



RESEARCH ARTICLE



Evaluation of Aesthetic Outcome and Safety of Lipoabdominoplasty for Abdominal Contouring

Rabab Abbas Hasan¹ | Assist.Prof.Ahmed Khalaf² | Hussein Adnan Khalaf^{3*} |

Abstract

Background:

Abdominoplasty is one of the commonest surgical procedures that performed for those patients who had skin laxity, stricture and muscle rectus diastasis. Combined using of liposuction and abdominoplasty it can give better result than traditional abdominoplasty with fewer complications.

Patient and Method:

A total number of 25 female patients with age ranging between 27-55 years were underwent lipoabdominoplasty. With extensive liposuction of abdominal wall and selective undermining together with muscle plication. All of our patients had body mass index more than 30. Patients satisfaction and complication were documented postoperatively.

Result:

All of our patients had no Major complications and the postoperative period passed uneventfully. The procedure result in improved body shape and give the abdomen more youthful appearance with defined waistline and well accepted scar.

Conclusion:

Lipoabdominoplasty is safe operation with reliable and predictable aesthetics result and faster recovery, it has few complications than traditional abdominoplasty.

1. FICMS-Plastic reconstructive surgeon
2. FICMS consultant plastic reconstructive surgeon
3. FICMS general surgeon

Supplementary information the online version of this article contains supplementary material, which is available to authorized users. Hussein Adnan Khalaf et al., 2022; Published by Innovative Journal, Inc. his Open Access article is distributed under the terms of the Creative Commons License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

1 | INTRODUCTION

Abdominoplasty is the most frequent surgical operation that performed in plastic surgery. According to the American Society for Aesthetic Surgery in 2004, abdominoplasty procedure performed had being increased by 344% during previous seven years. There are many goals that should be met when abdominoplasty is done, these included improvement of the abdominal wall contour and its external appearance, concealed acceptable scar, and naturally looking umbilicus.(1), (2), (3)

In 1980, modern abdominoplasty technique. were developed when Illonz developed liposuction technique. Abdominoplasty and liposuction attempt to decrease surgical morbidity, attained good body shape, and decrease in necrosis. Historically, combined abdominoplasty and liposuction can be trace back to 1987, when Cardoso de Castro was performed the first operation of combined abdominoplasty and liposuction. However, this combined procedure has not been adapted universally yet. Combined abdominoplasty and extensive liposuction was considered risky to vascular blood supply of the abdominal flap. Since at that time abdominoplasty procedure still done with traditional method with full undermining.(4), (5).

Saldanha in 2001, was the first used term of lipoabdominoplasty to address the procedure of liposuction with abdominoplasty with selective undermining along the internal border of rectur muscle. Lipoabdominoplasty, in contrast to the traditional abdominoplasty, preserved blood supply to the abdominal flap through limited and selective undermining so it reduce the incidence of complications like skin necrosis, hematoma, and seroma. Lipoabdominoplasty is more than using of liposuction with abdominoplasty, rather it substitute cannula undermining instead of traditional undermining.(6) In this study lipoabdominoplasty procedure was evaluated for its safety, aesthetic results and postoperative complications.

Between January 2019 to January 2020, a total number of 25 female patients underwent lipoabdominoplasty. Patients' ages were ranging "between" 27 year to 55 years old. Body Mass Index of our patients were more than 30. Three of our patients were hypertensive, 2 of them were diabetics and one of our patients was smoker. Smoker patient instructed to stop smoking 3 weeks before operation. We included all those patients who candidate for traditional abdominoplasty. Our patients were complaining from excess skin and subcutaneous tissue in the abdomen, lower abdominal wall striae, and laxity of abdominal wall. Some of our patients had also complaining from lipodystrophy in flank and lateral thigh region. We excluded those patients with ventral abdominal hernia, patient with history of deep venour thrombosis and pulmonary embolism bleeding diathesis, patients with chronic disease that might increase patient risk for general anaesthesia, and those patients with morbid obesity. All of patients were subjected to routine preoperative investigation. Echocardiology study and ultrasound was done also. All of our patients signed informed consent form preoperatively.

3 | SURGICAL TECHNIQUE

Preoperative marking was done while patient in standing position. A horizontal lower abdominal line (12-16 cm) is marked along the lower abdominal crease with distance (6-7 cm) above the superior vulvar commissure. Then two oblique lines of about 8 cm are drawn in direction of anterior iliac superior spine with approximately 40-45° of inclination on each side. The upper limit of pendulous fold was determined by pinch test to know how much skin to be resected comfortably. The upper line draw above the umbilicus and inclined toward the anterior lilac spine, usually this line not corresponding to the actual excisional level at time of operation. After that the area to be liposucted is marked including the abdomen, and in some patents, lateral thigh area. After completing of the marking, the patient lie supine on theater

PATIENTS AND METHOD

Suprascapular Nerve Block in Treatment of Idiopathic Frozen Shoulder

table and all of operations were done under general anaesthesia. A removable bolster was applied under lumbar lordosis of the patient in order to hyperextended the abdominal wall and that facilitated liposuction. A foley's catheter then applied and all of our patents were worn compression stocking.

After sterilization, the draping done with sterile sheet which give full excess to abdomen, flank, and lateral thigh. Prophylactic intravenous injection of third generation cephalosporin and subcutaneous low molecular weight heparine were given at time of induction of anaesthesia. The operation is begin by infiltration of tumoscent along the wall, flank, lateral thigh (for those cases needed). We usually infiltrated 1 to 1.5 liter of Ringer Saline with 1: 500.000 adrenaline. After waiting 10 to 15 minutes, using suction assisted or ultrasound assisted liposuction, liposuction is begin in lateral tight first, then the abdomen wall and flank. The liposuction is done uniformly to the all areas of the abdomen, there no danger zone. The liposuction is extended to Submammary fold. For upper abdomen, the liposuction is done by using Multi holes 3 mm cannula with liposuction of both deep and superficial fatty layer maintainece at least 2-5 cm fat thickness.

In lower abdomen, maintain the scarpa fascia, superficial fat and part of deep fat aspirated using 6 mm cannula. Average liposuction fat was ranging between 4.5-6.5 liters. After finishing liposuction, lumbar bolster is removed. Also, blade used for transverse lower abdominal incision along the previously Marking Line. The incision is deepened gradually to scarpa fascia using cutting diathermy. The scarpa fascia preserved.

The dissection is then proceed in cephalic direction with leaning adipose tissue layer on the surface of the external oblique aponeurosis. Lower abdominal flap elevation is continued up to the level of the umbilicus. Then to facilitated exposure, the lower abdominal flap is bisected to the level of the umbilicus. The umbilicus if circumscubed and its stalk is dissected from abdominal flap with thin layer of fat around it. flap elevation is proceed in midline tunnel above the umbilicus with just 1 to 1.5 inch from lateral aspect of rectur sheath just to exposed the rocket sheath for plication. We kept

direction in this midline tunnel up to xiphoid. Figure 1 shows a surgical process at the clinic.

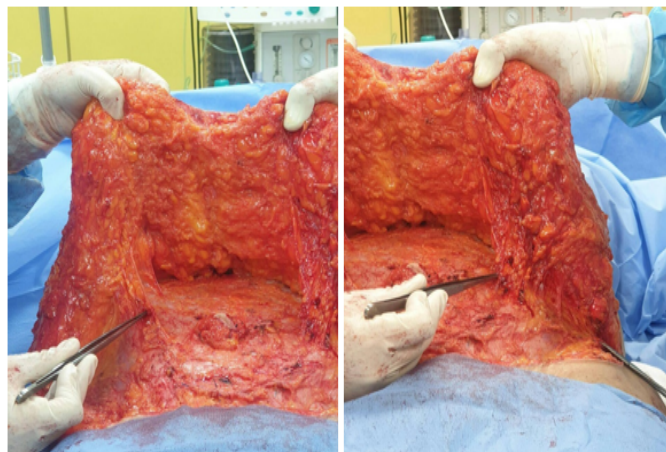


Figure 1: Perforators for Abdominal Flap after Liposuction of Abdominoplasty Shows Areas are Supplied by Segmental Perforators (Subcostal, Intercostal & Lumbar Arteries).

In order to facilitated exposure of rectur sheath, a thin layer of adipose tissue is removed from rectus sheath from xiphoid to pubis. Muscle diastasis plication is then done by using 1/0 long Nylon suture that extended in continuous fashion from the xiphoid to the umbilicus, then from umbilicus to the pubis, making sure not applied too much tension on umbilical stalk. After finishing of the muscle plication and in order to ensure freely mobile upper abdominal flap, discontinuous undermining of lateral side of upper abdominal flap is done by using liposuction cannula. Then the operating table is bend to put patient in semi-fowler position with hip is flexed to 30°. A central temporary anchoring suture is put to pull the upper abdominal flap downward.

The excess skin is then excised after ensuring that the flap is descend to the pubis without any tension. After that the position of the umbilicus is chosen to be located at the level of superior iliac spine. We choose "diamond shape" incision on the abdominal wall with removing of disc of fibrofatty tissue to facilitated exteronzed the umbilicus. The umbilicus base is fixed with deep fixation using 310 vicryl suture and second layer of closure it done by suturing the umbilicus to periumbilical adipose tissue using 310 vicryl suture. Finally, the

umbilicus skin is suture to the abdominal skin using Interrupted 5/0 prolene suture. After that, in some cases and in order to adequately visualize the scarpa fascia, open or external liposuction is done on the surface of scarpa fascia. The dead space is then closed by using 8 quilting suture of 2/0 vicryl on each side by taking a bite from dermis and anchored it to the preserved scarpa fascia. Two suction drains are externalized from mons pubis. The incision is closed by 3 layer closure. Deep layer closure is done by using 2/0 vicryl sutures with suturing of inferior scarpa fascia to subcutaneous flap. Then we used 4/0 vicryl suture for subdermis closure. Our closure is started from lateral to medial aiming to eliminate dead space and taking the tension off midline skin by placing more tension laterally. Finally, the skin is closed by using 3/0 subcuticular prolene sutures. The wound then dressed by using grade impregnated with antibiotic and second layer of dry gauze. After that surgical garment is applied over the dressing. Patients were kept in hospital overnight and they positioned in bed with head of bed popped up and pillow under knee to fix the hip. Foley's catheter is removed in next day. Patient keep on injectable antibiotic and low molecular weight heparine for 5 days. Drains are further any ambulated usually removed when there is collection. Patients usually encourage to ambulated in next day of surgery with gradual increasing her movement but try to keep bending forward at least 10 days after operation. The subcuticular sutures are removed 2 weeks after operation. All of our patients are instructed to keep surgical garment for at least 4 weeks after operation.

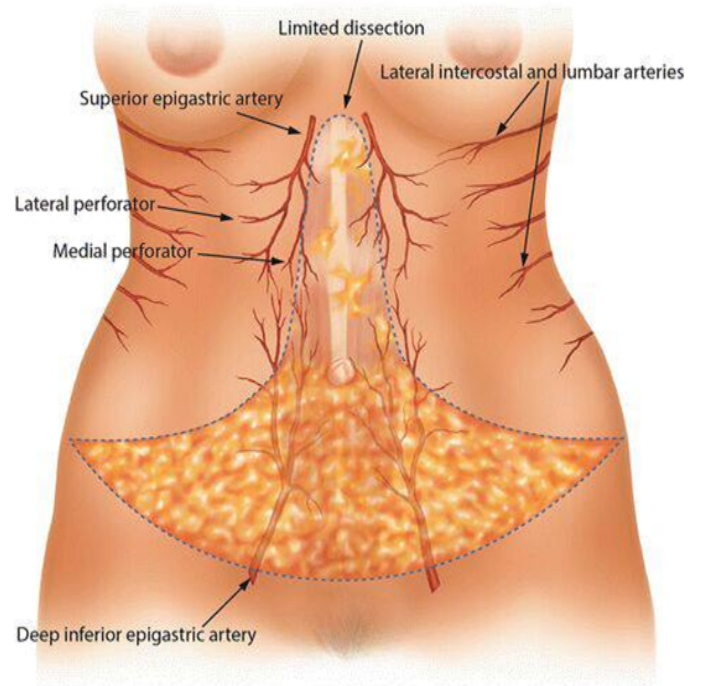
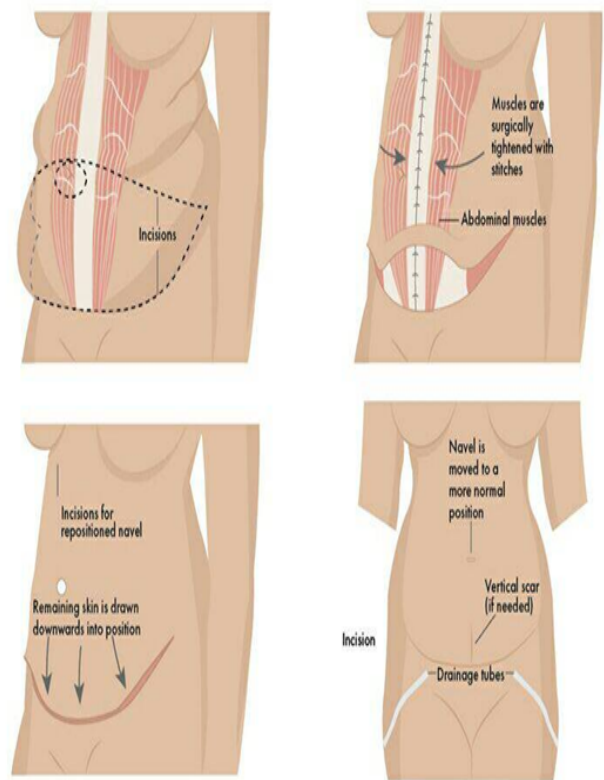


Figure 2: The Actual Location of Perforator of the Deep Superior Epigastric Arteries is Shown after Elevation of Abdominal Flap. The Artery Typically Located 6 cm from the Subcostal Margin.

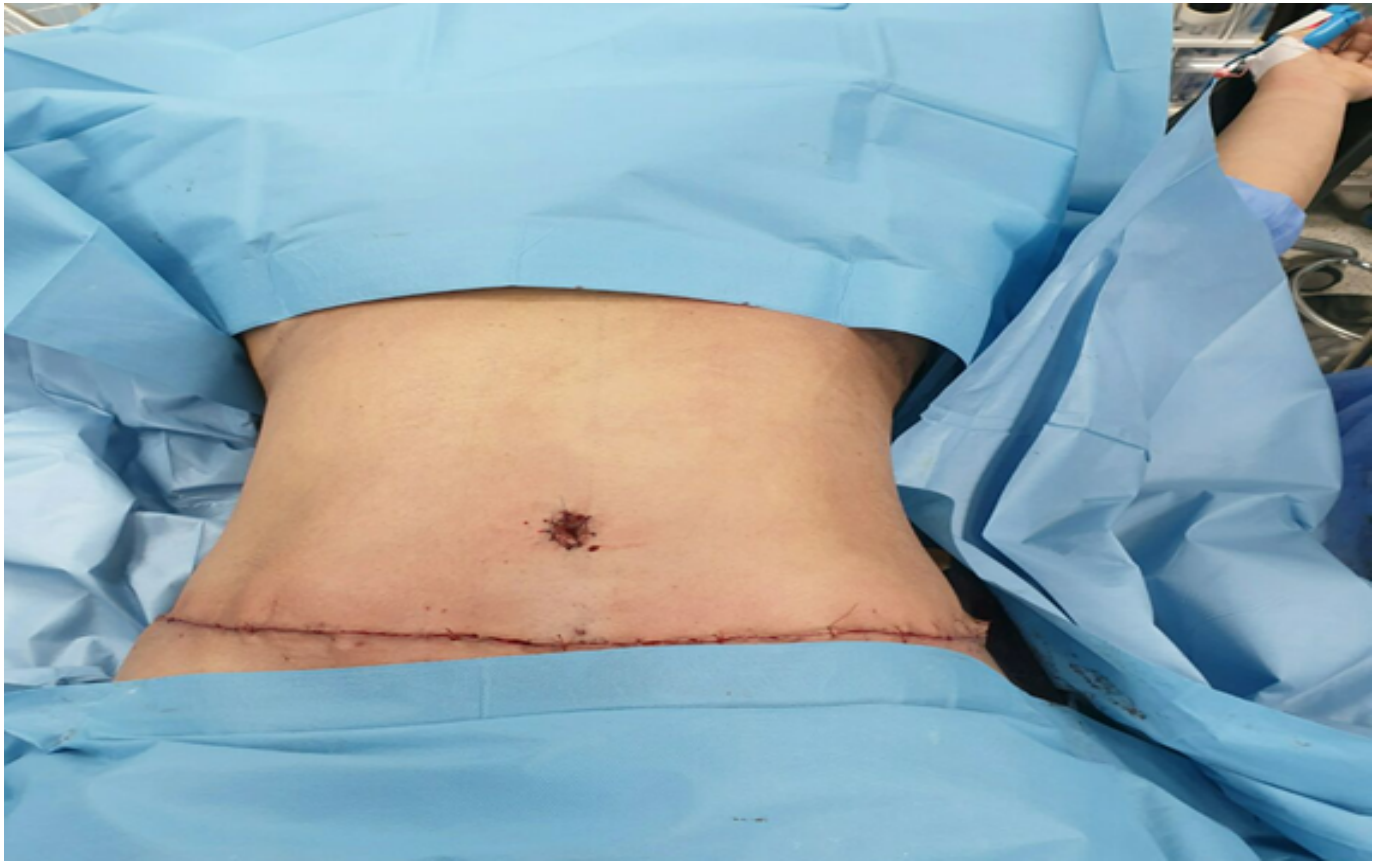


4 | RESULT

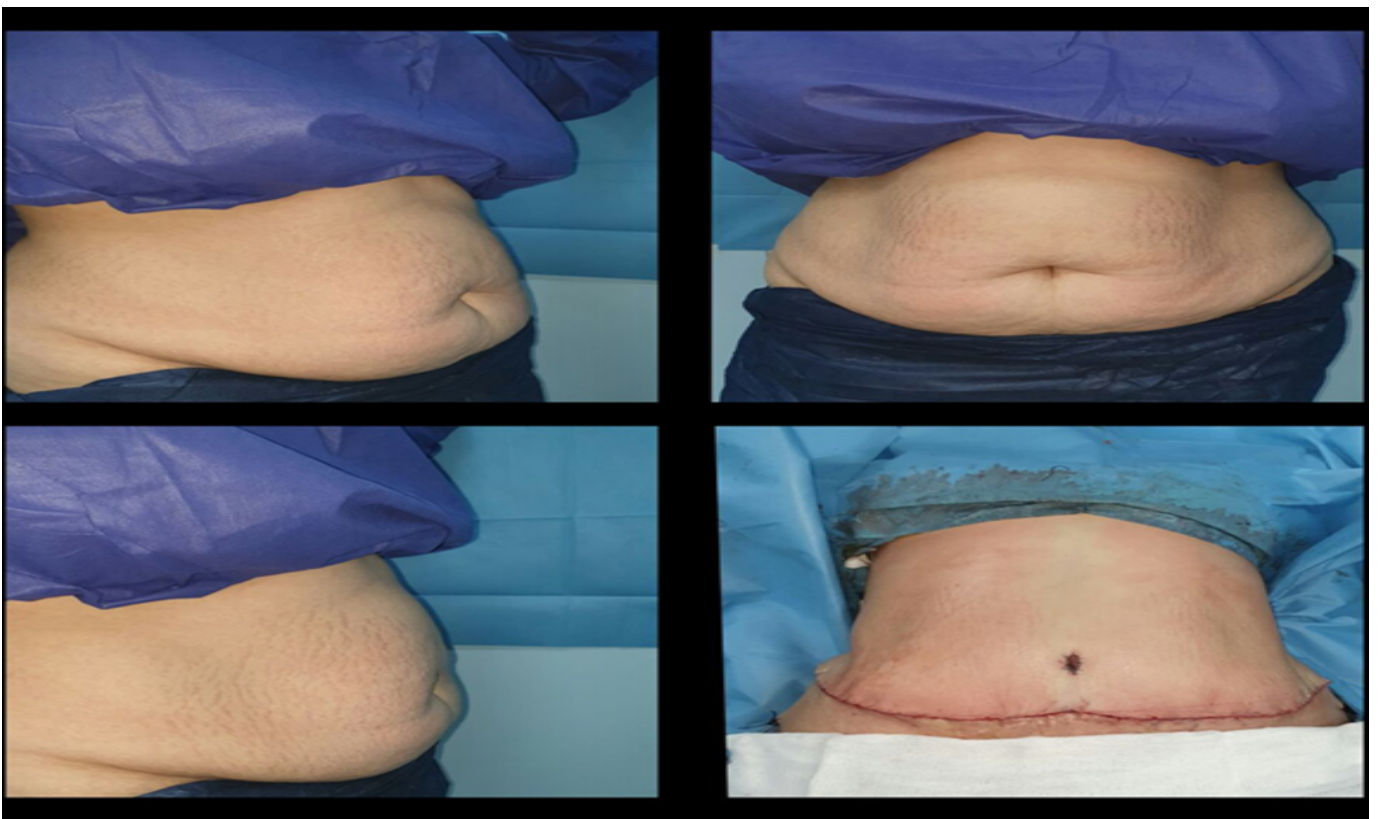
In this study, 25 female patients with age ranging between 27 to 55 years were subjected to lipoabdominoplasty. No concomitant surgical operation was done. The lipoaspirate was ranging between 4.5 to 65 liter and the weight of panniculectomy was ranged “between” 750 gram to 7.5 Kg. Postoperative result showed great reduction in abdominal measurements with enhanced waist line together with harmonious contour of the abdomen with aesthetic appearance umbilicus. These postoperative result gave the patient in more youthful abdominal appearance. Patient outcome were graded into 4 grade with poor who had major complication, fair who need early intervention in the course of recovery, good who required later intervention like dogear convection or liposuction, and excellent who required no intervention. In our study 92% of our patients had excellent result and 8% of them had good result and the main concern of those patient on upper abdominal fullness which required later on liposuction. We have no poor outcome regarding post-operative complications, only one of our patients had partial flap necrosis at midline which was treated conservatively without any sequelae. No major flap necrosis, wound infection, wound dehiscence was seen in this study. We encountered no case of seroma or hematoma. No systemic complication was noticed in all of our patient like deep venous thrombosis, pulmonary embolism or chest complication. The resultant score was acceptable to all of our patients and we did not encounter any hypertrophic Keloid scar.



Case 1: The Result before and after Surgery with Concurrent Abdomen and Flank Liposuction.



Case 2



Case 3



Case 4: The Result before and after Surgery with Concurrent Abdomen and Flank Liposuction after 2 Months from Surgery with Attributable Changes Solely from Operation not from Weight Loss.



Amount of fat after Liposuction at Time of Abdominoplasty.

5 | DISCUSSION

Traditional abdominoplasty is associated with relatively high complication rate this due to aggressive undermining which lead to compromise the perforator blood supply and lymphatic drainage of the abdominal flap. The introduction of liposuction had dramatically change the field of body contouring, initially liposuction was rare performed with abdominoplasty because of fear of damaging of blood supply to abdominal flop. Matarasso, had described safety area of liposuction in abdominal region and he didn't rewounded liposuction at same time as classical abdominoplasty. Many studies had showed that combining of liposuction and abdominoplasty had significantly improved the aesthetic outcome without increasing complication. The concept of lipoabdominoplasty was popularized by Saldanha in 2003(7), (8), (9). In this study, 25 female patents were underwent lipoabdominoplasty.

Our result showed that all of our patients were satisfied with postoperative result and no major complications were encountered. In this study



Case 5

liposuction was done to all zones of the abdomen with preservation at least 2.5 cm fat thickness. The most important step in our procedure is selective undermining, where only the central part of the abdomen is undermined to the level which enable us to do muscle plication.

In traditional abdominoplasty, it required undermining large area of flap where the perforator vessels are transected which represented 80% of blood supply to the abdominal wall. In lipoabdominoplasty, since selective undermining of the abdominal flap is done on superior medial line, this preserved the majority of neurovascular vessel and lymphatic vessels. The perforators is unlikely to be damage by liposuction because of using of blunt cannulas that preserved the integrity of perforators, in addition to that because of adrenaline which used with tumescent, this will reduce the caliber of blood vessels which make the vessels less likely to be injured during liposuction procedure. Of course, these vessels will dilated after finishing of adrenaline action.(10), (11), (12), (13)

One of fundamental principles of lipoabdominoplasty is superficial liposuction which was introduced by Souza de pinto, this give more mobility to abdominal flap. So it can be slide easily down to suprapubic region without the need for extensive subcostal undermining. This of course will decrease tension on flap which reduced the incidence of flap necrosis.(14),(15)

In some cases, when we felt that the upper flap is inadequately mobile downward, we did discontinuous undermining using liposuction. Cannula and release fibrous tissue that tether the flap and prevented it downward descend. Both Brauman and Capocci had described skin retaining ligament in the upper abdomen and they felt that these ligaments that attached the skin to deep fascia prevent downward advancement of flap. They used scissor to dissect these ligaments with preservation of perforator. However, they showed 1.7% necrosis in their series of 337 patients.(16)

Doppler study had showed that abdominal perforator, especially periumbilical vessels, are kept intact during lipoabdominoplasty procedure, thus providing good blood supply to the flap. In study which was conducted by Ruth Graf et al, Doppler flowmetry color study was done for abdominal wall perforators before operation and after operation (lipoabdominoplasty) for 20 patients. Their result showed that perforator it preserves above the undermined area and under rectus abdominal muscle. Also the brauche caliber had increase from 1.55 mm in preoperative period to 1.69 mm in postoperation period. Also this study showed 56% increase in blood volume which is attributed to the vasodilatory effect which is induced by surgical trauma.(17)

In our series none of our patient had developed seroma, this can attributed to many factors like using of quilting sutures or what called progressive tension suture, limited undermining and also due to preservation of scarpa fascia. Quilting sutures help to eliminated dead space so that it help in prevention of seroma and hematoma. Also quilting suture reduce the tension burden on the distal flap which help to reduce the incidence of skin necrosis and hypertrophic scar. Stroma is most common complication of abdominoplasty with an average incidence of 10%. In retrospective study which was conducted by Gould et al. the rate of seroma formation was 2.6% in those patients who used progressive tension to abdominoplasty versus 8-5% incidence of seroma in those patients who had classic drain-based abdominoplasty. Khan had showed significant reduction in seroma formation from 26% to 4% when he used progressive tension suture. Macias had reported reduction of seroma from 9 to 2% when he progressive tension sutures. (6). In our study we reported no case of hematoma formation this probably in part due to using of tumescent solution which contained adrenaline that help to induce vasoconstriction. Also using of tumescent solution prior to liposuction help to reduce blood loss due to effect of adrenaline.

One of the modifications in using of lipoabdominoplasty is preservation of scarpa fascia thus protected the underlying lymphatic vessels so

Suprascapular Nerve Block in Treatment of Idiopathic Frozen Shoulder

so it reduce incidence of seroma and also minimized ordma of abdominal flap. Also preservation of scarpa fascia will provided better adherent between the flap and deep layers, and provider smaller scar laterally.(5), (18)

Liposuction help to decrease thickness of the abdominal flap so that give better contouring to the abdomen which especially advantage in obese patients. In obese patient, the abdominal flap remain fatty and thick in traditional abdominoplasty. fat can be also regarded on blood at parasite supply of the flap so make it susceptible to for necrosis. So by using liposuction Most of the fat is eliminated but with retain intact neurovascular connection.

In our series we used both ultrasonic and suction assisted liposuction, we found no much different in their used. Blondeel et al. had done comparative study to see the effect of ultrasound assisted liposuction and suction assisted liposuction on blood vessels within the subcutaneous tissue. Both of fresh abdominoplasty and cardar tissue specimens were examined. No difference was observed between the groups.(19)

Saldanha et al. had compared traditional abdominoplasty and lipoabdominoplasty and they showed the following: Reduce the from incidence of seroma in traditional abdominoplasty from 60% to 0.4% in lipoabdominoplasty, delicense in traditional abdominoplasty had reduced from 5.1% to 0.4% in lipoabdominoplasty same finding was observed in flap necrosis which was reduced from 4% to 0.2%. Also the incidence of surgical revision decreased from 20% to 10%. (20)

Vieina et al. determine the effect of lipoabdominoplasty on complication compared with traditional abdominoplasty. They showed that total incidence of complication was 10.5% and 13.0% respectively.(21) in Meta-analysis incorporates seven cohort studies which was done by Xia et al. to determine the safety of lipoabdominoplasty versus abdominoplasty. Their result showed that lipoabdominoplasty had no evidence that it associated with higher rates of complications and the lipoabdominoplasty can reduce the risk of overall complication and

seroma effectively.(6) Samva et al. compared complication rates in patients who underwent lipoabdominoplasty versus abdominoplasty. Their results showed that the complication rate in lipoabdominoplasty is 4.30% compared with 11.76%. (22) Kanjoor and Singh had analysis used lipoabdominoplasty in 146 patient with age ranging between 20 to 72 years. Majority of their patients (94%) were of normal weight. Their result showed that lipoabdominoplasty had satisfactory result in 94% of patients and all of patients had well defined less heavy harmonious belly with defined waistline. The complication was seen in those patients with high body mass index which was seroma (6%), stein fat necrosis (4%), Infected fat necrosis (2%), deep venous thrombosis (1%), transient scalp alopecia (1%), and unsatisfied patient due to epigastuce fullness (4%). (14) One of the major concern of some surgeon it regarding increase operating time in lipoabdominoplasty. However, the time is not much differ significantly and this attributed to less-extensive undermining which it done in lipoabdominoplasty which of Course decrease dissection time and thus compensate for liposuction component.

6 | CONCLUSION AND RECOMMENDATION

Lipoabdominoplasty improved the aesthetic outcome of the patient with more youthful abdomen contour and it not associated with high complications rate. We believe that is much safe than traditional abdominoplasty.

REFERENCES

1. Melvin A. Shiffman, Sid Mivvafati. Aesthetic surgery of the abdominal wall. 1st ed., Springer, 2005; pp. 201.
American society for Aesthetic plastic surgery, 2004. Cosmetic surgery National Data bank. Available at www.surgery.org. Accessed May 2005.

3. Smida Ramanadham. Body contouring. selected reading plastic surgery, 2016, 11 ((8):1-30).
4. J. Peter Rubin. plastic surgery vol II, 4th ed, Elsevier Philadelphia, 2018 ; pp. 603.
5. Mohan Kangaswamy. Lipoabdominoplasty: A versatile and safe technique for abdominal contouring. Indian. J plast surg supplement, 2008, 41 548-555.
6. Yi Jun Xia, Jun Zhao, Dong sheng cao. Safety of lipoabdominoplasty versus abdominoplasty. A systematic reneur and meta-analysis.
7. Osvaldo Ribeiro et al lipoabdominoplasty without undermining. Aesthetic Surgery J. 2001; 21:518-526.
8. Joseph p. Hunstad, Remur kepta. Atlas of abdominoplasty. 1st. ed., Saunder Elsevier, 2009; pp 47.
9. Jason Roostalian et al. comparison of limited undermining lipoabdominoplasty and traditional abdominoplasty using laser fluorescence imaging. Aesthetic surgery Journal 2014, 24(9):741-747.
10. Nicolo Scuden, Bryant A. Toth. International. textbook of aesthetic surgery, 1st, springer, 2016; pp 383.
11. Saldanha ok, Souz pinto EB, Mottes WN Jr, et al. Lipoabdominoplasty with Selective and safe undermining. Aesthetic plast surg. 2003; 27 (4): 322-327.
12. Heller JB, Teng E, Knoll BI, Persing J. outcome analysis of combined abdominoplasty versus conventional abdominoplasty. plast Reconstr Surg. 2008; 121(5): 1821-1829.
13. Saldanha ok, Federico R, Daher Pf, et al. lipoabdominoplasty plast Reconstr Surg. 2009; 124(3): 934-942.
14. Sherrell J. Aston, Douglas S. Steinbrech, Jennifer L. Walden Aesthetic plastic surgery. 1st ed., Saunders Elsevier, 2009, pp. 759.
15. Kanjoor IR Singh AK. lipoabdominoplasty: An exponential advantage for Consistently safe and aesthetic outcome. Indian Journal of plastic surgery. 2012;45(1): 77-88
16. Quita Lopez. five and half years' experience with the Avelar lipoabdominoplasty procedure: Analysis of Complication rate. The American Journal of Cosmetic Surgery. 2013; 30 (3); 181-188.
17. Ruth Graf et al. lipoabdominoplasty: liposuction with reduced undermining. and traditional abdominal skin flop resection Aesth. plast. Surg. 2006; 30:1-8
18. Razzano S, Gathura EW, Sassoon EM et al. Scarpa fascia preservation in abdominoplasty, does it preserve the lymphatics? plast Reconstr Surg 2016, 1375: 898e-899e.
19. Blondeel PN, Derks D, Roch N, Van Landuyt KH, Monstrey SJ. The effect of ultrasound assisted liposuction and convential liposuction on the perforator vessels in the lower abdominal wall. Br J plast surg 2003; 56: 266-271.
20. Osvaldo R. Saldanha et al. lipoabdominoplasty. The Saldanha technique. Clin plastic surg. 2010; 37: 469-481.
21. Vieira BL et al. is there a limit? a risk assessment model of liposuction and lipoaspirate volume on complications in abdominoplasty. plast Reconstr Surg. 2018; 1414: 892-901
22. Samva S et al. Complication rate of lipoabdominoplasty versus traditional abdominoplasty in high risk patients. plast Reconstr Surg. 2010; 25: 690-693.

How to cite this article: Hussein Adnan Khalaf ET AL Evaluation of Aesthetic Outcome and Safety of Lipoabdominoplasty for Abdominal Contouring Clinical Medicine and Medical Research. 2022;165-174

