Pharmacophore

ISSN-2229-5402

Journal home page: http://www.pharmacophorejournal.com

AN OVERVIEW OF ABDOMINOPLASTY SURGICAL APPROACH: A LITERATURE REVIEW

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ARTICLE INFO

Received:
10 Aug 2020
Received in revised form:
25 Nov 2020
Accepted:
05 Dec 2020
Available online:
28 Dec 2020

Keywords: Abdominoplasty, Diagnosis, Clinical features, Management.

ABSTRACT.

Background: Abdominoplasty is one of the commonly used methods to correct the skin excess after rapid weight reduction, especially in post-partum women. This technique is different from lipoplasty, where only a zed localized part of the body is contoured surgically. Abdominoplasty has multiple types and is often known as a "tummy tuck" procedure, an accurate term for its purpose. Objectives: Techniques have been developed in the cosmetic field, and a combination of abdominoplasty with them is possible and the main example of this is liposuction. When combined, the operation is commonly referred to as lipoabdominoplasty. Therefore, in this paper, we will review abdominoplasty, indications, complications, and management in the common practice. Methodology: PubMed database was used for articles selection, from where papers were obtained and reviewed on the topic of abdominoplasty. Review: Abdominoplasty has been developed as all surgeries but the aim has remained the same. All different techniques will share three main features including limited dissection of the abdominal flap, plication of the fascia (rectus abdominis), and resection of the skin and subdermal tissue till the fascia of Scarpa. Therefore, abdominoplasty is not a liposuction, the difference is that liposuction is not restricted to the stomach and this latter procedure focuses more on general contour rather than skin excess or stretched musculature. Conclusion: In conclusion, the choice of an abdominoplasty approach is multifactorial, and often a multi-specialty approach is needed. This is especially the case in bariatric surgery combined with abdominoplasty.

To Cite This Article: Shareefah Mesabl Alenazi, Abeer Furayj Aljahdali, Abdulrahman Ibrahim Alwakil, Majdah Ahmed Alghafari, Shahad E. Alalawi, Fayruz Ahmed Almansouri2 *et al.*, (2020), "An Overview of Abdominoplasty Surgical Approach: A Literature Review", ***Pharmacophore, 11(6),*** *48-51.*

Introduction

Abdominoplasty is a commonly performed procedure to reduce fat and skin from the abdominal wall. This is of particular importance in people who used to be obese and now suffer from excess skin remnant, or previously pregnant and now would like to correct the postpartum abdominal deformity. Not all postpartum patients are suitable or recommended for surgical intervention, as 6 months is warranted before determining if excess pregnancy skin would not retract [1-3]. The benefit from operative intervention is maximized when patients plan on stopping smoking and exercising regularly to train their bodies to surgical stress. As smoking and morbid obesity are relative contraindications to abdominoplasty, it would be best to look for the alternative in non-compliant and non-enthused candidates. Other relative contraindications may include diseases such as heart disease and diabetes. While ideally, no patient who had abdominoplasty should consider pregnancy, reports are showing no complications in pregnancy post-operatively. [4]

Aesthetic surgeries have been more common in the last decades and one of the main examples is abdominoplasty. Globally, it is estimated that more than 800,000 patients will do this operation each year. [5] This number makes this operation the

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sixth most common aesthetic operation done worldwide. The main goal of this operation is to reshape the body contour, this is achieved by removing the redundant skin and fat then remodel the abdominal wall. Many techniques have been proposed since the initial concept suggested a century ago and modern abdominoplasty foundations have been suggested in the 1970s. [6]

Recently, many techniques have been developed in the cosmetic field, and a combination of abdominoplasty with them is possible and the main example of this is liposuction. When combined the operation is commonly referred to as lipoabdominoplasty. As in any surgeries, complications exist and the prevalence varies depending on the technique and the overall setting. However, many studies had local complications rates ranging between 13.5 up to 20% of cases, but the systemic complications were reported in less than 0.1%. [7] As a result, every surgeon shall have an idea about this operation, its indications, complications, and how to manage them to provide the best care and offer realistic expectations to their patients. In this paper, we will review abdominoplasty, indications, complications, and management in the common practice. [8]

Methodology

PubMed database was used for articles selection, and the following keys used in the mesh ((“Abdominoplasty"[Mesh]). Concerning the inclusion criteria, the articles were selected based on the inclusion of one of the following topics; abdominoplasty. Exclusion criteria were all other articles that did not have one of these topics as their primary endpoint.

Review

Overview

Abdominoplasty has been developed as all the surgeries, but the aim remains the same. All different techniques will share three main features including limited dissection of the abdominal flap, plication of the fascia (rectus abdominis), and resection of the skin and subdermal tissue till the fascia of Scarpa (See Table 1). Therefore, abdominoplasty is not liposuction, the difference is that liposuction is not restricted to the stomach and this latter procedure focuses more on general contour rather than skin excess or stretched musculature. The new addition of adjuvant procedure specifically liposuction provided a new option for patients not suitable for abdominoplasty, as the former procedure can focus on certain areas of the body contour.

Table 1: Comparison of Abdominoplasty Types

	Description	**Suitable Group**
Complete Abdominoplasty	Large Incision from Hip to Hip, Tightened Wall Muscle Fascia	More Refined Outcome as Surgery is Prolonged up to 5 Hours
Partial Abdominoplasty	Smaller Incision than Complete Type	Fast Surgery 1–2 Hours, less Invasive, Week for Recovery
Extended Abdominoplasty	Complete Abdominoplasty with Lateral Thigh Lift	Dramatic Reduction in Abdominal Fat and Skin Excess, Takes a Month for Recovery
High Lateral Tension Abdominoplasty	Muscles Are Tightened Horizontally	Better Defined Waistline
Floating Abdominoplasty	Partial Abdominoplasty with Sparing of Umbilicus	
Liposuction Abdominoplasty	Body Contouring of Hips, Thighs, and Gluteal Region	Aesthetic and Isolated Local Body Enhancement
Circumferential Abdominoplasty	Extended Abdominoplasty with Gluteal Lift	Obese Patients Who Had Massive Weight Loss

Approach

Lipoabdominoplasties have been more popular recently due to the higher satisfaction rates among the patients. There were concerns initially about higher risk regarding flap necrosis, but the technique proved to be effective. The safe approach in this procedure is to preserve the lateral perforating blood vessels by raising a tunnel from the umbilicus and up to the xiphoid process which needs to be narrow. [9]

Another approach to abdominoplasty is partial or circumferential abdominoplasty, both have similar low (0.24%) risks of postoperative necrosis development when compared to the former, complete abdominoplasty. [10] Furthermore, patients would prefer the aesthetic appearance of partial and circumferential approaches relative to complete abdominoplasty, as both approaches have better recovery post-operatively and patient satisfaction. [10] In high-definition abdominoplasty, also termed liposuction abdominoplasty, the goal is usually to focus on giving an aesthetic look to the patient, most commonly done in athletes of either gender. [11]

A recent analysis of abdominoplasty data has shown an increase in the rate of weight loss following bariatric surgery combined with abdominoplasty. In addition to abdominoplasty, an increase in follow-up time has also shown significant

weight reduction post-bariatric surgery. [12] Other non-abdominoplasty approaches are entering the trend, with micro-focused ultrasound with visualization showing significant effectiveness in managing skin excess in postpartum candidates. [13]

Complications

As with any surgery, complications are a possibility, however, the systemic complications in this operation are very rare and less than 0.1% in all cases. Nevertheless, local complication rates are much higher depending on the technique. One study reported that traditional abdominoplasty had 20% of patients reporting local complications in comparison to 10.3% in lipoabdominoplasty and 13.5% in mini-abdominoplasty. [7] Local complications are variable including, seroma, infection, skin (or umbilicus) necrosis, hematoma, hypertrophic (and keloid) scars, and suture extrusion among others. [7] Of important note, the difference in postoperative complications between patients with different BMI ranges is rather negligible. [14]

Even though they are rare, systemic complications are the most worrisome and have the highest clinical risk in these patients. One of the most notable examples is thromboembolism which happens in up to 1.1% of patients. In addition to the typical risk factors noted in surgery like immobility, abdominoplasty cases have a higher risk since a lot of them have a body mass index higher than 30 kg/m2 or equal to it. [15]

While some studies reported a reduction in the incidence of venous thromboembolism with low molecular weight heparin prophylaxis, it also showed a higher rate of hematomas in these patients. [16, 17] Generally, clinicians shall try to utilize other prevention protocols, like encouraging smoking cessation before the operation, intermittent pneumatic compression during the surgery, and encouraging early mobilization post-surgery. Nevertheless, adhering to a 7-day enoxaparin postoperative regimen would not increase the risk of postoperative bleeding, and would be appropriate in abdominoplasty patients. [18] Moreover, fat embolism was reported but in a very rare and scarce number of patients. [19]

Respiratory distress has been reported in some patients especially in anecdotal cases, however this still not a conclusive association. Moreover, death is a rarely reported complication and a study reported a prevalence range of up to 0.16%, most of which are due to massive pulmonary embolisms. Local complications are the most seen in the clinical daily life when it comes to this procedure. Seroma is one of the most common local complications and involves the accumulation of serous fluid under the abdominal flap. Recent papers reported a 15.4% incidence rate and a higher rate was reported in liposuction patients especially males. [20]

Furthermore, the relationship between lipoabdominoplasties and higher incidence of seroma formation is controversial. While one study reported an increased rate of up to 15.2% in these operations, another paper reported only 0.04%. [15] This can be due to the lack of an exact clinical definition of seroma and thus the objective methods used in assessing this will vary the results. There have been different proposed surgical techniques that were suggested to reduce the risk of seroma. [21]

If the seroma is still recurrent alkalizing agents like doxycycline, bleomycin, and talcum powder can be used. In severe and refractory cases, surgery may be indicated which aims to obliterate the space taken by the serosa and approach the walls closer. The second most common local complication is an infection, this is largely due to surgical wound infection or postoperative seroma formation and subsequent infection. [22, 23] Surgeons could potentially make use of hyperbaric oxygenation in cases of necrotic skin to promote the healing process. [24]

Conclusion

In conclusion, the choice of an abdominoplasty approach is multifactorial, and often a multi-specialty approach is needed. This is especially the case in bariatric surgery combined with abdominoplasty. The patient's opinion should always be taken into consideration. Clinicians need a detailed explanation of the expected outcomes, potential complications, and postoperative complications accompanying an abdominoplasty approach. All of the potential complications should be discussed and explained meticulously to all candidate patients.

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