COMPARATIVE STUDY BETWEEN OPEN PREPERITONEAL VERSUS LAPAROSCOPIC TOTALLY EXTRAPERITONEAL MESH REPAIR OF INGUINAL HERNIA

Thesis

Submitted for Partial Fulfillment of M.D. Degree in General Surgery

BY

Yasser Mohammed Ismaeel Saadawy

M. Sc of General Surgery
Supervisors

Prof. Dr. Moemen Mohamed Shafik Aboshloaa

Professor of General Surgery - Faculty of medicine - Ain shams university

Prof. Dr. Tarek Ismael Moustafa

Professor of General Surgery - Faculty of medicine - Ain shams university

Dr. Ahmed Mohammed Kamal

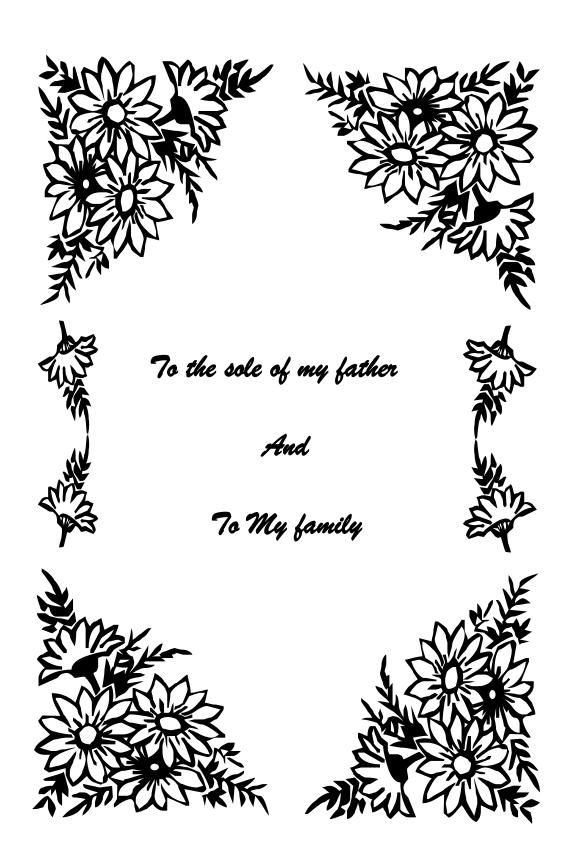
Assistant Professor of General Surgery - Faculty of medicine - Ain shams university

Dr. Mahmoud Saad Farahat

Assistant Professor of General Surgery - Faculty of medicine - Ain shams university

Faculty of medicine Ain Shams University 2014





Acknowledgement

First and foremost, I thank **Allah**, who gave me the strength to accomplish this work.

I am extremely grateful to **Professor Dr. Moemen Mohamed Shafik Aboshloaa**, Professor of General Surgery Faculty of medicine Ain Shams University, for his sincere co-operation, continuous unlimited help, also his accurate supervision through every step taken in this work and the most fruitful pieces of advice and continuous guidance during execution of this work.

My deep gratitude goes to **Professor Dr. Tarek Ismael Moustafa**, Professor of General Surgery and Faculty of medicine Ain Shams University, for his endless support and helpful suggestions and continuous encouragement.

I wish to extend my gratitude and deepest appreciation to **Dr. Ahmed Mohammed Kamal,** Assistant Professor of General Surgery Faculty of medicine Ain Shams University, for his helpful supervision and valuable assistance in conducting this study.

Special thanks to the great support and help by **Dr. Mahmoud Saad Farahat, Assistant** Professor of General Surgery: Faculty of medicine: Ain Shams University, on his great contribution and accomplishment of the clinical part of the study which brought our work to light, also for his endless creativity and meticulous supervision that have always stimulated me to spare no effort to get this study born to life.

Yasser Mohammed Ismaeel

Contents

List of Abbreviations		I
List of Tables		II
List of Figures		III
CHAPTER I- AIM OF WORK		1
CHAPTER II - REVIEW OF LITERATURE		
Anatomy of the Anterior Abdominal Wall	2	
Incidence and prevalence	29	
Etiology of inguinal hernia	30	
Classification of inguinal hernia	39	
Clinical findings of inguinal hernia	44	
Open repair of inguinal hernias	48	
Laparoscopic repair of inguinal hernias	67	
Complications of inguinal hernia repair	91	

CHAPTER III- PATIENTS AND METHODS	123
CHAPTER IV- RESULTS	158
CHAPTER V- DISCUSSION	180
CHAPTER VI- CONCLUSION AND RECOMMENDATIONS	203
CHAPTER VII- SUMMARY	205
CHAPTER VIII- REFERENCES	209
CHAPTER IX- ARABIC SUMMARY	

List of Abbreviations

FLS	Functional limitation score
GPRVS	Giant prosthetic reinforcement of the visceral sac
IC	Inguinal canal
IPOM	Intraperitoneal onlay mesh
N/cm	Newton per centimeter
PHS	Prolene Hernia System
PMNs	polymorphonucleocytes
PP	polypropylene
PTFE	Polytetraflouroethylene
RCTs	Randomized controlled trials
TAPP	Transabdominal preperitoneal
TEP	Totally extraperitoneal
TIPP	Transinguinal preperitoneal repair
VRS	Verbal rating pain score

List of Tables

Table title	Page
Table 1: Operative time in minutes in Group A and B	165
Table 2: Intraoperative complications in Group A and B	168
Table 3: Early postoperative complications in Group A and Group B	169
Table 4: Description and Comparison between both study groups as regards VRS at 1 st postoperative day	171
Table 5: Description and Comparison between both study groups as regards VRS at 7th postoperative day	173
Table 6: Oral analgesic consumption during first week in group A and B	175
Table 7: Description and Comparison between both study groups as regards hospital stay	177
Table 8: Description and Comparison between both study groups as regards functional score	178

List of Figures

Title	Page
Figure 1.1: The musculopectineal orifice of Fruchaud.	2
Figure 1.2: Two layers or laminae of transversalis	8
faccion the autorion (asymptosic) lesson formaris, called	
fascia; the anterior (superficial) layer formerly called	
the transversalis fascia proper and the posterior (deep)	
layer formerly called the preperitoneal fascia.	
layer formerly cance the preperitorical fascia.	
Figure 1.3: Highly diagrammatic representation of the	11
rigare 1.0. Highly diagrammatic representation of the	11
layers and spaces of the inguinal area and the space of	
Bogros.	
Dogros.	
Figure 1.4: The prevesical space of <i>Retzius</i> between	12
the makin home enteriority and the arringers blodden	
the pubic bone anteriorly and the urinary bladder	
posteriorly.	
E'grand 1 5. The angest of Decrees	12
Figure 1.5: The space of <i>Bogros</i> .	13

Figure 1 (. Contacts of the granewite goal areas at the	16
Figure 1.6: Contents of the preperitoneal space at the	10
inguinal region.	
Figure 1.7: Anatomy of the right preperitoneal space	19
showing the triangle of doom.	
Figure 1.8: Corona mortis vessels.	20
Figure 1.9: Nerves prone to injury during	21
laparoscopic inguinal herniorrhaphy	
Figure 1.10: Cutaneous innervation of the thing and	23
inguinoscrotal regions.	
Figure 1.11: Triangle of pain and triangle of doom.	25
Figure 1.12: The European Hernia Society (EHS) groin	42
hernia classification.	
Figure 1.13: Mesh plug.	48
Figure 1.14: New "plugs" for partially posterior	49
combined with anterior repair for inguinal hernia.(A)	
Lightweight polypropylene. (B) Absorbable	
polyglycolic acid-trimethylene carbonate.	
Figure 1.15: The shape of PHS mesh.	50

Figure 1.16: Bilateral GPRVS	59
Figure 1.17: Idea of Wantz repair.	63
Figure 1.18 and 1.19: The general idea of Kugel patch and its placement	65
Figure 1.20: Different types of balloon dissectors.	76
Figure 3.1a and 3.1b: Ipsilateral transverse incision between the umbilicus and internal ring deepened to rectus muscle which is then retracted laterally	129
Figure 3.2: Lateral and medial blunt dissection of preperitoneal space by "sponge on stick" to help in cord dissection and isolation by gauze strip or tape.	130
Figure 3.3: Hernia is dissected away from cord.	130

Figure 3.4a and 3.4b: Prolene mesh 15cm x 15cm is modified and slit laterally. Edges are rolled and held in place by pair of artery forceps before carefully oriented and placed in the space of Bogros.	131
Figure 3.5a and 3.5b: The mesh in place then closure in layers and the skin is closed by subcuticular sutures.	132
Figure 3.6: The operating room setup in right sided hernia before assistant stands next to surgeon	133
Figure 3.7a and 3.7b: Ipsilateral transverse incision just below and lateral to the umbilicus deepened to anterior rectus sheath. The rectus muscle is seen.	134
Figure 3.8: The artery forceps is introduced and opened along medial edge of rectus muscle to separate it from the posterior rectus sheath below.	135
Figure 3.9a and 3.9b: Diagrammatic representation of the access to preperitoneal space and position of camera port through which insufflation begins.	136

Figure 3.10: Ports in place.	137
Figure 3.11: The medial dissection and opening of space of Retzius in midline between the pubic bone anteriorly and the urinary bladder posteriorly.	139
Figure 3.12: Traction on the direct sac pulls the redundant fascia transversalis with it frequently mistaken as continuation of the sac.	140
Figure 3.13: Cave-like defect in the triangle of Hasslebach after reduction of direct hernia.	141
Figure 3.14: The view after completion of dissection of space of <i>Bogros</i>	142
Figure 3.15a and 3.15b: The hernial sac is identified and pulled medially and downwards while dissecting cord structures laterally. Then, the sac is pushed upwards and laterally while dissecting cord structures medially to create a window between the sac and cord structures.	143

Figure 3.16: Creation of window facilitates further	144
dissection and traction and may be used as point of	
hernial ligation and transaction.	
Figure 3.17: Maintaining traction on the sac while	145
cutting the attached bands to its fundus.	
Figure 3.18: The sac falls down with the peritoneum.	145
Figure 3.19: Further dissection of the peritoneal	146
reflection downwards to create enough space for the slit	
mesh.	
Figure 3.20: Creating another window to separate the	147
cord from its posterior relation to the peritoneum and	
abdominal wall.	
Figure 3.21a and 3.21b: Final mesh position hugging	148
the cord from medial to lateral.	
Figure 3.22: Prolene loop passed around long hernial	149
sac to limit dissection of the cord.	
	L

Figure 4.1: Smoking distribution in the study group	159
Figure 4.2: The patients' comorbidities.	160
Figure 4.3: ASA classification of patients in the study group	161
Figure 4.4: General hernia distribution among patients of the study group	163
Figure 4.5: Distribution of type of hernias in the study group	163
Figure 4.6: Operative time in minutes in Group A and B	166
Figure 4.7: Intraoperative complications in Group A and B	168
Figure 4.8: Early postoperative complications in Group A and Group B	170
Figure 4.9: Verbal rating pain scores in Group A and Group B at 1 st postoperative day	172