with prosthetic mesh repair. Both repairs are inherently tension free & both strengthen the posterior wall of the inguinal canal (*Heikkinen et al., 1998*).

AIM OF THE WORK :

COMPARING TWO APPROACHES FOR INGUINAL HERNIAL REPAIR:

LAPAROSCOPIC TOTALLY EXTRAPERITONEAL REPAIR

VERSUS OPEN REPAIR WITH MESH (LICHTENSTEIN REPAIR)

AS REGARDS:

Operative time, postoperative pain, analgesic dose, intraoperative and postoperative complications, hospital stay, cosmoeses and recurrence.

PATIENTS AND METHODS:

A prospective randomized controlled study will be conducted to compare TEP & open inguinal hernia repair techniques.

The study will be carried out on a total of 40 patients attending outpatient department of Ain-shams university hospital. Patients with unilateral or bilateral reducible inguinal hernias, whether primary or recurrent will be included in the study. Patients with irreducible or obstructed hernia, previous

lower abdominal operations and contraindications for general anaesthesia, ascites, coagulation disorders, or previous lower abdominal radiotherapy will be excluded.

The patients will be divided into 2 groups (20 patients for each) & every group with one type of repair & the data will be collected as regarding: ***operative time, postoperative pain, analgesic dose, intra and postoperative complications, length of hospital stay, evaluation of cosmoes, and short term recurrence between the 2 groups.*** The follow up will be designed after 10 days then every 3 months for 1 year.

CONTENTS:

1- Introduction

2- Aim of the work.

3- Review of literature.

- Anatomy and physiology of the inguinal canal.
- Diagnosis of inguinal hernia.
- Methods of repair

4- Patients and methods.

5- Results.

6- Discussion.

7- Conclusion.

8- Summary.

9- References.

10-Arabic summary.

REFERENCES:

1- Scheuerlien H., Schiller A., Schneider C., Scheidbach H., Tamme C. and Kockerling F.: Totally extraperitoneal repair of recurrent inguinal hernia. Results from 179 consecutive patients. Surg Endosc 17:1072-1076, 2003.

2- Tamme C., Scheidbach H., Hampe C., Schneider C. and Kockerling F.: Totally extraperitoneal endoscopic inguinal hernia repair (TEP). Results of 5203 hernia repairs. Surg Endosc 17: 190-195, 2003.

3- Lai P., Kajla R.K., Chander J., Saha R. and Ramteke V.K.: Randomized controlled study of laparoscopic Total extraperitoneal vs open Lichtenstien inguinal hernia repair. Surg Endosc 17:850-856, 2003.

4- Dirksen C.D., Beets G.L., Go P.M., Geisler F.E. and Baeten C.G.: Bassini repair compared with laparoscopic repair for primary inguinal hernia. A randomized controlled trial. Eur J Surg 164: 439-474, 1998.

5- Fitzgibbons R.J., Camps J., Cornet D.A., Nguyen N.X., Litke B.S., Annibali R. and Salerno G.M.: Laparoscopic inguinal herniorrhaphy : results of multicentre trial . Ann Surg 221: 3-13, 1995.

6- Lichtenstien I., Shulman A.G.: Ambulatory outpatient hernia surgery, including a new concept, introducing tension-free repair. Int Surg 71: 1-4, 1986.

7- Shultz L., Graber J., Pietrafitta J. and Hickok D.: Laser laparoscopic herniorrhaphy: a clinical trial, preliminary results. J Laparo Endosc Surg 1: 41-45, 1990.

8- Phillips E.H., Carrol B.J. Fallas M.J.: Laparoscopic preperitoneal inguinal hernia repair without peritoneal incision. Surg Endosc 7:159-162, 1993.

9- EU Hernia Trailist Collaboration: Laparoscopic compared with open methods of groin hernia repair: Systmatic review of randomized controlled trial. Br J Surg 87: 860-867, 2000.

11- Heikkinen T.J., Haukipuro K., Koivukangas P. and Hulkko A.: A prospective randomized outcome and cost comparison of totally extraperitoneal endoscopic hernioplasty versus Lichtenstien operation among employed patients. Surg Laparosc Endosc 8:338-344, 1998.

LIST OF ABBREVIATIONS.

Br.:	Branch.
COPD:	Chronic obstructive air way disease.
C.T.:	Computerized tomography.
Cut.:	Cutaneous.
DM:	Diabetes mellitus.
DVT:	Deep venous thrombosis.
ECG:	Electro-cardiography.
Fig.:	Figure.
GPRVS:	Giant prosthetic reinforcement of the visceral sac.
IEV's:	Inferior epigastric vessels.
IM:	Intramuscular.
Inf.:	Inferior.
Ing.:	Inguinal.
IPOM:	Intraperitoneal onlay mesh.
K:	Potassium.
Lat.:	Lateral.
Lig.:	Ligament.
LIHR:	Laparoscopic inguinal hernial repair.
Med.:	Medial.
MI:	Myocardial infarction.
MRI:	Magnetic resonance imaging.

NICE:	National institute for clinical excellence.
P value:	Probability of error.
PE:	Pulmonary embolism.
PT's:	Peritoneal tears.
SD:	Standard deviation.
Sup.:	Superior.
Syn.:	Synonymous.
TAPP:	Transabdominal preperitoneal hernial repair.
TEP:	Total extra-peritoneal hernial repair.
TiMesh:	Titanium mesh.

LIST OF FIGURES.

Figure	Title	Page No
Figure 1	A, Posterior wall ("floor") B, piriform fossa. (arrow) of the inguinal canal.	6
Figure 2	Parasagittal section through right mid-inguinal region.	8
Figure 3	Inguinal ligament, lacunar ligament (Gimbernat's), pectineal ligament (Cooper's), neuromuscular compartment, vascular compartment and Compartment of femoral canal.	10
Figure 4	Iliopectineal arch.	13
Figure 5	Arrangement of cord structures.	15
Figure 6	Highly diagrammatic representation of the layers of the abdominal wall and inguinal area.	18
Figure 7	Anatomic features exposed in preperitoneal laparoscopic herniorrhaphy on left side.	22
Figure 8	Triangle of Doom.	26
Figure 9	Circle of death.	27

Figure 10	Triangle of Pain.	30
Figure 11	Types of oblique inguinal hernia.	41
Figure 12	Maydl's or W-loop hernia strangulation.	46
Figure 13	Shouldice repair.	55
Figure 14	(A) Prolene hernia system anterior view. (B) Prolene hernia system posterior view.	71
Figure 15	Dissection of the preperitoneal space in TAPP.	73
Figure 16	Completed transabdominal preperitoneal prosthetic repair after peritoneal closure.	74
Figure 17	Right Inguinal Region dissected (TEP).	83
Figure 18	Nerves prone to injury during laparoscopic inguinal herniorrhaphy.	103
Figure 19	Three midline ports in situ with telescope in (TEP).	126
Figure 20	Right groin showing arcuate line bottom right with epigastric vessels in roof and spermatic cord in floor in (TEP).	127
Figure 21	Arcuate line being divided (TEP).	128

Figure 22	Lateral space fully opened after division of lower fibres of arcuate line.	128
Figure 23	Cave-like defect of a right direct hernia with inferior epigastric vessels running vertically and cord structures entering deep inguinal ring from below.	130
Figure 24	Developing the space lateral to a right indirect hernial sac.	131
Figure 25	Separating a right indirect hernial sac from the cord structures lying at a deeper level.	132
Figure 26	Right-sided dissection showing elevation of the cord to bring the peritoneal reflection into view and allowing mobilisation of the peritoneum away from the inferior margin of the deep ring to allow accurate placement of mesh well below the ring.	133
Figure 27	Bilateral herniae showing two 10cm x 15cm meshes overlapping in the midline.	136
Figure 28	Age distribution of the patients.	141
Figure 29	Incidence of Intra-operative complication in Group B.	145
Figure 30	Incidence of postoperative complications in Group A.	147

Figure 31	Incidence of postoperative complications in Group B.	147
Figure 32	Ability to walk freely postoperatively in Group A.	149
Figure 33	Ability to walk freely postoperatively in Group B.	149
Figure 34	Durations of hospital stay in Group A.	150
Figure 35	Durations of hospital stay in Group B.	151
Figure 36	Time until return to work in Group A.	151
Figure 37	Time until return to work in Group B.	152
