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지방흡입술과 병행한 복부성형술: 타 수술과 병행한 지방흡입 복부성형술과의 비교 연구

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Lipoabdominoplasty: A Comparative Study of Combined Operation Versus Lipoabdominoplasty Only

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Abdominoplasty may be applied to achieve aesthetic outcome and it also can be combined with other surgeries. In addition, liposuction has been offered to patients to improve contour. Liposuction combined with abdominoplasty gives us the advantage of higher patient satisfaction, better aesthetic outcome, and one-staged surgery. The authors performed a retrospective study to evaluate the outcomes. A total of 6 patients who underwent lipoabdominoplasty were included. The patients were all female and the mean age of the patients was 50.5 years old (age range, 32 to 58 years). This study surveyed lipoabdominoplasty based on the purpose of operation, type of suture, and application of quilting suture. Complication rates, patient satisfaction, and postoperative contour of the abdomen were questioned. A mild abdominal complication occurred in one patient, flap bullae, but this was healed within a week and overall flap survival was excellent with good satisfactory outcome. It appears that complication rates of simple lipoabdominoplasty group is low (1/6), and only minor complication occurs. Preservation of perforators during liposuction accounts for improved flap survival. In addition, abdominoplasty may be combined with other abdominal surgeries since other abdominal surgeries usually involve the lower abdomen, which will eventually be cut away curing the abdominoplasty stage.
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Key Words: Abdominal wall, Plastic surgery, Liposuction, Adipose tissue, Combined therapy

I. INTRODUCTION

Abdominoplasty may be applied to achieve aesthetic outcome and it also can be combined with other surgeries. In addition, liposuction has been offered to patients to improve contour. Liposuction combined with abdominoplasty gives us the advantage of higher patient satisfaction, better aesthetic outcome, and one-staged surgery.[1] In order to study the advantage of one-staged surgery with other abdomen-related surgeries including lipoabdominoplasty, the authors compared the patient groups who received lipoabdominoplasty only with patient groups who received combined operation with lipoabdominoplasty to evaluate the advantage and disadvantages of such combined operation. The authors performed a retrospective study to evaluate the outcomes.

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II. MATERIAL AND METHODS

This is a retrospective clinical study conducted by patients who received lipoabdominoplasty. A group of 6 female patients referred to our hospital from March 2007 to November 2008. The mean age was 50.5 years old, ranging from 32 to 58 years.

Average BMI of the patients was 31.95, ranging from 29.3 to 34.85. Patients were categorized according to the following: purpose, type of skin suture, submission of quilting suture, and initiation of combined surgery. Patient satisfaction and complications were noted. Complications were categorized into minor and major, with minor being those that were not life-threatening and all the other complications were defined as major applied by the definition of Hensel et al.[2] Satisfaction of the patients were also checked on a five scale survey; excellent, good, moderate, poor, and unacceptable. The patient is marked in a standing position preoperatively. Perforators were marked by detecting the arteries using ultrasonography.[3,4]

A. Surgical technique

The surgery was routinely performed under general anesthesia. To ensure that thromboembolism does not occur, we applied intramuscular low-molecular weight heparin from immediate preoperation daily until three days postoperation.[5-7] Following the injection of a tumescent solution of 1 liter lactated ringer, mixed with 50 mL of 1% lidocaine, 1 mL of 1 : 1000 epinephrine, and 8 mL of sodium bicarbonate to reduce intraoperative blood loss and to facilitate dissection, liposuction of the average 1,600 mL (average 1,600 mL ranging from 900 mL to 1,950 mL) was done, and incision was made on the lower abdominal skin. The liposuction instrument we used was a MicroAire product LipoSculptor™. Careful approach not to interfere with perforator arteries was done (Fig. 1).[8,9] Supra-fascial dissection was carried out up to the xiphoid and costal margins. A wide anterior rectus plication with Vicryl #2-0 was performed in order to keep the abdomen from widening.[2] The superior flap was pulled inferiorly, overlapping the inferior section. Following remnant skin resection, umbilicus was carefully marked and reconstructed. Suturing the flap to the abdominal wall with Vicryl #2-0, which we called a quilting suture, ensured the absence of deadspace underneath the abdominal flap. Quilting sutures of the flap and abdominal fascia were done in some cases to reduce the possibility of seroma/hematoma formation.[10] Subcutaneous layer was sutured close to the dermis to ensure low-tension skin closure. Subcuticular suture using #4-0 PDS or skin suture using #5-0 Nylon was done. Routinely, two negative suction drains were placed.

B. Patient summary

The overall data of the six patients who received lipoabdominoplasty in our clinic is shown in Table 1. Patients were categorized according to the following: purpose, submission of quilting suture, and initiation of combined surgery. Four patients received combined surgery, and lipoabdominoplasty was done after combined procedure was done. Combined surgeries were full thickness skin graft (n=2), and gynecological surgery (n=2; pelvic lymph node dissection n=1, total abdominal hysterectomy n=1). Remnant skin was used as a skin graft donor in two combined full thickness skin graft patients. Gynecological surgery involved midline incision in one case, and trocar

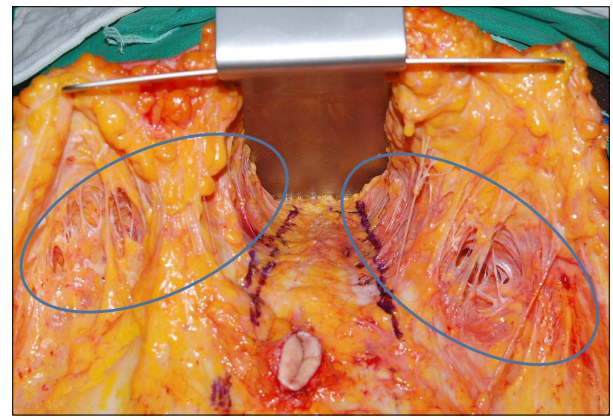

Fig. 1. This figure shows the preservation of the perforators. Multiple perforators (in circles) of zone I vascular territory supporting the abdominal flap are shown.

Table 1. Patient Summary Shows the Overall Data of the Patients who Received Lipoabdominoplasty

Patient	Diagnosis	Purpose	Quilting suture	Combined operation	Satisfaction
A	Hemifacial hemangioma	Reconstruction	O	Excision & FTSG	Moderate
B	Hemifacial hemangioma	Reconstruction	O	Excision & FTSG	Moderate
C	Pendulous abdomen/Endometrial ca.	Aesthetic	O	TAH	Excellent
D	Pendulous abdomen	Aesthetic	O	X	Good
E	Pendulous abdomen	Aesthetic	O	X	Excellent
F	Pendulous abdomen/Endometrial ca.	Aesthetic	O	Pelvic lymph node dissection	Good

FTSG, full thickness skin graft; TAH, total abdominal hysterectomy; ca, carcinoma.

insertion site in another, both within the lower abdominal area, which was removed as a remnant tissue after abdominoplasty.

III. RESULT

Patients initially showed moderate increase in body weight by average of 7.2% due to extensive fluid injection of Hartmann solution to the patient during and after surgery. By postoperative two weeks, however, patient body weight decreased by 11.8%, and showed average of 7.2 cm decrease in abdominal circumference (Table 2).[11,12]

The complications were experienced in one of six lipoabdominoplasty patients. No major complications occurred. Complications were abdominal flap bullae. Abdominal complication rate showed 16.7% (1/6). Two cases of combined operation patients are discussed below.

Case 1

A 57-year-old female patient had a hemifacial hemangioma and was scheduled to receive excision of the hemangioma tissue and application of full thickness skin graft. This patient also wanted lipoabdominoplasty, so we used the removed abdominal skin as a donor for the full thickness skin graft (Fig. 2).

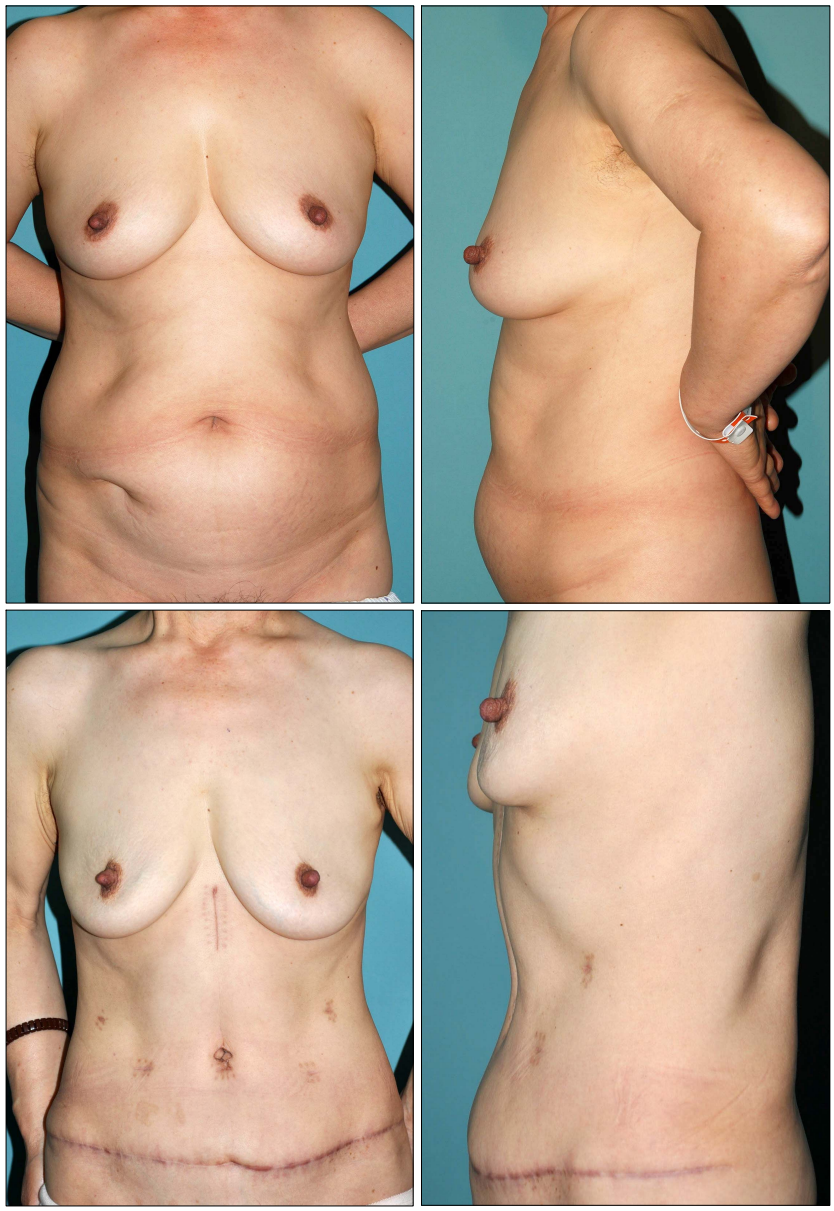

Fig. 2. Preoperative (Above left, and right) and 10 month postoperative view (Below left, and right) of a patient. The patient showed reduced abdominal circumference by 9 cm.

Case 2

This 32-year-old female patient was diagnosed endometrial carcinoma, and received pelvic lymph node dissection. The patient desired lipoabdominoplasty, and combined surgery was done (Fig. 3).

Satisfaction rates of the patient were also studied. All patients were moderately or better satisfied with the outcome of the surgery. Those patients who received the surgery for aesthetic purpose were excellent to well satisfied with the outcome (Table 2).

IV. DISCUSSION

Modern abdominoplasty techniques were developed during the last 40 years of the 20th century. Standard abdominoplasty is done by making transverse lower abdominal incision, wide undermining of the skin and subcutaneous tissue to the xiphoid

Table 2. Preoperative and Postoperative Weight and Abdominal Circumference Change, Along with Patient Satisfaction are Listed. (legend: weight-kg, circumference−cm) The patient numbers of Table 2 match that of Table 1.

Patient No.	Preop weight	Postop weight	Preop circumference	Postop circumference	Satisfaction
A	51.5	46.5	76	67	Moderate
B	51	48.5	75	70	Moderate
C	75.0	64.0	97	89	Excellent
D	83.0	72.5	104	95	Good
E	84.0	70.0	102	87	Excellent
F	75.0	66.0	98	91	Good

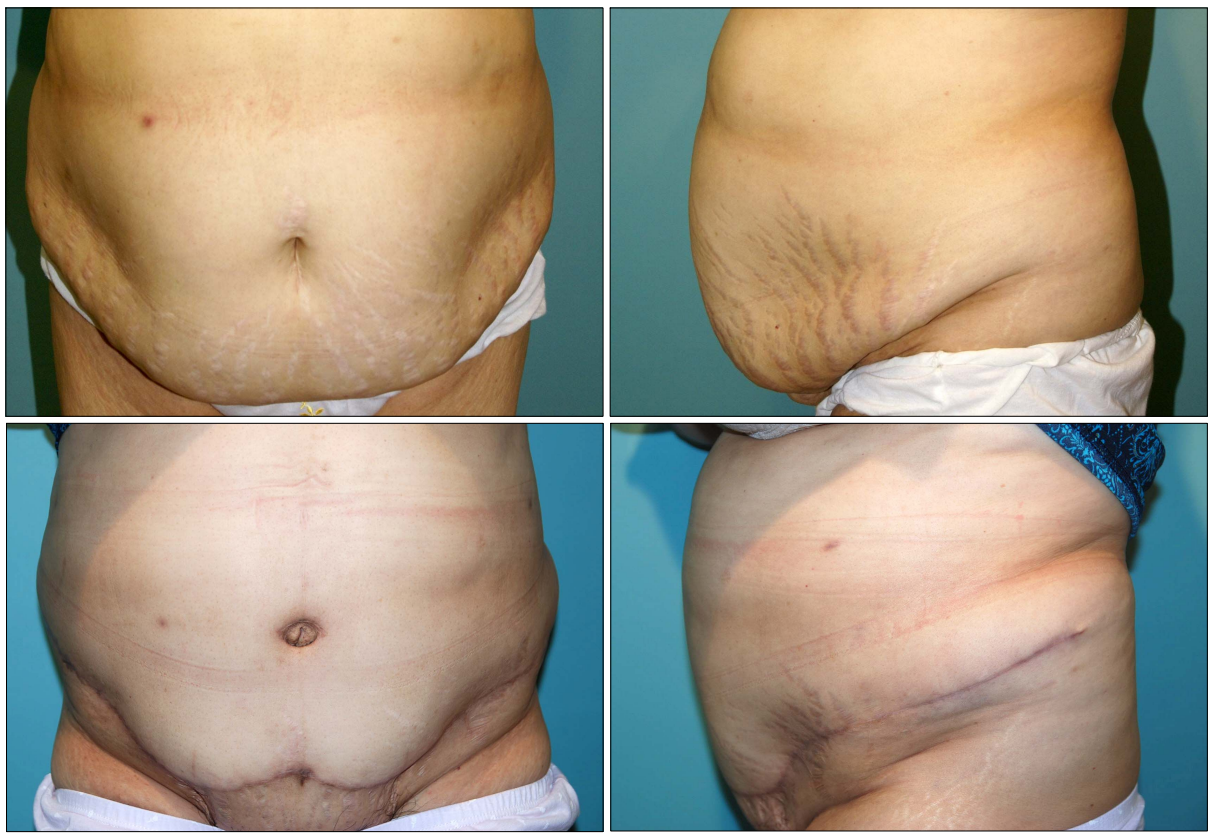

Fig. 3. This patient received abdominoplasty in combination with liposuction. Preoperative photo (Above left, and right) show excess abdominal tissue. 6 month follow up photo (Below left, and right) show reduction of abdominal circumference by 15 cm.

and costal margin, tightening of the abdominal musculature, resection of redundant abdominal skin and subcutaneous tissue, umbilical repositioning, and skin closure.[1]

Abdominoplasty is associated with a significant number of complications. Most important factor in complication is circulation of the abdomen. Huger described three vascular territories of the abdominal wall: zone I, in the midabdomen from the xiphoid to the pubis between the lateral borders of the rectus abdominis supplied by deep epigastric arcade; zone II, in the lower abdomen supplied by external iliac artery; and zone III, consisting of the flanks and lateral abdomen supplied by intercostals, subcostal, and lumbar arteries[1,4] Conventional abdominoplasty sacrifices the blood supply in zones I and II. Careful approach in order to preserve as much perforators as possible is the key to reduced complication rates. Others may include patients underlying disease such as diabetes mellitus, hypertension, smoking history, high BMI, and operation time.

The introduction of liposuction has given us many options to treatment of aesthetic deformities of the trunk and the extremities. However, since liposuction only deals with the element of excess subcutaneous adipose tissue, abdominoplasty is still needed in order to fully accomplish trunk aesthetics. To improve contour, liposuction may be offered to patients in addition to abdominoplasty. If direct undermining and liposuction is done on the abdominal wall, further impingement of the vascular supply is risked, increasing potential of skin or soft-tissue necrosis. For this reason, preoperative detection of perforators through ultrasonography and cautious approach is suggested in order to spare the perforator vasculatures reaching the abdominal flap.

V. CONCLUSION

This study evaluated our experience with lipoabdominoplasty. Surgeries combined with abdominoplasty made operation time longer, 2 hours at minimum, average of 4 hours, which may lead to increased complication rate.[13,14] Quilting sutures were done in all patients to reduce complication rates. Our conclusion is that preservation of abdominal flap pedicle ensures flap circulation, and quilting suture reduces the dead space between the suprafascial area and abdominal flap, thus reducing minor seroma and hematoma formation, leading to improved flap condition. Patients receiving abdominoplasty with aesthetic purpose were far more satisfied with the outcome, than those with reconstructive purpose. Abdominoplasty may be done in combination with other abdominal surgeries, such as gynecological surgery. Since gynecological surgery site usually involves the lower abdomen, abdominoplasty eventually removes this gynecological surgery site, thereby resulting in a postoperative outcome similar to abdominoplasty alone.

Careful evaluation and preservation of perforators during liposuction helps ensured flap survival. No severe flap loss was found in our cases, suggesting that preserved perforators account for good circulation of the abdominal flap. Our study, however, has limitations of small case numbers, thus our data cannot be accepted as an ultimate concept of lipoabdominoplasty with or without combined surgery. We look forward to having our data used as a reference upon further lipoabdominoplasty cases.

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