Assessment of Laparoscopic Hernial Repair of Primary Paraumbilical Hernia Through Transabdominal Preperitoneal Technique

Thesis

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By

Abdel rahman Ali El Saied
M.B.B.Ch
General Surgery Resident at El-Agozaa Police Hospital

Under supervision of

Prof. Dr. Ayman Abdullah Abdraboh
Professor of General Surgery
Head of Endocrine Surgery Department
Faculty of Medicine - Ain Shams University

Dr. Hossam Sobhy Abdel raheem
Lecturer of General Surgery
Endocrine Surgery Department
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	vi
Introduction	1
Aim of the Work	3
Review of Literature	
▪ Surgical Anatomy Related to Ventral Hernias	4
▪ Adults Umbilical/ Paraumbilical Hernias	15
▪ Approaches for Umbilical/ Paraumbilical Hernia Repair	30
Patients and Methods	59
Results	67
Discussion	79
Conclusion	87
Summary	88
References	92
Arabic Summary	—

List of Tables

Table No.	Title	Page No.
Table (1):	Number and percentage distribution patients of primary paraumbilical hernia who underwent Transabdominal Preperitoneal (TAPP) repair technique according to their demographic data	67
Table (2):	Number and percentage distribution patients of primary paraumbilical hernia who underwent Transabdominal Preperitoneal (TAPP) repair technique according to their intraoperative	70
Table (3):	Number and percentage distribution patients of primary paraumbilical hernia who underwent Transabdominal Preperitoneal (TAPP) repair technique according to their postoperative complications	72
Table (4):	Number and percentage distribution patients of primary paraumbilical hernia who underwent Transabdominal Preperitoneal (TAPP) repair technique according to their recurrence within 3 months	74
Table (5):	Number and percentage distribution patients of primary paraumbilical hernia who underwent Transabdominal Preperitoneal (TAPP) repair technique according to their hospital stay	75
Table (6):	Distribution of the 3-month recurrence by personal and operation characteristics	76
Table (7):	Distribution of the seroma and hematoma by personal and operation characteristics	77
Table (8):	Distribution of the conversion into open by personal and operation characteristics	78

List of Figures

Fig. No.	Title	Page No.
Figure (1):	Adult anatomical remnants of the umbilical ring and its contents.	6
Figure (2):	The muscles of the abdominal wall.	10
Figure (3):	The blood supply to the abdomen divided into three zones	11
Figure (4):	Multifactorial etiology of hernia development	16
Figure (5):	Type 1: 1 Round or oval UR, RL attached to the top and MdLs, MnL to the lower border of UR. Type 2: Obliterated or slitted UR with all ligaments attached to slit. Type 3: Round or oval UR, RL covered the whole ring and terminated at the inferior border of it with MdLs and MnL. Type 4: Round or oval UR, RL bifurcated and fused to both sides of the ring; MdLs and MnL attached to the lower border of it. Type 5: Round or oval UR, RL attached to top, MnL and MdLs joined before UR and attached as a single ligament to inferior border	19
Figure (6):	An axial computed tomographic image showing a ventral hernia with incarceration of the anterior transverse colonic wall, consistent with a Richter hernia	25
Figure (7):	Large complex primary umbilical hernia	30
Figure (8):	Primary suture closure of a small umbilical hernia	32
Figure (9):	Blunt dissection is performed to encircle umbilical stalk and hernia sac	34
Figure (10):	Hernia sac that has been dissected free containing preperitoneal fat	34
Figure (11):	Laparoscopic view of remote preperitoneal umbilical hernia repair with mesh during nonrelated laparoscopic procedure	38
Figure (12):	Mesh prosthetic for umbilical hernia repair in the sublay position (either intra-abdominal or preperitoneal)	38

List of Figures Cont...

Fig. No.	Title	Page No.
Figure (13):	Large umbilical hernia (approximately 5 cm) approached through a periumbilical midline incision and retrorectus repair	39
Figure (14):	Synthetic polypropylene mesh chosen for retrorectus repair and fixed using transfacial sutures	39
Figure (15):	Mesh placed in the retrorectus space and fixed with 4 sutures	40
Figure (16):	Laparoscopic view of umbilical hernia with associated hernia above the defect	43
Figure (17):	Often, omentum is in the hernia sac and has to be dissected and reduced to evaluate the size of the defect	44
Figure (18):	The hernia defect should be measured intracorporeal to get an exact measurement to help size the mesh	44
Figure (19):	Mesh placement with wide overlap of the umbilical hernia defect (at least 3–5 cm in all directions).	45
Figure (20):	Mesh fixation using a permanent tacker and the aid of a mesh positioning device to help keep the mesh on the abdominal wall during fixation	45
Figure (21):	Port positions. (a) for umbilical and infraumbilical hernia; (b) for supraumbilical hernia	47
Figure (22):	(a) Creation of retro-rectus space. Note the neurovascular bundles - black arrow, Linea Semilunaris - yellow arrow, posterior rectus sheath - blue arrow (b) intraperitoneal dissection and taking down hernia contents (c) crossing the midline	48
Figure (23):	(a) Closure of linea alba. Rectus abdominis are marked with white arrows (b) closure of posterior rectus sheath	50

List of Figures Cont...

Fig. No.	Title	Page No.
Figure (24):	Transversus abdominis release. TA fibres are marked with black arrow	51
Figure (25):	Mesh placement. Pubic bone is marked with an arrow	52
Figure (26):	Areas of trocar insertion	53
Figure (27):	Creation of a peritoneal flap with sharp dissection.Rectus abdominis muscle is seen on the roof	54
Figure (28):	Dissection of peritoneal flap	54
Figure (29):	Completed dissection of peritoneal flap showing the hernia defect	55
Figure (30):	Fixation of polypropylene mesh in the preperitoneal space	55
Figure (31):	One proposed potential advantage of robotic hernia repair is the ability to facilitate suture closure of the fascia	57
Figure (32):	A mesh positioning device helps to hold the mesh to the abdominal wall to facilitate suturing	57
Figure (33):	**a-b)** Paraumbilical hernia(33a) sites of trocars (33b)	62
Figure (34):	**a-b-c)** The identification of hernial defect intraabdominal (34a) starting of the preperitoneal flap (34b)creation of preperitoneal fap (34c)	63
Figure (35):	**a-b**) Reduction of content (35a) and closure of fascial defect (35b)	63
Figure (36):	**a-b)** Applying and fixation of the mesh by tackers (36a) closure of the peritoneal flap(36b)	64
Figure (37):	Percentage distribution patients of primary paraumbilical hernia who underwent Transabdominal Preperitoneal (TAPP) repair technique according to their gender.	68

List of Figures Cont...

Fig. No.	Title	Page No.
Figure (38):	Percentage distribution patients of primary paraumbilical hernia who underwent Transabdominal Preperitoneal (TAPP) repair technique according to their age.....	68
Figure (39):	Percentage distribution patients of primary paraumbilical hernia who underwent Transabdominal Preperitoneal (TAPP) repair technique according to their BMI.....	69
Figure (40):	Percentage distribution patients of primary paraumbilical hernia who underwent Trans-abdominal Preperitoneal (TAPP) repair technique according to their intraoperative.	71
Figure (41):	Percentage distribution patients of primary paraumbilical hernia who underwent Transabdominal Preperitoneal (TAPP) repair technique according to their post-operative complications.....	73
Figure (42):	Percentage distribution patients of primary paraumbilical hernia who underwent Transabdominal Preperitoneal (TAPP) repair technique according to their recurrence within 3months.	74

List of Abbreviations

Abb.	Full term
CT	Computed tomography
EHS	European Hernia Society
IPOM	Intraperitoneal onlay mesh
IQR	Interquartile range
PUH	Paraumbilical hernias
SD	Standard deviation
TAPP	Transabdominal preperitoneal
TEP	Totally extraperitoneal
UR	Umbilical ring

INTRODUCTION

Paraumbilical hernias (PUH) constitute 19% of ventral hernias and less than 10% of overall hernias ***(Dabbas et al., 2011).*** They are commonly found in patients in their 50s and 60s, and risk factors include female gender, obesity, underlying cirrhosis or renal failure, and multiple pregnancies ***(Abdel-Baki et al., 2007).***

Laparoscopic repair has been advocated since 1993, with advantages including smaller incisions and better delineation of the defect via an intraperitoneal view and recently via preperitoneal repair. Also, occult hernias are easily identified via laparoscopy compared to open repairs, studies have shown a lower incidence of wound infection in laparoscopic repairs than in open repairs, but the rate of visceral injury is higher. The former is theorized to be because of reduced tissue dissection during laparoscopy, which allows for better postoperative recovery. The latter complication is higher particularly in patients requiring extensive adhesiolysis and therefore longer operative times ***(Zaghloul, 2004).***

The standard procedure for paraumbilical hernia is implantation of prosthetic mesh. Various studies have concluded that mesh repair is superior to suture repair which has 85 % higher recurrence risk compared to mesh repair. This can be done laparoscopically using various techniques like Intraperitoneal approach and transabdominal preperitoneal

approach ***(Hajibandeh et al., 2017).*** The laparoscopic TAPP approach for umbilical hernia and rectus diastasis may be a safe surgical option when trying to avoid potential complications related to intraperitoneal approach ***(Prasad et al., 2011)***.

Aim of the Work

The aim of this study is to assess the outcomes, benefits and complications of laparoscopic hernial repair of primary paraumbilical hernia through Transabdominal preperitoneal technique.

Chapter 1

SURGICAL ANATOMY RELATED TO VENTRAL HERNIAS

The surgeon's understanding of the anatomy of the anterior abdominal wall is critical for successful hernia repair. Although the clinical anatomy of the inguinal region has traditionally been a focus for hernia surgeons, increasing attention is now applied to abdominal wall clinical anatomy for abdominal wall reconstruction.

A- *Embryology of the Abdominal Wall:*

The ventral body wall first begins to form during the third week of development. This process begins with the differentiation of the mesoderm, located between the ectoderm and endoderm. At this stage, the embryo is a flat disc, the circumference of which will eventually become the umbilical ring. The embryo begins folding during the fourth week of development, characterized by proliferation of the neuroectoderm and mesoderm, but at the same time, cell death and subsequent growth arrest occurs at the umbilical ring ***(Sadler, 2004).***

At the fifth week, the umbilical vessels (2 arteries and 1 vein), the allantois, the yolk stalk, and the canal connecting the intraembryonic and extraembryonic cavities pass through the

umbilical ring. This is also the period when there is rapid growth and expansion of the liver, which temporarily makes the abdominal cavity too small to contain all of the intestinal loops, which then enter the extraembryonic cavity through the umbilical ring, referred to as the physiologic umbilical herniation, during the sixth week of development ***(Sadler, 2004).***

The intestines remain herniated until the 10th week, when they begin returning to the abdominal cavity. Abnormalities in this process can lead to congenital defects of the abdominal wall. The umbilical ring remains located at the center of the abdomen and is a transition zone between the body wall and the amnion. By the 10th week, the epithelial tissues have fused in the midline of the embryo, leaving only the umbilical vessels in the region of the umbilical ring. At this time, the umbilical cord has formed. The cord contains 2 umbilical arteries, 1 umbilical vein, and the remnants of the allantois, which is referred to as the urachus after it becomes obliterated.9 These structures all have remnants in the adult abdominal wall and can be used as surgical landmarks (**Figure 1**) ***(Loukas et al., 2008).***