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

Thesis

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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 Circumflix 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 somatopluere 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 anteriosuperior 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.