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ORIGINAL ARTICLE

Awareness about Advantages and Disadvantages of Abdominoplasty in the Kingdom of Saudi Arabia

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ABSTRACT

Background: Abdominoplasty (AP) is a pervasive procedure in cosmetic clinics with spectrum cosmetic reasons used globally under the giant umbrella of enhancing the quality of life. In Saudi Arabia (KSA), AP is the most common requested body-contouring surgery. It is associated with a significant number of complications, thus, there is a need to increase the clinical knowledge of physicians about AP to increase their clinical management ability of these patients as well raise the awareness of potential patients.

Aim of study: The study aims to increase the awareness about advantages and disadvantages of AP among Saudi physicians and patients going to have an AP surgery.

Methodology: The study adopts a quantitative descriptive approach among public and private cosmetic clinics practicing AP surgery. An online questionnaire form was distributed to patients who had AP surgery.

Results: total of 229 patients participated in this study, 172 (75.1%) males and 57 (24.9%) females. One third of participants with BMI >30. The main reasons of performing AP surgery were cosmetics (96.9%), weight loss (86.9%), sagging skin (67.2%) and stretch marks (42.8%). only 12.2% need to re-correct their primary operations and majority (89.9 %%) reported a positive response of AP satisfaction, weight loss (67.9%) and emotional and social benefits (66.4%).

Conclusion: We conclude that most of the study participants were satisfied with their results. Unfortunately, there is a lack of data in Saudi Arabia, and this study somewhat fulfill the current gap about the advantages and disadvantages of AP surgery.

Keywords: Cosmetic Surgery, Risks post Abdominoplasty, Advantages & Disadvantages, Obesity, KSA.

INTRODUCTION

The abdominal trunk is an area of special interest to plastic surgeons as it presents a large area of opportunity for body contouring. The trunk is a gross description of the area between the inferior aspect of the breasts and the beginning of the pelvis. Abdominoplasty, commonly referred to as a "tummy tuck," is a procedure to reduce the excess skin and fat around the abdomen and strengthen the abdominal wall musculature. The goal of this procedure is to develop an aesthetically pleasing abdomen and can incorporate direct excisional techniques as well as liposuction. With the rise in bariatric surgery, the abdominoplasty has become a significant resource to help these patients with an excess abdominal tissue after their weight loss.[1] Often, regain a beautiful flat stomach with more gentle methods is possible by physical exercises and hardware cosmetology procedures to liposuction. But in some cases, a tummy tuck surgery may be the best solution. Abdominal plastic surgery is recommended in some cases such as excess skin and fat; Sagging of the anterior abdominal wall; Divergence or extension of the rectus abdominis muscles; Stretch marks, scars from operations and injuries; Hernia, including umbilical, white line of the abdomen, inguinal.[2] However, the reasons for undergoing abdominoplasty are numerous, including men and women desiring aesthetic improvement of the abdomen, women with significant skin and abdominal wall laxity following multiple pregnancies, or bariatric patients who have excessive skin and/or pannus following significant weight loss. The laxity of the skin after significant weight loss, as well as the potentially massive size of the skin apron, may require further dissection and may require additional adjunct procedures to lift the thigh, back, arm and flank areas to maintain overall symmetry of the body. Patients with lower BMI tend to have superior results, and patients with diabetes mellitus may be more prone to complications.3 Patients with little to no fat and no abdominal wall laxity are optimal candidates for liposuction alone. Patients with minimal to moderate subcutaneous fat and minimal to moderate abdominal wall laxity which is located primarily in the infra- umbilical region are candidates for the "mini-abdominoplasty." Patients with excessive skin laxity, fat, and abdominal wall weakness are ideal candidates for full abdominoplasties.[4,5] The study aims to increase the awareness of Saudi physicians and patients going to have an abdominoplasty. The study adopts a quantitative descriptive approach among public and private cosmetic clinics practicing AP surgery for patients.

SUBJECT AND METHODS

The descriptive analytical method was used, and a qualitative approach was performed by developing a questionnaire. The questionnaire was consisted of two parts, the first part about respondents Scio-demographic information, while the second part represents the advantages and disadvantages of abdominoplasty. The study was conducted in public and private cosmetic clinics or hospitals in KSA. Data was collected through well-structured questionnaire and was distributed among abdominoplasty patients; the total number of participants was 229. In each hospital, questionnaires were distributed to AP patients and all clinical examination data was recorded. Concerning the inclusion criteria, patients from both genders who had conducted AP or visiting the clinic to conduct the surgery their age more than 18 years old. While exclusion criteria, patients with end stage of chronic diseases or less than 18 years old. The Statistical analysis will be done with Statistical Package for Social Sciences (version 25 SPSS Inc, Chicago, IL, USA). Descriptive analysis was performed by prescribing frequency distribution and percentages for study variables, including participants Scio-demographic data, advantages, and disadvantages of abdominoplasty surgery.

RESULTS

Table 1 showed that a total of 229 patients participated in this study, 172 (75.1%) males and 57 (24.9%) females with a male to females' ratio of 3:1. Their ages ranged from 18 to 60 years, majority of them falling between the ages of 21 and 30 (34.1%).

Regarding the BMI, around 40% have a normal total BMI (18.5-24.5), 31.9 % have a BMI of 25-30, 7% have a BMI of 31-

34.5, and 16.6 % have a BMI of 35-39.5. In terms of chronic diseases, 37.6% were obese while 20.1%, 17.5%, and 13% of the participants have heart diseases, hypertension, and diabetes mellitus respectively.

Table 1: Demonstration of patient's demographic & clinical data as frequency and percentages about the abdominoplasty surgery [n= 229].

Questions	Answers Frequency (%)							
Gender	Male				Female			
	172 (75.1)				57 (24.9)			
Age (Years)	18-20			21-30	31-40	41-50		51-60
	7 (3.1)			78 (34.1)	45 (19.7)	44 (19.2)		55 (24)
BMI	< 18.5		Normal 18.5 – 24.5		25-30	31 - 34.5	35 - 39.5	40 - 44.5
	2 (9)		92 (40.2)		73 (31.9)	16 (7)	38 (16.6)	8 (3.2)
Having chronic Diseases.	None	Obesity	Heart diseases	Hypertension	High Cholesterol & TG	Diabetes Miletus	Parathyroid diseases	Asthma
	74 (32.3)	86 (37.6)	46 (20.1)	40 (17.5)	16 (7)	13 (5.7)	12 (5.2)	10 (4.4)
Receiving nutritional supplements.	None	Vitamin C&D	Selenium	Omega 3	Multi- vitamin	Protein	Biotin	Collagen
	104 (45.4)	52 (22.7)	10 (4.4)	25 (10.9)	48 (21)	13 (5.7)	51 (22.2)	27 (11.8)
Using medications.	None		Antihypertensives	Antidiabetic drugs	Antipyretic, Analgesic & Anti-inflammatory	Thrombolytic	Sedatives	Thyroid drugs
	124 (54.1)		51 (22.2)	23 (10)	13 (5.7)	50 (21.3)	2 (0.9)	11 (4.8)
Diagnoses with mental illness.	YES				NO			
	216 (94.3)				13 (5.7)			
Smoking.	YES				NO			
	174 (76)				55 (24)			
Rapid weight loss in 6 months.	YES				NO			
	151 (65.9)				78 (34.1)			
Suffering from sagging skin.	YES				NO			
	207 (90.4)				22 (9.6)			

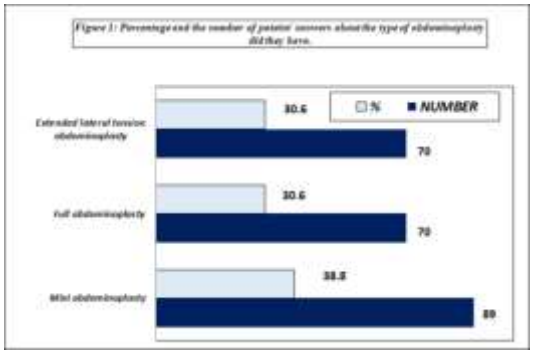
Table 2: Demonstration of patient's Clinical data as frequency and percentages about the abdominoplasty surgery [n= 229].

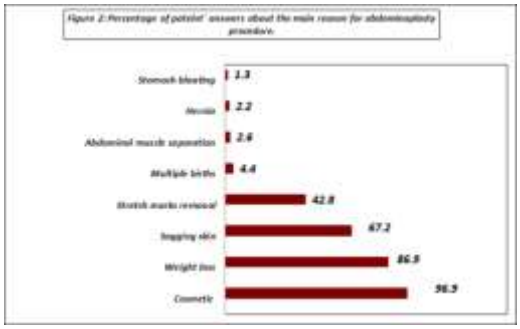
Questions	Answers [Frequency & (%)]									
Time of Abdominoplasty performed.	< 6 months	6 - 12 months		1-2 years		3-4 years	5-6 years old			Furthermore
	20 (8.7)	26 (11.4)		84 (36.7)		28 12.2()	7 (3.1)			64 (27.9)
Type of plastic surgery.	None	Pull arm	Butt Lift / Butt Lifting	Thigh lift	Breast lift / mobilization	Body liposuction	Lip Filling	Abdominoplasty	Face Lifting/Filling	Rhinoplasty
	99 (43.2)	88 (38.4)	67 (29.3)	67 (29.3)	62 (27.1)	53 (23.1)	22 (9.6)	19 (8.3)	2 (0.9)	2 (0.9)
Weight loss operations before (Bariatric surgery).	None		Gastric sleeve	Rerouting	Stomach ring	Gastric balloon			Stomach stapling	
	47 (20.5)		146 (63.8)	16 (7)	12 (5.2)	5 (2.2)			2 (0.9)	
Main reason for abdominoplasty procedure. 2	Weight loss	Cosmetic reason	Sagging skin	Stretch marks removal	Multiple births	Abdominal muscle separation	Stomach bloating		Hernia	Other
	199 (86.9)	222 (96.9)	154 (67.2)	98 (42.8)	10 (4.4)	6 (2.6)	3 (1.3)		5 (2.2)	15 (6.6)
Type of abdominoplasty that you performed. 1	Mini abdominoplasty			Full abdominoplasty			Extended lateral tension abdominoplasty			
	89 (38.9)			70 (30.6)			70 (30.6)			
Post Abdominoplasty operative days.	1-2 days		3-4 days		5-6 days		7-8 days		More than 8 days	
	42 (18.3)		100 (43.7)		58 (25.3)		10 (4.4)		19 (8.3)	
Side effects of abdominoplasty.	None	Visible scars & Granular thread	Asymmetry in the location of the scar or sculpt	Deep venous thrombosis & pulmonary complications		Anesthesia complications or numbness in the skin		Infection & wound swell or local sensitivity		Bleeding and hematoma or constant pain
	38 (16.6)	53 (23.1)	42 (18.3)	22 (9.6)		24 (10.4)		12 (5.2)		6 (2.6)
Effect of the surgery in improving these symptoms.	None	Weight loss	Improvement in emotional and social benefits (increased self-confidence	Tightening of the abdominal muscles		Improving the posture and straightening of the back		Reduce back pain		Repair of the hernia or reduce urinary incontinence

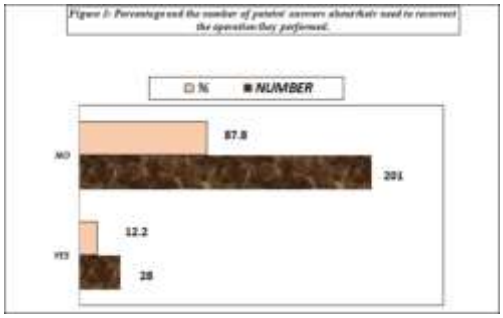
			and ability to choose clothes)				
	20 (8.7)	155 (67.9)	152 (66.4)	130 (56.8)	69 (30.1)	57 (24.9)	20 (8.8)

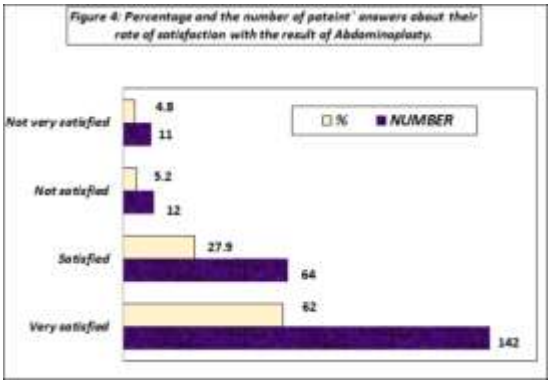
Table 3: Demonstration of patient's Clinical data as frequency and percentages about the abdominoplasty surgery [n= 229].

Questions	Answers Frequency (%)			
Other alternative surgery.	None	Abdominal muscle tightening with EMSCULPT	Tighten sagging skin with Therma Tight technology	Cool Sculpting Fat Freezing
	106 (46.3)	60 (26.2)	20 (8.7)	17 (7.4)
The rate your satisfaction about the result of Abdominoplasty.	Very satisfied	Satisfied	Not satisfied	Not very satisfied
	142 (62)	64 (27.9)	12 (5.2)	11 (4.8)
Did you perform both hernia repair & abdominoplasty surgery?	YES		NO	
	15 (6.6)		214 (93.4)	
Did you perform operation to repair the abdominal muscle separation & abdominoplasty together?	YES		NO	
	85 (37.1)		144 (62.9)	
Did you perform abdominoplasty and liposuction together?	YES		NO	
	97 (42.4)		132 (57.6)	
Did you need a blood transfusion after Abdominoplasty?	YES		NO	
	13 (5.7)		216 (94.7)	
Did you need to recorrect the operation you performed?	YES		NO	
	28 (12.2)		201 (87.8)	
Did you need laser sessions to hide the surgical scars?	YES		NO	
	90 (39.3)		139 (60.7)	
Have you ever had another plastic surgery?	YES		NO	
	123 (53.7)		106 (46.3)	









The majority (45.4%) didn't report using nutritional supplements throughout their life; however, vitamins (C and D) and biotin were found to be used by about 22% of the participants as a supplement. More than half of the patients (54.1%) were not on regular medications, nevertheless, antihypertensive drugs and antithrombotic were used by 22.2% and 21.3% of the study participants. The vast majority (65.9%) experienced rapid weight loss in the last six months and complained of sagging skin (90.4%).

Regarding type of surgery, table 2 showed that most of the patients (38.4%) underwent pull arm operation, followed by butt lift and thigh lift operations (29.3%). Furthermore; 63.8% of the participants underwent gastric sleeve surgery before the bariatric surgery. Cosmetic purposes, weight loss, and sagging skin were the primary reasons for the abdominoplasty procedure in the current project.

Regarding the type of AP, 38.9% underwent mini-AP, while full and extended lateral tension AP was performed by 30.6% of each (Figure 1). On the other hand, 16.6% of our participants didn't show any complication after AP procedure, however, visible scars and granular thread along with asymmetry in the location of the scars were reported by 23.1% and 18.3% respectively. Our participants said that the main reasons of performing AP surgery were cosmetics, weight loss, sagging skin and stretch marks (96.9%, 86.9%, 67.2% and 42.8%) respectively (Figure 2).

Regarding the patients' knowledge, table 3 showed that only 42.3% heard about alternatives process to AP. Of those, 26.25% know abdominal muscle tightening with EMSCULPT, 8.7% about tightening sagging skin with Therma tight technology, and 7.4% about cool sculpting fat freezing. Furthermore, only 12.2% need to re-correct their primary operations (Figure 3). Regarding the evaluation of improvement after surgery, the majority (89.9 %%) reported a positive response of satisfaction (Figure 4). In addition to the weight loss after surgery (67.9%); improvement in emotional and social benefits (66.4%) and tightening of the abdominal muscles (56.8%) were also delineated.

Concerning the details of the operation and concurrent other procedures, the results showed that a considerable number of patients underwent these. Abdominoplasty and liposuction were performed by 42.4% of patients while only 6.6% underwent hernia repair along with the Abdominoplasty. As surgical scars are one of the alarming cosmetic complications after surgery, 39.3% of the study participants necessitate laser sessions to hide this. Moreover, only 12.2 % demand blood transfusion to upgrade their hemodynamic status after surgery (Table 3).

DISCUSSION

Abdominoplasty has long been accepted as body contouring surgery. The benefits of the procedure go beyond aesthetics, such as improved postural changes,[6] and improved quality of life.[7,8] It is one of the most popular body-contouring procedures, it is reliable and safe. It is among the top five procedures in aesthetic surgery in the USA,[9] and in KSA.[10] The number of bariatric surgeries in Asia has increased, [6] as body contouring surgery to repair excess skin after massive weight loss.[11] Others said that it is safe but the risk for complications was significantly more in patients with diabetes & cardiovascular diseases.[12]

Regarding obesity especially the morbid one, has become an epidemic across the world. In KSA, the prevalence of obesity which defines as a BMI > 30 is estimated to be 28.7%, 25.6%, and 24.7% in 2013, 2018, and 2020 respectively.[13] Because of numerous complications due to obesity (might be fatal); a considerable number of patients undergo cosmetic surgeries to reduce their weight and feel healthier.

Body mass index less than 30 kg/m^2 and low weight of resected tissue were associated with fewer complications.[14,15] Other study in South Korea said that the only significant predictor of acceptance of cosmetic surgery was general body appreciation and enhancing their body image.[16] Body image dissatisfaction and depression in post bariatric patients is associated with less weight loss and a desire for body contouring surgery.[17] So, increased awareness regarding obesity complications contributes positively to demand AP in Saudi Arabia.

Regarding gender, our study revealed that males tend to request AP more than females but not statistically significant, this is similar to a previous study,[18] the possible explanation is that females may be more satisfied with their weight and physical appearance compared to males in our region. Some authors said that male participants had better body appreciation than females.[19] The American Society for Aesthetic Plastic Surgery (ASAPS) reports that Americans spent more than 12 billion in 2014; procedures for men up 43% over five-year period.[20] While other studies found that women had AP and interested in body contouring surgery after bariatric surgery higher than men.[17,21-24] , which contrasts with our study. In UAE, female participants (58% of them) were aged 19–21 and most of them accepted cosmetic procedures in their society.25 Many authors in a systematic review reported that women comprising roughly 90% of all cosmetic surgery and had greater knowledge and acceptance of cosmetic surgery.[26]

Concerning the age; most of our participants were from the younger age group, more obsessed and engaged in different social and community events than the elderly group. Park and his colleague summarized that the younger age group has a positive acceptance and perspective towards cosmetic surgery,[27] other participant's ages ranged from 18 to 54 years.[19] Cosmetic procedures are more accepted among youth in the Middle East especially skin and nasal procedures. The youth's concept of ideal body shape is in alignment with the Western ideas of beauty.[25] On the other hand, other study showed that older adults were turning to cosmetic surgery than younger ones.[28]

Good nutrition status and mental health are of extreme importance to assess in patients' candidates for AP, and they correlate with the results of the procedure.[29] Global Nutrition Report (2020) clarified the nutrition inequities and determined the barriers to attain healthy diets and lives.[30] Other studies in different region of Saudi Arabia revealed that fast, unhealthy food, and lack of physical activity led to obesity.[31,32]

The current research revealed that cosmetic purposes, weight loss, and sagging skin were the primary reasons for the AP procedure. Another study from Saudi Arabia concluded that social and cultural issues were the fundamental rationale to undergo cosmetic surgery. About half (47.6%) of patients were willing to undergo minor cosmetic surgery, and 60.9% patients agreed that cosmetic surgery is good because it can help people feel better about themselves.[33] We believe that interpersonal reasons along with cultural and motivational desires play an important role in this domain in our society.

Numerous factors can influence the outcome of the procedure and the rate of complications including patients' factors like age and co-morbid conditions as well as technical factors related to the post-operative follow-up.[24] In our study, a considerable number of patients experienced rapid weight loss in the last six months, sagging skin, visible scars, and granular thread along with asymmetry in the location of the scars. Van-Uchelen and his colleague monitored some patients through years for protentional complications who underwent AP. They reported wound infections, wound dehiscence, along with hematoma and seroma as the most frequent complications.[34] importantly, none of these complications were reported in our project. A study with 198 procedures were performed in 153 patients, found that more than half (55.5%) had complications, 13% with major complications and patients who require blood transfusion with weight of the resected tissue greater than 2.7 kg in AP, and no thromboembolic problems among this population.[35]

Common complications include infections, electrolyte and hematologic abnormalities, and wound complications. Postoperative complications that are delayed up to months, as may occur with surgical site hematomas.[36,37] Swelling and tissue edema is normally observed and anticipated after most cosmetic surgeries. Such findings typically resolved after 1-2 months. However, persistent, organized collections may represent hematoma,[38] less than 2% processed bleeding,[39] skin necrosis and wound dehiscence is typically due to insufficient tissue perfusion.[40] Venous Thromboembolism is the leading cause of postoperative mortality in cosmetic surgery (21%) of postoperative deaths.[41] Deep vein thrombosis and pulmonary embolism incidence in liposuction is reported at less than 1%, but there is a marked increase in deep vein thrombosis incidence when liposuction is combined with other surgeries, especially AP.[34,42,43] So, we believed that prevention strategies implemented during and after surgery are correlated positively with the few complications in our study. As complications often pose difficulty for the surgical team; applying the best standard protocol will eventually lead to better practice and subsequently, reduce the rate of complications. Losing weight, feeling healthy, and decreasing the psychological aspects are the key elements in the post-operative follow-up. These factors are achieved by a considerable number in our result; therefore, many of our participants reported a significant improvement after surgery. Our results are like another study from KSA concluded a good improvement after surgery.[44,45] Another study revealed that commonly performed body-contouring procedures that treat excess skin of the abdomen, arms, and thighs in the patient experiencing massive weight loss post bariatric procedures.[46] In our study, AP together with liposuction

were performed by 42.4% of patients while only 6.6% underwent hernia repair along with the AP. Abdominoplasty surgery had a good impact on weight loss in bariatric patients, and bariatric patients did not experience significant additional weight loss with AP, while weight reduction after AP alone was greater than diet alone.[11] Froylich et al. (2016) said that weight loss and BMI drop were higher among patients who undergo body contouring procedures after bariatric surgery.[47]

CONCLUSION

Considering the above, we can conclude that most of the study participants were satisfied with the results of AP surgery. Unfortunately, there is a lack of data in Saudi Arabia, and we believe this study somewhat fulfill the current gap about the advantages and disadvantages of AP surgery.

Informed consent Statement was made to protect their rights and ensure the security of their information. There is a phrase at the top of the questionnaire that states that completing the questionnaire constitutes acceptance to participate in this study.

Conflicts of interest: The authors have reported no conflicts of interest.

Ethical Approval: Research ethical approval number was (H-2022-004) that was reviewed and approved by the Research Ethical Committee (REC) at the University of Hail dated: 17/01/2022.

Authors' contributions This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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