

Research Article

Simultaneous Liposuction and Abdominoplasty Combined with Laparoscopic Cholecystectomy

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Abstract

Background: Combining laparoscopic cholecystectomy and abdominoplasty done for cosmetic reasons in a single general anesthesia setting is a demanding surgical technique that necessitates meticulous planning and execution.

Objective: To measure the outcome of same admission laparoscopic cholecystectomy, liposuction & abdominoplasty in terms of hospital stay, cost-effectiveness and complications.

Methods: This case series of fifteen obese patients was conducted in a private hospital from June 2017 to May 2022. All patients were diagnosed, cases of cholelithiasis demanding concomitant correction of the fatty pendulous abdomen, in a single setting. Liposuction, Laparoscopic cholecystectomy & abdominoplasty were performed as a team approach including an Anesthetist, a Laparoscopic Surgeon, and a Plastic Surgeon. The data included patient demographics, cost-effectiveness, complications and patient satisfaction.

Results: A total fifteen patients who requested simultaneous laparoscopic cholecystectomy along with abdominoplasty and liposuction was performed. There were 2 males & 13 females. The mean ages of the patients were 43.73 years. The mean duration was 6.86 hours. The total length of stay was around four to five days in the hospital. The satisfaction of patients was noted after the procedure. There were minor wound infections such as wound dehiscence and epidermolysis of the umbilicus in some cases which resolved itself.

Conclusion: Same admission liposuction, abdominoplasty and laparoscopic cholecystectomy was found safe and cost effective conducted under a single general anesthesia with better outcomes and cosmesis for the patient.

Received: 24-02-2024 | **1st Revision:** 25-07-2024 | **2nd Revision:** 16-09-2024 | **Accepted:** 08-02-2025

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Keywords | Liposuction, Abdominoplasty, Laparoscopic Cholecystectomy, General Anesthesia, Combined Surgeries

Introduction

Obese patients have several problems, and it is a risk factor for many diseases. Over 1 billion individuals globally suffer from obesity; this includes 650 million adults, 340 million teenagers,

and 39 million children. This figure is still rising. Obesity can lead to the development of gallstones, especially in females.¹ In a study conducted in Pakistan, the surgical incidence for cholelithiasis was found to be nearly 9%, with females being 80% of the affected patients.² There is a well-known historical predictor denoted by the Five F's mnemonic, including Fair, Female, Forty, Fertile, and Fatty. These patients, along with those with cholelithiasis, are also prone to having a pendulous abdomen, which



Production and Hosting by KEMU

<https://doi.org/10.21649/akemu.v31i1.5607>
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is deemed to require liposuction and abdominoplasty.³

Laparoscopic cholecystectomy is a minimally invasive operation used to remove the gallbladder⁴. Recent developments in surgical methods have produced creative strategies for simultaneously treating several surgical diseases.⁵

Abdominoplasty, which was started by Demars and Marx in the 18th century, underwent many modifications.⁶ According to the American Society of Aesthetic Plastic Surgery, liposuction remained the most common plastic surgery procedure, while abdominoplasty ranked third overall.

There were very few indications initially, which later on, due to modifications, broadened, and that's why abdominoplasty is a very demanding procedure these days. It is often sought by females for hanging and sagging skin of the abdomen after significant weight loss or pregnancy, as well as for muscle diastasis.^{7,8} The present-day abdominoplasty procedure involves the undermining of the abdominal flap, correction of the muscular diastasis, and penniculectomy.⁹⁻¹¹ Moreover it is combined with liposuction, in which unwanted fat deposits are removed, yielding more promising results.¹²

Combining liposuction, abdominoplasty, and laparoscopic cholecystectomy as a single surgical procedure is one such method in order to reduce multiple anesthesia, hospital stays, follow-ups, and financial costs.^{13,14,15,16} Simultaneously performing these procedures in a single setting requires meticulous planning and execution, so this study was conducted to measure the outcome of the same hospital admission laparoscopic cholecystectomy combined with liposuction and abdominoplasty in terms of its feasibility, duration, and safety.

Methods

All fifteen patients were approached by a multidisciplinary team, including a nutritionist, anesthetist, ICU intensive care physician, laparoscopic surgeon, and plastic surgeon. This case series presents the patients who underwent liposuction, abdominoplasty, and laparoscopic

cholecystectomy in a private hospital between 2017 and 2022. The patients with gallstones were diagnosed clinically and confirmed on ultrasound abdomen. Patients with cholelithiasis, obesity with a hanging abdomen, thick abdominal skin folds, C-section scars that are otherwise medically fit, and demanding a combined approach were included. Patients excluded from this study had laparotomy, ileostomy, or colostomy scars; an ultrasonographic scan was evident of massive intra-abdominal fat; acute cholecystitis; empyema; liver diseases; an incidental finding of intra-abdominal hernia; or any other abdominal pathology. Patients with medical illnesses such as dyspnea, COPD, hypertension, cardiac pathologies, stroke, coagulopathy, a BMI > 40, and uncontrolled diabetes. Patients who met the inclusion criteria were counseled about the conversion of laparoscopic cholecystectomy to open cholecystectomy.

Standard abdominoplasty along with liposuction marking was drawn in all patients one day prior to surgery in a well-lit room. In the standing position, the lower abdominal horizontal incision at the pubic crease was marked, and then the upper incision was marked by pinching so that the final incision hid in the bikini and extended laterally depending on the length of the skin fold. The areas and cannula insertion sites of liposuction were marked. Previous scars (i.e., C-sections) were included inside the skin to be excised. All patients followed the protocol of general anesthesia and were administered antibiotics on induction. Stockings were applied.

Surgery was performed with the patient in a supine position. Patients were catheterized. The temperature of the theater was carefully maintained.

After infiltration of tumescent fluid with a motorized infusion pump, power-assisted liposuction was performed in the marked area of the abdomen in order to reduce the thickness of the skin flap, especially in the flanks. In the subcutaneous plane, even strokes were given by a 3 or 4 mm-diameter liposuction cannula in a fan-shaped distribution with the dominant hand and the non-dominant hand over the treatment area, giving tactic feedback on the cannula site and depth. Skin flap thickness was evenly maintained, and almost 2–4 liters of fat were removed through liposuction.

Incisions were made according to the marking, and the abdominal flap was elevated in the sub-scarpa fascial plane above the rectus sheath, leaving minimal

fat on it. The umbilicus was freed from the flap by giving a heart-shaped incision around it, and dissection was carried up to the xiphoid superiorly.

Table 1: *The details of all the patients.*

S.NO	Age	Gender	Indication	Procedure	Complications	Patient Satisfaction
1	44	F	Cholelithiasis, Saggy abdomen	Abdominoplasty, Liposuction, Laparoscopic Cholecystectomy	None	Satisfied
2	39	F	Cholelithiasis, Saggy abdomen	Abdominoplasty, Liposuction, Laparoscopic Cholecystectomy	None	Satisfied
3	36	F	Cholelithiasis, Minimal laxity of abdomen	Miniabdominoplasty, Liposuction, Laparoscopic Cholecystectomy	None	Satisfied
4	51	F	Chronic Cholecystitis, Rectus Diastasis, Abdominal wall laxity	Abdominoplasty, Liposuction, Laparoscopic Cholecystectomy	Accidental drain removal, Seroma	Satisfied
5	47	F	Cholelithiasis, Rectus Diastasis, Abdominal wall laxity	Abdominoplasty, Liposuction, Laparoscopic Cholecystectomy	None	Satisfied
6	38	F	Cholelithiasis, Saggy abdomen	Abdominoplasty, Liposuction, Laparoscopic Cholecystectomy	None	Satisfied
7	50	M	Cholelithiasis, Post weight loss abdominal wall laxity	Abdominoplasty, Liposuction, Laparoscopic Cholecystectomy	None	Satisfied
8	40	F	Cholelithiasis, Saggy abdomen	Abdominoplasty, Liposuction, Laparoscopic Cholecystectomy	Minimal wound dehiscence	Satisfied
9	46	M	Cholelithiasis, Post weight loss abdominal wall laxity	Abdominoplasty, Liposuction, Laparoscopic Cholecystectomy	epidermal necrosis of umbilicus	Satisfied
10	42	F	Cholelithiasis, Rectus Diastasis, Abdominal wall laxity	Abdominoplasty, Liposuction, Laparoscopic Cholecystectomy	None	Satisfied
11	36	F	Cholelithiasis, Sagging of abdomen post multiple pregnancy	Miniabdominoplasty, Liposuction, Laparoscopic Cholecystectomy	None	Satisfied
12	46	F	Cholelithiasis, Saggy abdomen	Abdominoplasty, Liposuction, Laparoscopic Cholecystectomy	Minimal wound dehiscence	Satisfied
13	44	F	Chronic Cholecystitis, Abdominal wall laxity	Abdominoplasty, Liposuction, Laparoscopic Cholecystectomy	None	Satisfied
14	49	F	Cholelithiasis, Saggy abdomen	Abdominoplasty, Liposuction, Laparoscopic Cholecystectomy	None	Satisfied
15	48	F	Cholelithiasis, Saggy abdomen	Abdominoplasty, Liposuction, Laparoscopic Cholecystectomy	Suture line infection, epidermal necrosis of umbilicus	Satisfied

The supero-lateral dissection was kept as minimal as possible; however, dissection can be extended up to the coastal margin.

At this stage, a standard 4-port laparoscopic cholecystectomy was performed by general surgeon colleagues, and the gallbladder was safely removed. Port sites were sutured. Rectus diastasis was corrected by plication of the rectus abdominis muscle with prolene 1-0 continuous sutures. The abdominal flap was draped back by retrieving the umbilicus in a new position in the skin flap after marking. The excess skin was excised, the head site was elevated, the wound was washed, and hemostasis was done. A meticulous layered closure was performed after placing two negative suction drains.

Postoperatively, on the recommendation of the anesthetist or intensive care nurse, the patients were kept in the ICU or HDU and managed for maintenance of vitals, fluids, antibiotics, and pain control. Patients were kept in a boat-shaped position with their heads and feet elevated. Compression stockings were utilized. Patients mobilized as early as possible in a semi-erect position with caution for tension over sutures and were instructed to wear an abdominal binder. Drains were removed when there were <30 mls. All the patients were discharged from the 4th to the 5th day.

All data were analyzed using SPSS Statistics v.27 and the output for quantitative data was presented as mean \pm S.E. categorical data was presented in the form of frequency and percentages. Non-parametric chi-square test for proportion was used. A line chart was also used for non-metric data. A p-value less than 0.05 was taken as significant.

Results

Among 15 patients two patients were males and thirteen females. The mean age of the patients included in the study was 43.73 years (range 36–51 years). The total duration of surgery ranges from 6 to 8 hours (mean 6.86 hours). The patient's hospital stay lasted from almost 4 to 5 days. Patients were asked about their experience with combined surgeries and when the incisions were healed. All the patients were completely satisfied. All the patients were followed up for almost 6 to 8 weeks, except for two patients who moved abroad. Details of all the patients are

Table 2: Statistics of all the variables included in the study

		Count	N %	Mean
Total Patients		15		
Gender	Male	2	13.30%	N/A
	Female	13	86.70%	
Patient Satisfaction	Yes	15	100%	
	No	0	0%	
Length of stay	4 days	9	60%	4.3 days
	5 days	6	40%	
Duration of surgery	6 hours	4	26%	6.86hr
	7 hours	7	46%	
	8 hours	4	26%	

Table 3: The percentage of complications

Complications	Frequency	Percentage
Epidermolysis	3	20%
Seroma	1	6%
Skin wound dehiscence	2	10%

given in Table 1.

All the patients tolerated the surgeries very well; however, one patient had accidental removal of drain on the bed roll, which caused mild seroma away from the port area but recovered with needle aspiration and strict abdominal binder application. Three patients developed small skin wound dehiscence, which settled with antibiotic tulle dressings. There was evidence of epidermolysis of the umbilicus in some cases, which resolved itself, as shown in Table 3.

Discussion

Combining surgical procedures is not a novel idea; people have been combining surgeries for a long time. The senior author himself practices combining plastic surgical procedures in a single setting; this case series is one of the examples of a simultaneously performed multidisciplinary team approach study. Many surgeons have successfully combined two procedures, i.e., abdominoplasty and intraabdominal procedures (hysterectomy, tubal ligation and cholecystectomy), but in this series, we combined three procedures successfully.¹⁷

A time-tested tummy tuck is now a frequently

requested procedure combined with other intraabdominal surgeries to avoid multiple separate operations, thereby reducing the length of hospitalization, medical care, recovery time, pharmacoeconomics, and serious anesthetic risks. We found there are numerous advantages to concomitant liposuction and abdominoplasty with lap cholecystectomy, but cost effectiveness in terms of single admission, single anesthesia, single recovery, single scar, minimal usage of hospital expense (drugs, imaging and surgical products), less hospital stay time whilst meeting the highest standards of superior aesthetic outcomes comparing the separate complete surgical episodes. In addition to that, patients become more satisfied and experience less mental stress.¹⁸

Although abdominoplasty is a simple, easy, and reliable procedure, it can be combined with other such surgeries to get rid of excess skin, ugly scars, and the correction of abdominal wall diastasis. However, patients safety was considered the foremost concern. There is suspicion of a high risk of infection and pulmonary embolism in combining clean and clean-contaminated surgeries in a single setting.^{19,20} The challenge was taken by the authors, keeping in mind other surgeons performing similar procedures simultaneously.

The age range in this study was 36 to 51 years, with a mean of 43.73 years; all had a smooth recovery. In comparison to a previous study, the present patient population was almost in between their recorded mean ages. The duration of the procedure lasts from 3-5 hours, which is also comparable to 4-5 hours by Gemperli et al,¹⁸ 3-5 hours by AAM Ibrahim. Similarly, 4-6 days hospital stay were also comparable with 5-7 days reported by gemperli and 5-7 days AAM Ibrahim.^{13,18}

These procedures were successfully executed because of the strict preoperative, intraoperative, and postoperative protocols laid down by a well-experienced and talented team. Preoperatively, a detailed history of acute cholecystitis and co-morbid conditions (smoking, hypertension, dyspnea, orthopnea, IHD, diabetes, DVT, use of contraceptives, previous surgeries, and allergies) was noted carefully. The workup includes CXR, ECG,

pulmonary function tests, echocardiography, baselines, coagulation profile, and HBA1C. The combined team approach to education and counseling resulted in more effective patient compliance and outcomes. Therefore, the morbidity in our series is almost equivalent to single or combined procedures reported; however, blood loss is less than abdominoplasty alone because of tumescent fluid.

The duration of procedure lasts from 6-8 hours, which is longer than other studies 4-5 hours Gemperli et al, 3-5 hours AAM Ibrahim.^{13,18} This increase in operative time is because of the planning and combining of liposuction, in which tumescent fluid is infiltrated into the standard abdominoplasty area along with the waiting time, and then the skin flap fat is removed through the cannulas to decrease the thickness of the flaps.

The intraoperative factors that improved the outcome in terms of patient satisfaction performed by the author were that tumescent fluid significantly reduced the blood loss, hence the blood transfusion. The planning of the port site in the skin flaps is to be excised to get more pleasing results by eliminating the port site scars on the abdomen. Placement of the horizontal incision, like the extended Pfannenstiel incision, which removed the previous C-section scars, and the expected dog ears were addressed in the planning by liposuctioning the flanks as well as keeping the length of the incision according to skin fold thickness. The transposition of the umbilicus is done through an elliptical, heart-shaped incision to interrupt the circumferential scar, which might result in a constricted and shriveled umbilicus. The positioning of the main port site was decided in combination with a laparoscopic surgeon approximately 5 cm below the umbilicus in midline in order to save the paraumbilical perforators, hence saving the blood supply of the umbilicus. Seroma formation risk is more in patient going lipoabdominoplasty²¹ but formation of seroma was avoided by leaving minimal fat on the rectus sheath while elevating the abdominal flap, meticulous hemostasis, placing two drains at the dependent parts, and applying multiple quilting sutures to hold the skin flap with the abdominal wall to eliminate the dead space.²²⁻²⁶

Similarly, 4 to 5 hospital stay was also comparable with 5 to 7 gemperli and 5 to 7 days AAM Ibrahim.^{13,18} The better advances in medical facilities, equipment, and cohesive team care improved the patient's recovery earlier and hence expedited early discharge. We performed all the surgeries safely because of meticulous planning and a well-trained multi-disciplinary team, and fortunately, we have not faced any dangerous complications such as pulmonary embolism or abdominal compartments found in our study because of early mobilization.

Combining the techniques may provide benefits, but there are also recognized risks reported in the literature. Venous thromboembolism incidence is stated to be less than 0.2% in patient undergoing abdominoplasty alone.²⁷ Meriwether et al reported that 3 out of 26 patients had an event of pulmonary embolism while combining abdominoplasty with a gynecological procedure though Sinno et al showed no case of pulmonary embolism.²⁸ Fortunately, there were no cases of pulmonary embolism found in our study. YiJun Xia showed lipoabdominoplasty does not pose higher complication rate than abdominoplasty done alone.

Although there are disadvantages to merging two or more procedures, such as DVT 10 and lengthy hours, to overcome this, the key surgeons who are most confident about intraabdominal anatomy, like anesthesiologists, general surgeons, and gynecologists, are an essential part of the multidisciplinary team performing these surgeries. Surgeons, if well experienced, can provide a better standard of care and results as compared to single, independent procedures.

The limitation of the study is that it is a small, single-author case series, and our setup contains trained staff dealing with such combined surgeries frequently. Our recommendation is that it should be performed as a multi-centric study.

Conclusion

Combining liposuction, abdominoplasty, and cholecystectomy techniques may have certain complications, but if properly executed by skilled surgeons, the advantages are substantial. It may decrease the risks associated with multiple anesthesia

for each treatment, shorten the length of the patient's hospital stay and the time spent in the operating room, and lower expenditures and time off from work.

Ethical Approval: The Hospital Ethical Committee approved this study vide letter No. Ref. PCH/957.

Conflict of Interest: The authors declare no conflict of interest.

Funding Source: None

Authors' Contribution:

ZAM: Conception & design, acquisition of data, drafting of article, critical revision for important intellectual content, final approval

AH: Acquisition of data, analysis & interpretation of data, critical revision for important intellectual content, final approval

AA: Drafting of article, analysis & interpretation of data

References

1. Kozakowski J, Dudek P, Zgliczyński W. Obesity in rheumatological practice. *Reumatol.* 2023;61(4):318-25.
2. Jadoon S, Nawaz M, Javed S, Imtiaz H, Jadoon O, Taimoor A. Study On The Prevalence Of Gallstones In Patients Undergoing Cholecystectomy In Benazir Bhutto Shaheed Hospital (DHQ) Abbottabad. *J Ayub Med Coll Abbottabad.* 2021 ;33(1):102-4.
3. Bass G, Gilani SN, Walsh TN. Validating the 5Fs mnemonic for cholelithiasis: time to include family history. *Postgrad Med J.* 2013;89(1057):638-41.
4. Kapoor T, Wrenn SM, Callas PW, Abu-Jaish W. Cost Analysis and Supply Utilization of Laparoscopic Cholecystectomy. *Minim Invasive Surg.* 2018;2018:7838103.
5. Prasad MB, Surapaneni SR, Dabade SS. Scarless cholecystectomy: laparoscopic cholecystectomy with abdominoplasty. *Indian J Surg.* 2012;74(6):486-8.
6. Le Louarn C, Pascal JF. The high-superior-tension technique: evolution of lipoabdominoplasty. *Aesthetic Plast Surg.* 2010;34(6):773-81.
7. Valina G, Sessa A. Current trends of cosmetic surgical procedures with the general cosmetic surgery by the American Academy of Cosmetic Surgery. *AJCS.* 2020;37(1):5-13.

8. Rangaswamy M, Bhargava P. Lipoabdominoplasty: a versatile and safe technique for abdominal contouring. *Indian J Plast Surg.* 2008;41(S 01):48-55.
9. Cardoso de Castro C, Cupello AM, Cintra H. Limited incisions in abdominoplasty. *Ann Plast Surg.* 1987 (5):436-47. doi: 10.1097/00000637-198711000-00009. PMID: 2961301.
10. Grazer FM. Abdominoplasty. *Plast Reconstr Surg.* 1973;51(6):617-23.
11. Psillakis JM. Plastic surgery of the abdomen with improvement in the body contour. Physiopathology and treatment of the aponeurotic musculature. *Clin Plast Surg.* 1984 ;11(3):465-77.
12. Logan JM, Broughton II G. Plastic surgery: understanding abdominoplasty and liposuction. *AORN journal.* 2008;88(4):587-604.
13. Ibrahim AAM. Simultaneous laparoscopic cholecystectomy with abdominoplasty. *Int Surg J [Internet].* 2025;4(7):2139-42.
14. Roriz-Silva R, Vilallonga R, Sánchez-Cordero S, Cambier B. combined surgery: abdominoplasty and abdominal surgery laproscopic in one surgical time after sleeve gastrectomy SOARD. 2018;14(11):192.
15. Daskalopoulou D, Moustakis N, Barkolias C. Scarless Laparoscopic Cholecystectomy Combined With Lipoabdominoplasty. *Cureus.* 2024;16(7): e64561. doi:10.7759/cureus.64561.
16. Gençtürk M, Erdem H, Sözen S. Simultaneous abdominoplasty with scar-less laporoscopic cholecystectomy. *Arch Clin Exp Med.* 2021;6(1):37-9.
17. Monga K, Goil P. Concomitant Abdominal Procedures with Abdominoplasty – Patient Selection and Principles to Avoid Complications. *J Aesthet Reconstr Surg* 2021;7(1):30.
18. Gemperli R, Neves RI, Tuma P Jr, Bonamichi GT, Ferreira MC, Manders EK. Abdominoplasty combined with other intraabdominal procedures. *Ann Plast Surg.* 1992;(1):18-22.
19. Xia Y, Zhao J, Cao DS. Safety of Lipoabdominoplasty Versus Abdominoplasty: A Systematic Review and Meta-analysis. *Aesth Plast Surg.* 2019;43(1):167–74.
20. Meriwether KV, Antosh DD, Knoepp LR, Chen CC, Mete M, Gutman RE. Increased morbidity in combined abdominal sacrocolpopexy and abdominoplasty procedures. *Int Urogynecol J.* 2013;24(3):385-91.
21. Marsh DJ, Fox A, Grobbelaar AO, Chana JS. Abdominoplasty and seroma: a prospective randomised study comparing scalpel and handheld electrocautery dissection. *J Plast Reconstr Aesthet Surg.* 2015;68(2):192-6.
22. Khair MA. Can drains be avoided in lipo-abdominoplasty?. *Indian J Plast Surg.* 2018;51(01):15-23.
23. Nahas FX, Ferreira LM, Ghelfond C. Does quilting suture prevent seroma in abdominoplasty? *Plast Reconstr Surg.* 2007;119(3):1060-4.
24. Marsh DJ, Fox A, Grobbelaar AO, Chana JS. Abdominoplasty and seroma: a prospective randomised study comparing scalpel and handheld electrocautery dissection. *J Plast Reconstr Aesthet Surg.* 2015;68(2):192-6.
25. Seretis K, Goulis D, Demiri EC, Lykoudis EG. Prevention of Seroma Formation Following Abdominoplasty: A Systematic Review and Meta-Analysis. *Aesthet Surg J.* 2017;37(3):316-23.
26. Janis JE, Khansa L, Khansa I. Strategies for Postoperative Seroma Prevention: A Systematic Review. *Plast Reconstr Surg.* 2016;138(1):240-52.
27. Keyes GR, Singer R, Iverson RE, Nahai F. Incidence and Predictors of Venous Thromboembolism in Abdominoplasty. *Aesthet Surg J.* 2018;38(2):162-73.
28. Sinno S, Shah S, Kenton K, Brubaker L, Angelats J, Vandevender D, et al. Assessing the safety and efficacy of combined abdominoplasty and gynecologic surgery. *Ann Plast Surg.* 2011;67(3):272-4.