



The Outcome of the Combined Procedure of Abdominoplasty and Repair of Umbilical Hernia

Thesis

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List of Contents

Title	Page No.
List of Tables	i
List of Figures	ii
List of Abbreviations	vi
Introduction	7
Aim of the Work	8
Review of Literature	
The Anatomy of Abdominal Wall	4
Aesthetics Consideration of the Abdomen	32
Abdomenplasty and Hernia Repair	40
Patients and Methods	95
Results	103
Discussion	128
Summary	138
Conclusion	140
References	141
Arabic Summary	—

List of Tables

Table No.	Title	Page No.
Table (1):	Shows the difference in male and female characteristics of the abdomen.	34
Table (2):	Abdominoplasty Classification System.....	41
Table (3):	Selected contributions to modern abdominoplasty design.	51
Table (4):	Classification of abdominoplasty complications.....	78
Table (5):	Show the age, sex, BMI, co-morbidity, parity of the patient.	104
Table (6):	Show the type of hernia, weight loss, mesenchymal weakness.	109
Table (7):	The maximum and minimum amount and drain removal results of the studied cases.....	112
Table (8):	Show the complications of the procedure.	113
Table (9):	The clinicopathological characteristics of patients with umbilical hernias in the presented study.	115
Table (10):	Show the drain amount and duration of both study groups.	118
Table (11):	Showed the postoperative complications which were detected during the patient's hospital stay and after discharge from hospital within 30 days from operation date and the late post-operative complications within a six months after surgery.....	121
Table (12):	Show the relation of age, sex, BMI, co-morbidity and complications of the procedure.....	124
Table (13):	Show the relation between drain amount, removal and the complication.	127

List of Figures

Fig. No.	Title	Page No.
Figure (1):	Scarpa's fascia drainage is based on superficial inferior epigastric artery vein (SIEAV) and the medial epigastric vein (MEV).....	13
Figure (2):	Muscles of the anterior abdominal wall.....	17
Figure (3):	External oblique muscle	18
Figure (4):	Internal oblique muscle.....	19
Figure (5):	Transversus abdominis muscle.....	19
Figure (6):	Blood supply to the abdominal wall.....	22
Figure (7):	Arterial supply of the anterior abdominal wall	27
Figure (8):	Topographically, a handful of bony and soft tissue landmarks	35
Figure (9):	A, B The soft-tissue landmarks may not be easily visualized in patients with excess adiposity	36
Figure (10):	Abdominolipoplasty classification system.....	41
Figure (11):	(left) type A; deformity showing rectus diastasis (RD). (Right) correction of the rectus diastasis by plication	46
Figure (12):	(left) type B deformity with demarcation at the area of rectus diastasis and the L-shaped and inverted L-shaped plication of the external oblique aponeurosis. (Right) after correction of the rectus diastasis and plication of the external oblique aponeurosis	46
Figure (13):	(left) type C deformity showing congenital rectus diastasis (CRD). (Right) undermining of both rectus muscle (RM), exposing the posterior recti sheaths (PRS).....	47

List of Figures Cont...

Fig. No.	Title	Page No.
Figure (14):	(Above) Incision of the anterior rectus aponeurosis and undermining of the posterior rectus sheath. Suture is passed on the posterior rectus aponeurosis laterally to the linea alba. (Second row) invagination of the linea alba. (Third row) Suture anchoring the anterior rectus sheath to the midline. (Below) Final aspect with recreation of the local anatomy	48
Figure (15):	(left) type D deformity: elevation of the external oblique muscles (Right) advancement of the external oblique and correction of rectus diastasis	49
Figure (16):	Incisions used for abdominoplasty	51
Figure (17):	As demonstrated by the lower body lift design, the maximum amount of vertical truncal laxity occurs along the lateral contour	61
Figure (18):	High-lateral-tension abdominoplasty design.....	62
Figure (19):	The front view of the U-M dermolipectomy	63
Figure (20):	Three-quarters view of the U-M dermolipectomy	63
Figure (21):	Skin markings are conducted while stretching the lower abdominal skin cranially and drawing a modified Regnault-incision.....	64
Figure (22):	Resection of the tuxedo flaps is performed after exertion of an inferomedial pull resulting in rounded resection margins laterally	65

List of Figures Cont...

Fig. No.	Title	Page No.
Figure (23):	It is of outmost importance to remove any residual subcutaneous adipose tissue underneath the lateral dog ears or else the skin will not be subject to shrinkage	65
Figure (24):	Selective undermining, diastasis demarcation.	67
Figure (25):	Perforating vessels.....	67
Figure (26):	The dissection plane of the abdominal wall skin flap.....	69
Figure (27):	Intraoperative view of the completed elevation of the skin flap	69
Figure (28):	Vertical rectus plication.....	72
Figure (29):	Transverse rectus plication with bilateral crescent-shaped plications of the external oblique fascia.....	73
Figure (30):	Percutaneous Aspiration of seroma	81
Figure (31):	Localized fullness that develops weeks after an abdominoplasty is likely to be a pseudo-bursa	82
Figure (32):	Pseudo-bursa is removed with sharp dissection.....	82
Figure (33):	Hematoma following abdominoplasty	84
Figure (34):	Full-thickness soft-tissue necrosis	86
Figure (35):	Advancement of the upper tissue towards the midline help reduce the incidence of excess skin	90
Figure (36):	The final transverse scar migrating superiorly	92
Figure (37):	Sex distribution of the studied cases.	105
Figure (38):	The high risk group of the studied cases.	106

List of Figures Cont...

Fig. No.	Title	Page No.
Figure (39):	The parity of the studied cases.	107
Figure (40):	The delivery of the studied cases.....	108
Figure (41):	Show the weight loss of the studied groups.	110
Figure (42):	Show the mesenchymal weakness of the studied groups.....	110
Figure (43):	The hernia repair of the studied cases.....	111
Figure (44):	Show the complications of the procedure.	114
Figure (45):	Show the mean age of both groups.	116
Figure (46):	Show the mean sex of both groups.....	117
Figure (47):	Show the mean of co-morbidity of both groups.	117
Figure (48):	Show the mean of the duration of drain removal of the studied groups.....	119
Figure (49):	Show the mean of maximum amount of drain amount of both studied groups.	119
Figure (50):	Show the mean of minimal amount of drain of both studied groups.....	120
Figure (51):	Show the complications of the procedures in both studied groups.	123
Figure (52):	Show the relation between age and complications.....	125
Figure (53):	Show the relation between sex and complications.....	125
Figure (54):	Show the relation between co-morbidity and complications.....	126
Figure (55):	Show the relation between Drain removal and complication.	127

List of Abbreviations

Abb.	Full term
ASA.....	American Society of Anesthesiology
BMI.....	Body Mass Index
BMP.....	Basic metabolic panel
CBC	Complete blood count
CRD	Congenital rectus diastasis
CS	Caesarean Section
DAT	Deep Adipose Tissue
DIEA.....	Deep inferior epigastric artery
DM	Diabetes Mellitus
DSEA.....	Deep superior epigastric artery
DVT	Deep vein thrombosis
HTN	Hypertension
MEV.....	Medial epigastric vein
PE	Pulmonary embolism
PRS.....	Posterior recti sheaths
RA.....	Rectus abdominis
RD.....	Rectus diastasis
RM	Rectus muscle
SAA.....	Suction assisted abdominoplasty
SAT.....	Superficial Adipose Tissue
SCIA	Superficial Circumflex Iliac Artery
SFS	Superficial facial system
SIEAV.....	Superficial inferior epigastric artery vein
SSEA	Superficial Superior Epigastric Artery
UH	Umbilical hernias

INTRODUCTION

The abdominal wall encompasses an area of the body bounded superiorly by the xiphoid process and costal arch, and inferiorly by the inguinal ligament, pubic bones and the iliac crest.

The anterior abdominal wall can be thought of as having two parts: anterolateral and midline. The anterolateral portion is composed of the external oblique, internal oblique, and transversus abdominis muscles (often referred to as “the three flat muscles of the anterior abdominal wall”). These muscles are arranged such that their fibers are roughly parallel as they approach their insertion on the rectus sheath.

The midline (middle) portion is composed of the rectus abdominis and pyramidal muscles. The rectus muscle is enclosed in a stout sheath formed by the bilaminar aponeuroses of the three flat muscles, which divide and pass anteriorly and posteriorly around it. The sheath attaches medially to the linea alba, which is formed by decussation. In 10–20 % of the subjects, the pyramidal muscle is absent on one or both sides (*Skandalakis et al., 2014*).

When performing abdominal contouring procedures, it is necessary to understand the anatomy of the abdominal region and how it relates to the specific surgical operation being performed. The vascularity of the abdominal soft tissue is

particularly important, considering the large area that is often undermined during abdominoplasty, and the fact that the tissue is often closed under tension. Understanding the muscular and fascial components of the abdominal wall is important for myofascial plication and hernia repair.

The sensory distribution is also important when considering incision placement for abdominal body contouring procedures. Specific caveats of the abdominal anatomy are important to note, as they play an important role in simplifying and safely achieving excellent aesthetic results in abdominal contouring procedures.

AIM OF THE WORK

The main objective of our study is to assess the outcome of the combined procedure of abdominoplasty and repair of umbilical hernia.

Chapter 1

THE ANATOMY OF ABDOMINAL WALL

Embryology of the anterior abdominal wall:

The anterior abdominal wall forms as a result of the rapid growth of the embryonic body and simultaneous decrease in the growth of the body stalk. A layer of ectoderm and mesoderm (somatopleure) at the first without muscle, vessels or nerves forms the primitive wall. By the sixth week of intrauterine life the somatopleure is invaded by the mesoderm derived from the myotomes on either side of the vertebral column. The segmental pattern is lost and the mesoderm grows laterally and ventrally as a sheet, the leading edges of which will differentiate into the right and left rectus abdominis muscles.

The remaining part of the mesodermal sheet splits into three layers; an external layer which will differentiate ventrally into the external oblique muscle; a middle layer which will form the internal oblique muscle and an inner layer which will become the transversus abdominis muscle. All of these muscles are distinguishable by the seventh week of intrauterine life (*Skandalakis et al., 1994*)

With elongation of the midgut during the sixth week of gestation, a physiologic herniation of the abdominal contents occurs through the umbilicus (*Vásconez and de la Torre, 2006*).

The midgut returns to the abdomen during week 10 to allow closure and development of the abdominal wall to continue. Closure of the midline proceeds from both caudal and cranial directions as the two rectus abdominis muscles meet in the midline. Although this process is complete in the week 12 of gestation (*Vásconez and de la Torre, 2006*).

Regions of the Abdominal Wall:

The anterolateral abdomen is divided into nine regions by four imaginary planes: two verticals (midclavicular/ midinguinal) and two horizontal (transpyloric/ intertubercular) planes.

The transpyloric plane corresponds to the midpoint between the umbilicus and xiphoid process, crossing the pylorus of the stomach at the lower border of the first lumbar vertebra. The subcostal plane that passes across the costal margins and the upper border of the third lumbar vertebra may be used instead of the transpyloric plane.

The lower horizontal plane, designated as the intertubercular line, traverses the anterior abdomen at the level

of fifth lumbar vertebra, and connects the iliac tubercles on both sides.

A second lower horizontal plane, the inter spinous plane, may also be used, interconnecting the anterosuperior iliac spines on both sides and running across the sacral promontory.

A simplified division of the anterolateral abdomen uses two imaginary planes that run through the umbilicus, one passing horizontally and the other vertically. The four quadrants separated by these planes divide the anterior abdomen into the right and left upper and lower quadrants.

Of the nine areas, the centrally placed zone is the umbilical region.

The epigastrium is the upper middle part of the anterior abdomen between the umbilicus below and the costal arches and the xiphoid process above.

The pubic region known as the hypogastrium defines the zone immediately distal to the umbilical region.

The hypochondriac regions flank the epigastrium and are occupied on the right side by the liver, gallbladder, right colic flexure, descending duodenum, right kidney and suprarenal gland. On the left side these regions contain the spleen, left kidney and suprarenal gland, tail of the pancreas, left colic flexure, and fundus of the stomach.