International Surgery Journal
Ahmed I et al. Int Surg J. 2022 Sep;9(9):1528-1535
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: https://dx.doi.org/10.18203/2349-2902.isj20222231

Original Research Article

Early outcome of total abdominoplasty in thirty cases

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Received: 18 July 2022
Revised: 08 August 2022
Accepted: 12 August 2022

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ABSTRACT

Background: Abdominoplasty, a popular cosmetic surgery, has improved in recent years. Kelly helped minimize abdominal fat and skin. Medical institutions are diagnosing and treating obesity at an increasing pace. The research aimed to examine early post-abdominoplasty outcomes.
Methods: This prospective observational study was carried out from July 2014 to April 2015. Patients admitted at the plastic surgery department of Dhaka Medical College Hospital and different private hospitals in Dhaka with excess abdominal skin and abdominal wall laxity due to various reasons like previous pregnancy or massive weight reduction were the study population. A total of 30 cases that fulfilled the enrolment criteria were selected from the study population.
Results: Most of the patients (26, 86.67%) were female, 76% of them were married. The mean age at the time of operation was 41.3 years. The overall complication rate was 40% with few major complication (4, 13.33%) and the maximum portion was minor (9, 30%). The most frequent was seroma (3, 10%), infection (2, 6.67%), hematoma (2, 6.67%), wound dehiscence (1, 3.33%), partial flap loss (2, 6.67%) and umbilical stenosis (1, 3.33%), epidermolysis (1, 3.33%), deep vein thrombosis (DVT) (1, 3.33%). Patients' satisfaction was scored as very good (19, 66.3%), good (9, 30%), satisfactory (2, 6%). No patient scored his satisfaction as poor or very poor.
Conclusions: Abdominoplasty is safe and comfortable. Patients were happy with the treatment and had improved symptoms with little health hazards. There were mild problems, especially with wound healing. Minor difficulties were simply treated in an office.

Keywords: Abdominoplasty, Complication, Outcome, Obesity

INTRODUCTION

In 1910, Kelly was the first to describe the surgical procedure now known as abdominoplasty. Using a minimally invasive wedge excision, we were able to remove the surplus of tissue in the lower abdomen.[1] Later, Babcock made certain adjustments to the method, one of which was adding a vertical component to the abdominal incision.[2] By 1967, Pitanguy had published a comprehensive series documenting the success of a new type of incision: a low transverse incision with a wide undermining.[3] Plication of the rectus diastasis without incising the anterior rectus sheath was an additional modification of the Pitanguy technique that was introduced by Grazer.[4] In the years since it was first performed, abdominoplasty has steadily grown in popularity. Abdominoplasty is one of the top five most popular cosmetic surgery treatments, as reported by the American Society of Plastic Surgeons. Bozola and Psillakis have made attempts to classify the different kinds of abdominal deformity.[5,6] In addition, according to Matarasso, abdominoplasty can be either small, modified,

or full.[7] The characteristics of the abdominal wall, fat, and skin of the patient before to surgery informed the decision about the sort of procedure to be performed. Many plastic surgeons now offer full abdominoplasty as a standalone service or in conjunction with other procedures, making it one of the most popular forms of cosmetic abdominoplasty.[8] The rising number of patients requesting cosmetic complete abdominoplasty underscores the importance of the surgeon being aware of the risks. The most common complications are seroma, hematoma, wound dehiscence, and wound infection. Seroma is the most often reported complication of abdominoplasty, with reported incidence between 3.0 and 37.3%.[10-19] The lack of big research analyzing outcomes makes it difficult to pin down the precise complication rate in cosmetic abdominoplasty. There are various statistical limitations that are specific to survey-based studies, which affect a sizable proportion of high-power studies.[8,9]

In this study, we sought to identify the early outcome of the patients following full cosmetic abdominoplasty in a private practice environment.

Objectives

The purpose of the study was to evaluate the early post operative outcome of total abdominoplasty.

METHODS

This prospective observational study was carried out from July 2014 to April 2015. Patients admitted at the plastic surgery department of Dhaka Medical College Hospital and different private hospitals in Dhaka with excess abdominal skin and abdominal wall laxity due to various reasons like previous pregnancy or massive weight reduction were the study population. A total of 30 cases that fulfilled the enrolment criteria were selected from the study population. Purposive sampling technique was followed in this study.

Inclusion criteria

Patients with skin and subcutaneous tissue excess and/or laxity limited to anterior abdomen, and abdominal wall laxity were included in the study.

Exclusion criteria

Patients with unrealistic expectations, psychiatric instability, abstinence from smoking for less than 1 month, plan for pregnancy in the near future, patients with unoptimized co-morbid medical conditions like chronic obstructive pulmonary disorder (COPD), diabetes mellitus (DM), malignancy, jaundice, uremia, as it may influence the outcome by increased chance of infection and decreased healing capacity of the body and patients denying surgery or unwilling to take part in the study were excluded.

Data collection and analysis

After the patients getting admitted in the hospital the researcher introduced himself to the patient or his/her guardian, explained the purpose of the study and asked for participation. The particulars of the patient, physical examination and local examination findings were recorded. Besides the local examination findings, the records also included the pre-operative, per-operative and post-operative photograph. Informed written consent was obtained from all patients or their parents prior to the operation. After discharge from hospital follow up was given on 14th, 28th, 42nd post-operative day. Photographs were taken in every follow up. At the end of the research the researcher gave thanks to the respondent for participation After collecting data, Microsoft excel 2013 was used for compiling and organizing the data. All data were compiled in a major table first. Standard statistical formulae were used and analysis was done by statistical package for social science (SPSS) 23.

Operative technique

Clinical procedure

All the patients were carefully assessed by history taking, examination and doing relevant investigations to assess the pathology and fitness for surgery.

Surgical procedure

Markings were done before giving anaesthesia.

Figure 1: Pendulous anterior abdomen dueto excess skin and subcutaneous fat and musculoaponeurotic laxity.

The proposed excision is marked in the lower abdomen. Centrally, the inferior incision line is marked in the natural suprapubic crease and then carried laterally or a 'French bikini/thong pattern' in which the lateral aspect of the proposed inferior incision is angled towards the ASIS. An attempt is made to avoid the incision beyond the ASIS but is more important to avoid the dog-ears. A marking is drawn from xiphisternum to pubic symphysis through umbilicus.

Figure 2: Preoperative markings.

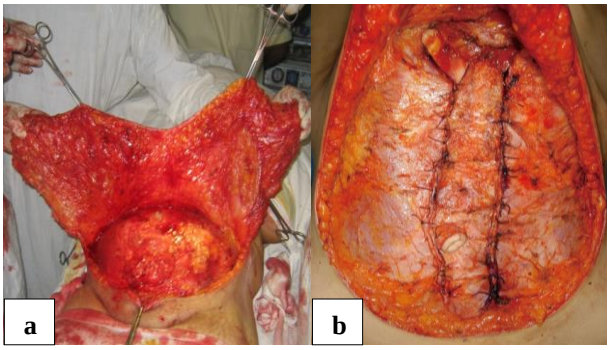

Figure 3: (a) Abdominal flap elevation and (b) rectus sheath plication.

The anticipated abdominal skin excision's inferior mark is cut. An abdominal flap is raised around the umbilicus and may reach the xiphoid and costal borders. The flap is lifted at the muscle fascia level, however scarpa's fascia is preferred. Wide undermining permits the most abdominal flap advancement during flap tailoring, but it also divides the most superior epigastric muscle perforator vessels, leaving just the lateral intercostal, subcostal, and lumber veins as the flap's blood supply. After flap elevation, rectus fascia placation is usually vertical. The umbilical stalk is dissected to the deep fascia. The flap's umbilicus is marked, and a neo-umbilicus is produced. The umbilical stalk is brought through the abdominal flap using a vertical incision and three-point fixation sutures at 3, 6, and 9 o'clock. Create a tiny, vertical, superiorly hooded umbilicus. Over the bottom flap, the flap's surplus is measured. Closing the abdominal wound involves numerous layers, with the superficial fascial system or scarpa fascia being the most significant. Permanent suture does this. Place drains.

Ethical approval

Ethical approval was taken from the ethical committee of Dhaka Medical College Hospital, Dhaka. The study subjects were informed properly about the study design, purpose of the study, the procedure and complications; and patient's confidentiality would be assured. The study subject would have the right to withdraw his/her name from the study at any point of study for any reason what so ever. No deception was used during counselling. No confidential data was obtained or accessed. The photographs that were taken during the course of this study only displayed the affected areas of the body and not the face of the patient. None of the conversations with the patients or the attendants were tape recorded. None of the patients were placed in any embarrassing situation due to their participation in the study.

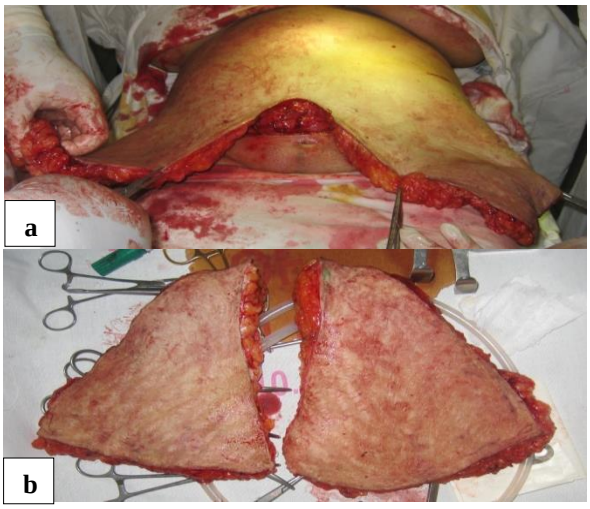

Figure 4: (a) The excess portion to be excised and (b) excised portion of the flap.

RESULTS

The age varied from 24 years to 59 years. Mean age was 41.3 years. Most of the cases were within the 25-39 years age group (12, 40%). This implied that younger age groups are candidates of this procedure. On sex distribution, a female predominance was observed with female to male ratio being 6.5:1. Female were 26 (86.7%) and male were 4 (13.87%). This is mostly pregnancy related and more aesthetic concern of the female than male. Analysis of the data of marital status revealed majority of the patients were married (96.7%), single (3.33%). Occupational distribution showed most of the patients were housewife (50%) followed by professional (33.3%), business (16.7%). However, these demographic data have not any direct correlation with the outcome of the study.

Table 1: Demographic data.

Demographic variables	Frequency
Age (mean age)	41.3
Gender	
Male	4
Female	26
Marital status	
Married	29
Single	1
Occupation	
Service	10
Housewife	15
Business	5

Aetiology distribution shows abdominoplasty was done mostly due to excess abdominal tissue from previous pregnancy (43.33%) (Figure 5).

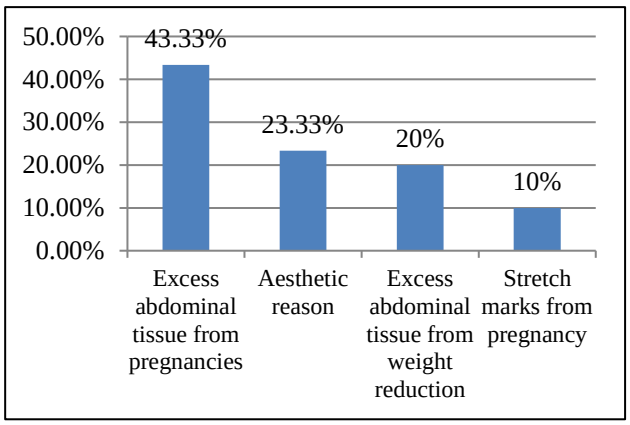

Figure 5: Distribution of study population according to indications of abdominoplasty (n=30).

Distribution according to medical history shows most of the patients were obese (70%) (Figure 6).

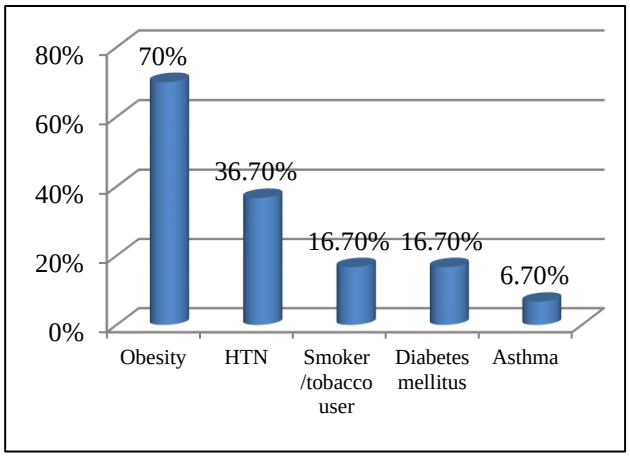

Figure 6: Distribution of patients according to medical history.

Table 2 shows most of the patients were overweight (36.7%).

Table 2: Distribution of the patients according to BMI.

Weight	No. of patients	Percentages (%)
Underweight (<18.5)	0	0
Normal weight (18.5-24.9)	9	30
Overweight (25.0-29.9)	11	36.7
Obese (30.0-39.9)	8	26.7
Morbidly obese (>40.0)	2	6.7
Total	30	100.0

Distribution of patients according to previous abdominal surgeries shows most of the patients underwent caesarean section (46.67%) (Table 3).

Table 3: Distribution of patients according to previous abdominal surgeries (n=23).

Previous abdominal surgery	No. of patients	Percentages (%)
Caesarean section	14	46.67
Total Abdominal Hysterectomy	2	06.67
Cholecystectomy	2	06.67
Bilateral tubal ligation	2	06.67
Appendicectomy	2	06.67
Salpingoophorectomy	1	03.33

In this study, 28 (93.33%) flaps were completely survived without any morbidity. Marginal flap necrosis was observed in 2 cases (6.67%) (Table 4).

Table 4: Outcome of flap of the study population (n=30).

Outcome	Frequency	Percentage (%)
Marginal flap necrosis	02	6.67
Partial flap loss	00	00
Major flap loss	00	00
Total flap loss	00	00
No loss (complete survival)	28	93.33
Total	30	100

Patients were asked to rate the shape of their new umbilicus, its position and symmetry, and the overall appearance. The rating scale was from 1 to 10, in which a score of 1-2 was considered unsatisfactory, 3-6 satisfactory; and 7-10 ideal.

Total 24 patients involved in this evaluation. The average rating for shape was 8.96, the rating for position was 9.54 and the average rating for overall appearance was 9.33. 50% of the total patients (15 of 30) were extremely satisfied with their overall appearance, and scored 10. None of the patients rated the overall appearance below 7 (Table 5).

Patients' overall satisfaction was judged by subjective evaluation by the patients on the basis of some parameters. Patients were asked to rate the contour of the abdomen, correction of laxity and waist definition. The rating scale was from 1 to 10, in which a score of 1-2 was considered as very poor, 3-4 poor, 5-6 satisfactory, 7-8 good and 9-10 was very good. The average score for contour was 8.63, correction of laxity 8.43 and for waist definition 8.63. Data was recorded by a non-bias third person not related to this study.

Table 5: Patient's satisfaction score for neo-umblilicus (n=24).

No. respondents for each score	Ideal	Satisfactory	Unsatisfactory	
	10 9 8 7	6 5 4 3	2 1	Average score
Shape	12 5 3 3	1 - - -	- -	8.9
Position and symmetry	16 3 2 3	- - - -	- -	9.54
Overall appearance	15 4 3 2	- - - -	- -	9.33

Table 6: Patients own appraisal of satisfaction (n=30).

Parameters	Very good (10-9)	Good (8-7)	Satisfactory (6-5)	Poor (4-3)	Very poor (2-1)	Average score
Contour	19	9	2	0	0	8.63
Correction of laxity	17	10	3	0	0	8.43
Waist definition	20	7	3	0	0	8.63

The table showed most of the complications was seroma (10%) (Table 7).

Table 7: Distribution of patients according to complications (n=13).

Complications	No. of patients	Percentages (%)
Seroma	3	10
Wound dehiscence	1	3.33
Marginal flap loss	2	6.67
Hematoma	2	6.67
Wound infection	2	6.67
Epidermolysis	1	3.33
Umbilical stenosis	1	3.3
DVT	1	3.33
PE	0	0

Figure 7 showed that obese patients had more complications than non-obese patients.

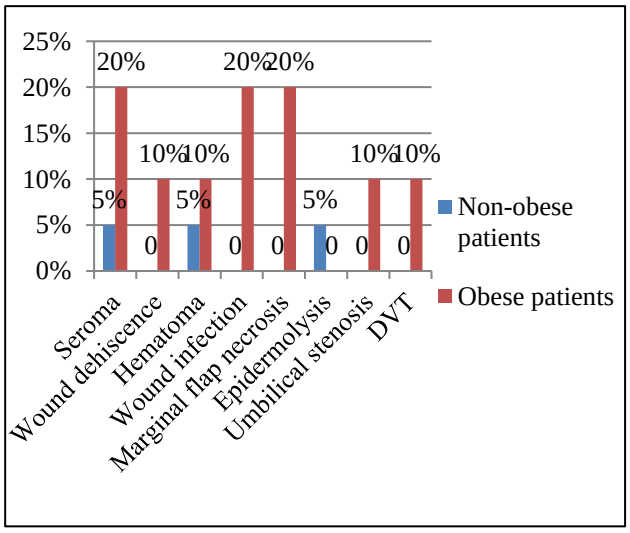

Figure 7: Comparison of complications between non-obese and obese patients (n=13).

DISCUSSION

Demand for body-contouring operations will grow as more individuals lose weight via healthy lifestyle choices and surgery. Patients who have lost a lot of weight may discover that their skin has become redundant, despite frequent skin-tightening treatments. People who are obese resort to body-contouring operations to seem thinner.

This study examined abdominoplasty's early outcomes. This research suggests abdominoplasty has several adverse effects. Most wound-healing issues are related to blood flow interruptions to the abdominal wall flap. Smoking, a midline incision, or an undiagnosed hematoma might impede wound healing. These issues are usually modest and treatable without surgery. This investigation involved 30 people with lax abdominal muscles. 24-59-year-olds participated. It was 41. Twelve instances (40%) were 25-39 years old, ten (33.33%) were 40-49 years old, and three (3.33%) were 50 or older (7, 23.33%). The youngest patients are 25. (1, 3.33%). This means younger people can get this therapy.

The 6.5-to-1 female-to-male ratio indicates a gender imbalance. 26 women (86.7%) and 4 males participated (13.87%). Pregnancy-related and worse for women's vanity than men. 96.7% of patients were in stable, committed couples, according to a study (3.33%). Mothers were the most prevalent occupation, followed by professionals (33.3%) and company owners (16%). (16.7%) Abdominoplasty was done to remove excess abdominal tissue (43.33%), improve body image (23.33%), lose weight (20%), erase a stretch mark (10%), and treat medical issues (other than pregnancy) (3.33%). Abdominoplasty candidates had pregnancy-related abdominal wall laxity. According to Hensel et al, the most frequent causes for abdominoplasty were to remove excess abdominal tissue following weight loss (26%), to remove stretch marks from pregnancy (25%), to remove an abdominal scar (18%), or for other reasons (8 percent).[21] The study results were replicated. Stuerz et al observed that 5 abdominoplasty surgeries were conducted for

aesthetic reasons, 5 for emotional reasons, 4 for functional reasons, 2 for physiologic reasons, 2 for reduced leisure activities, and 2 for physical-sexual subjective discomfort.[26] This refuted the research 70% of patients were overweight, with 36.7% having high blood pressure, 16.7% smoking, 16.7% diabetes, and 16.7% hypothyroidism. 6,7%. In one study, 62% of participants had negative medical histories.[21] Hypothyroidism, hypertension, and diabetes were common. 37 of 199 patients smoked. In 2014, Garcia-Garcia et al detected arterial hypertension (44.4%), diabetes (23.6%), and smoking as comorbidities (26.4%). Obesity (35.4%), hypertension (19.4%), smoking (18.4%), and diabetes (7.8%; IDDDM 2.9%; NIDDM 4.9%) were the most prevalent comorbidities in a 2007 study.[24] This study resembles Neaman and Hansen.

36.7% of individuals were overweight, 30.3% were healthy, 26.7% were obese, and 6.7% were very obese, body mass index (BMI)=kg/m^2.[1] Patients were underweighted (BMI=18.5), normal weight (BMI=18.5-24.9), overweight (BMI=25-29.9), obese (BMI=30-39.9), or extremely obese (BMI>40). 70% of patients were overweight; none were underweighted. In research by Neaman et al, the average BMI of 206 abdominoplasty patients was 28.78 (range: 17.8-58.9); 73 of these patients were obese (BMI=30 kg/m^2).[20] Summa et al 17 found 121 abdominoplasty patients had an average BMI of 26. The average BMI of 44 abdominoplasty patients was 27.1.[28] These matched the study results.

TAH (6.67%) was the most frequent abdominal surgery, followed by cholecystectomy (6.67%), caesarean section (46.67%), bilateral tubal ligation (6.67%), salpingoophorectomy (3.33%), and appendicectomy (3.33 percent). 6.7% Most study participants underwent pregnancy-related surgery. In a study by Neaman, 157 (76.2%) of 206 patients had previous abdominal surgeries, including 58 caesarean sections, 45 TAHs, 34 cholecystectomies, 31 bilateral tubal ligations, 29 gastric bypasses, 22 appendectomies, 16 exploratory laparoscopies, 16 ventral hernia repairs, 10 cystectomies, 17 other gynec.[1] This study was similar. Complications were major and minor.

Major issues included surgery, aspiration, intravenous or intramuscular antibiotics, and hospitalization. Small issues remained. Thirteen people (40.33%) reported problems; nine (30%) had mild ones and four (13.3%) had moderate or severe ones. Seroma, hematoma, infection, and dehiscence each occurred once. Seroma 2, hematoma 1, wound infection 1, wound dehiscence 1, marginal skin necrosis 2, epidermolysis 1, and DVT 1 were all minor.

In this study, an infected wound required a drain and intravenous antibiotics.

Infected wound swabs cultured and sensitive to microorganisms. One flask had pseudomonas and *E. coli*. Using sensitivity testing, antibiotics were given. Amikacin, ciprofloxacin, colistin, imipenum, and tazobactum inhibited pseudomonas. Ceftazidime, cefepime, meropenem, and netilmycin kill *E. coli*. Low molecular weight heparin and warfarin were used to treat DVT. Delaying wound closure treated wound dehiscence. Neaman et al examined abdominoplasty complications in 206 patients and identified 37.4%, including 16.7% serious issues.[20] This confirms the investigation's conclusions. In 17.5% of instances, seroma, cellulitis, wound dehiscence, wound necrosis, hematoma, abscess, epidermolysis, neuropathic pain, deep vein thrombosis, and pulmonary embolism occurred. Wound disintegration and hematoma/seroma were among the 15 of 23 disorders reported in obese individuals in a 2006 study by Rogliani et al. Normal weight people (10 of 30) had a third as many concerns as overweight people (35 percent versus 35 percent). Normal weight and overweight people only had seromas. The most prevalent adverse effect is seroma. Hensel et al analyzed the results and patient satisfaction of 199 abdominoplasty surgeries and found 63 patients experienced 75 issues, 4 of which were serious. Only 32% had major difficulties (1.4 percent).[21] This proves abdominoplasty's effectiveness and happiness. 45.8% of abdominoplasty patients encountered problems, according to another study. Garcia-Garcia et al studied 72 patients. The most frequent consequences were seroma (23.6%), infection (13.9%), hemorrhage (11.1%), hematoma (requiring 6.9% transfusion), skin necrosis, and umbilical necrosis (4.2 percent). Eight required more surgery (11.1 percent). This investigation's results matched these.

Seroma affected 3 people. Two patients needed aspiration and one surgery. Seromas were aspirated using a 14–18-gauge needle and treated with a local compressive bandage and an elastic bandage. 6.5% of 153 patients investigated by Kryger et al required seroma aspiration. Only 327 (1.2%) of 26562 plastic surgeons surveyed in Teimourium et al had seroma.[27] The researcher thought the low seroma incidence rate meant some instances were ignored or underreported. 36 of 206 abdominoplasty patients experienced seroma, according to Neaman et al (17.4 percent). 15 patients (41.7% of the total) needed aspiration, 3 needed a pigtail catheter/JP drain, 2 needed surgery, and the average number of aspirations was 2.2. This matched the research.

One patient needed surgical evacuation in the OT and a blood transfusion (1 unit), while the other needed aspiration as an outpatient. In Pitangui's report of 652 patients receiving abdominoplasty without suction lipectomy, 2.5% required surgical intervention and 3.3% just aspiration. Neaman et al reported that hematoma formed in 12 (5.8%) of 206 abdominoplasty patients; seven needed surgical intervention, three required a blood transfusion, two required outpatient suction, and one required ICU hospitalization. The hematoma fluid averaged 531 ml.[20]

One patient's wound dehisced 4.3 cm^2. Two patients lost 2 cm^2 marginal flaps. Delaying wound closure prevented

dehiscence. Secondary goal: debride and heal necrotic margin. In 2006 research, 11 of 80 patients had wound dehiscence.[6] In 206 abdominoplasty patients, 15 wounds dehisced, averaging 4.3 cm^2. 14 wounds necrosed, averaging 5.1 cm^2.

Seroma (n=2.20%), wound infection (n=2.20%), marginal flap necrosis (n=2.20%), wound dehiscence (n=1.10%), hematoma (n=1.10%), and deep vein thrombosis (n=1.10%) were prevalent in obese individuals. Obese people had increased seroma, infection, dehiscence, and flap loss. Rogliani and colleagues observed that 76% (23 of 30) of obese individuals experienced issues. 15% (15 of 23) were "serious" concerns including wound collapse or hematoma/seroma. Both overweight (7/20) and normal weight (10/30) groups had a 35% complication rate. Normal-weight and overweight people only had seromas. Neaman observed that 79% of abdominoplasty patients had complications. Despite a significant frequency of issues, most were modest and readily handled. Consistent with their results.

28 of 32 flaps (93.33%) in this study survived without morbidity. Two patients experienced flap necrosis (6.67 percent). Only 5% of 80 people tested developed skin necrosis, according to Rogliani et al. This fits the inquiry. Overall appearance, position, and umbilical cord shape averaged 9.33, 9.54, and 8.96. Fifteen out of thirty patients (50%) rated their appearance a perfect 10.

The scars and vertical umbilicus pleased patients. Overall, patients rated the presentation a 7. Fixing the navel is challenging during abdominoplasty. The umbilicus is the sole natural scar on a human's abdomen. This operation leaves a periumbilical scar. Ineffective abdominoplasty outcomes may be marred by a poorly healed circular scar. A T- or vertically-shaped umbilicus with a quality cover or shelf is suitable for cosmetics. Umbilical protrusion, horizontal or distorted shape, and large size are unappealing. Dogan assessed 50 abdominoplasty patients on umbilicoplasty.[22] It got a 9.3 overall, including 8.9 for shape and 9.6 for location. This fits the inquiry. 32 out of 50 patients (64%) were satisfied with their appearance. The scars and vertical umbilicus pleased patients. 50 patients gave a 7-star rating. Colwell et al found no incisional or umbilical necrosis in 60 abdominoplasties with umbilicoplasty patients.[23] All patients were pleased with their new bellies and umbilical cord positioning.

Patient happiness has been a concern as the healthcare business grows increasingly competitive. A therapy's aesthetic outcomes affect patient satisfaction. Assessing a medical intervention's cosmetic effectiveness is challenging. This study examined surgical patients' abdominal contour perceptions. An impartial observer recorded patient self-assessment of overall outcome using a Likert scale from 1 to 10. No patients were displeased with the result; 100% were satisfied. Restrepo et al found patient satisfaction in 74 cases.[25] In the other two cases, patients were satisfied despite scar growth, which massage treatment reduced. Extremely satisfied: 51.4%, satisfied: 31.9%, dissatisfied: 8.3%, and extremely dissatisfied: 8.4% were the satisfaction ratings stated by patients in a 2014 study on complications and satisfaction. Similar results were found.

Limitations

The study's sample size was too small to draw any definite conclusions. The research and the term of follow-up were both brief. Purposive sampling prevents a strict application of statistical interference. In our country, there had never been comparable research on abdominoplasty.

CONCLUSION

Abdominoplasty is a safe and satisfying procedure. Patients are pleased with the outcome and it has minimal health risks. More complications were observed in obese patients. Most of the patients with complications in this study ultimately resolved their problems. Patient's satisfaction was very good. The degree of dissatisfaction is mostly related with the post-operative complications of the surgical procedure and not with the aesthetic result. When complications occurred, they were minor in most of the cases and managed easily in an office setting.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Ahmed I, Hossain MF, Asaduzzaman M. Early outcome of total abdominoplasty in thirty cases. Int Surg J 2022;9:1528-35.