

BUTTOCK AUGMENTATION WITH FAT TRANSFER: EXPERIENCE WITH 200 CASES

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ABSTRACT

Background: Anatomical features that make the buttocks attractive include adequate volume, projection, and a defined infragluteal fold. A simple and reproducible surgical technique for gluteal shaping and augmentation with autologous fat is needed. The female waist-hip ratio of around 0.7 is reachable through liposuction and gluteal fat grafting. The authors evaluated the reliability of this technique. **Methods:** Prospective evaluation was performed of all female patients subjected to gluteoplasty with autologous fat tissue between July of 2011 and July of 2015 without a weight change greater than 10 percent during follow-up. Results were evaluated through photographs. The degree of satisfaction (patient and surgeon) was assessed on a scale of 1 (poor outcome) to 4 (excellent improvement), and agreement was measured by Kappa statistics. The technique involved epidural anesthesia, tumescent infiltration, liposuction around the buttocks, fat decantation, and grafting with retrograde injection in different planes. **Results:** A total of 200 patients were included. Patient age ranged between 22 and 60 years (mean, 33 years). The preoperative body mass index was between 19 and 31.6 kg/m² (mean, 24.8 kg/m²). The volume grafted to the buttocks ranged between 350 and 1000 cc (mean, 700 cc). There were no medical complications. **Conclusions:** This gluteoplasty technique is simple and inexpensive, with minimal morbidity and excellent results. A good result depends on harmoniously combining fat elimination by liposuction and fat grafting for buttocks sculpting, with lasting results.

PATIENTS AND METHODS

We prospectively evaluated all female patients who voluntarily sought to improve the contour of the trunk and hips via liposuction from July of 2011 to July of 2015 at Al manar clinic, Kuwait.

Laboratorial analyses were performed preoperatively in all patients and included determination of hemoglobin, hematocrit, prothrombin time, partial thromboplastin time, glucose, urea, creatinine. Patients were advised to stop oral contraceptive pills for 30 days and acetyl salicylic acid for 7 days before surgery.

In patients older than 45 years of age or who presented significant medical history, a complete medical evaluation, including a resting electrocardiogram, was performed.

Patients were followed clinically, and data were collected regarding their preoperative and postoperative course through photographs, patients' subjective level of satisfaction with the procedure, and complications. In all patients, the results were evaluated with preoperative and postoperative photographs. The assessment considered patients' level of satisfaction regarding their waist and buttocks using a scale of 1 to 4 (1, poor outcome; 4, excellent improvement).

Surgical Technique

Markings on all patients were performed with the patient in standing position.

Most of the patients the procedure were done under general anaesthesia (90%) and the rest under spinal anaesthesia upon the patient request.

Antibiotic given to the patient with induction of anaesthesia.

Tumescent infiltration of the fat tissue undergoing liposuction with 0.9% saline solution associated with adrenaline 1mg/500ml saline.

Liposuction with 3- and 4-mm cannulas of fat in the flanks, thigh roots, saddlebags, and sub-gluteal region, through as few ports as possible, in the prone position, with no need for lateral decubitus.

Decanting for 30 minutes to separate the supernatant fat from underlying liquid inside a closed system to avoid exposure to air. There was no kind of preparation of the fat tissue to be grafted.

Fat grafting with retrograde injection using a 60-cc syringe and a blunt, 3-mm cannula in previously demarcated areas of the buttocks, in different planes, avoiding the grafting of large volumes of fat tissue in a

single area to prevent graft necrosis, and re-accommodating eventual lumps of fat by massaging the gluteal surface. First, we injected superficially to improve the shape of the buttocks, from lateral to center. Later, we injected deeper toward the gluteal muscle to expand and augment its volume, giving projection but avoiding overcorrection to obtain the desired contour at the end of the surgery.

No drains were used.

Having the patient sit and sleep in the supine position in the recovery room. Patients were also instructed to wear an elastic compression garment for 2 months postoperatively and start lymphatic drainage from the first week after surgery, except in grafted areas. Patients were instructed to take in about 4 liters of liquid per day

to avoid dehydration.

RESULTS

During the study period, 200 patients met the inclusion and exclusion criteria and were operated on. All of them were women. The age ranged between 22 and 60 years (mean, 33 years). The body mass index at the time of surgery ranged between 19 and 31.6 kg/m² (mean, 24.8 kg/m²). The total volume grafted in each gluteal region ranged between 350 and 1000 ml (mean, 700 ml).

In the sample of patients evaluated, there were no medical complications or postoperative complications within the period evaluated. There were no cases of infection.



Case 1. A 25-year-old patient preoperatively (above) and 6 months postoperatively (below) who underwent liposuction (3.5 liters) and fat grafting of 600 cc in each buttock.



Case 2. A 22-year-old patient preoperatively (above) and 1 year postoperatively (below) who underwent liposuction (3.0 liters) and fat grafting of 700 cc in each buttock.





Case: 3. A 28 years old patient preoperatively (Above) and 6 months postoperatively (below) who underwent liposuction (4.0 liters) and tummy tuck , with fat grafting of 900cc each buttock.



Case.4. A 35 years old patient preoperatively (Above) and 6 months postoperatively (below) who underwent liposuction (4.0 liters) and fat grafting of 900cc each buttock.

DISCUSSION

Buttock contour surgery includes a wide variety of procedures performed in various ways. Pitanguy⁴ and Regnault et al.^[5] improved the gluteal appearance by resecting tissue from the trochanteric region and gluteal fold. Gonzalez-Ulloa^[6] and Lockwood^[7] obtained a better shape by lifting the whole gluteal region, achieving substantial improvement but creating large and visible scars.^[4,7]

Power-assisted gluteal augmentation with autologous fat is an efficient, safe, and reproducible procedure that produces an aesthetically pleasing gluteal projection and contour. 36

With the development of implants, several authors have obtained good results with this technique.^[8-10] Undoubtedly, the use of gluteal implants is an advance because they provide an adequate volume to the contour of the region with minimal scars. However, the implants have the disadvantages of cost, diminished durability compared with breast implants,^[11] and complication incidence reaching up to 38.1 percent in a multicenter review of experienced gluteal augmentation surgeons.^[12] Many patients have an aversion to the use of foreign material in their bodies. Moreover, implants do not allow treating different parts of the buttocks according to each patient need.

After the introduction of liposuction, a new alternative^[13,14] became available for the treatment of body contours. Illouz himself, the creator of liposuction,¹⁵ used fat as a graft to correct liposuction deformities in a patient in 1984.^[16] The first report of successful fat grafting to the buttocks was in 1986 by Gonzalez and Spina,^[17] along with the development of the first sterile device to accumulate the fat to be grafted. The authors stressed the importance of injecting the fat in different levels, avoiding large collections and using cannulas between 1 and 3 mm. Since then, this procedure has gained popularity around the globe,^[18,19] with several authors publishing classifications and treatment strategies,^[2,20,21] corroborated by the evidence of fat survival in long-term monitoring studies.^[22-26]

Therefore, this procedure has been used to improve the contour of the buttocks, and when needed, the projection of the buttocks has been achieved without implants.

Considering the wishes of our patients and using the principle of fat removal where it is in excess and injection where it is needed, we decided to improve the contour of the buttocks by a combination of two surgical procedures that have given excellent results in plastic surgery: lipoinjection and liposuction. Liposuction has been considered the best choice for body contouring.^[15,27,28]

We obtained favorable results in patients using a combination of both techniques. More than 90 percent of

our patients felt satisfied and showed improvement in photographs, as determined by postoperative evaluation by surgeons and patients. Two patients complained of excess volume in lateral hips and underwent revision surgery. Given this complaint, we have since started to draw a line laterally, dividing anterior and posterior hip and avoiding the injection of fat anterior to this line, which has led to no more complaints about it. Notably, we had no complaints regarding waist results.

The excess fat in the lumbosacral region is one of the basic factors that must be corrected to achieve a proper gluteal shape. For this reason, it was necessary to perform liposuction in this area in all patients. Liposuction of the subgluteal and saddlebag regions was necessary in most patients, but not all of them. About 10 percent of the patients were thin (body mass index <20.0 kg/m²) and improved with a graft of less than 240 ml in each buttock, later becoming satisfied, probably because of a more realistic expectation built during preoperative consultation. There was no relationship between the volume injected and the satisfaction of patients or surgical team. Of note, patients gave lower scores to preoperative photographs than surgeons but higher scores in the postoperative evaluation. Perhaps this observation was attributable to a more objective analysis by the surgeons, who showed a nearly perfect postoperative agreement (K = 0.896/0.896), because they are devoid of the emotional issues involved in patients' assessments. Despite this difference, the Kappa analysis showed that the postoperative agreement between patients and surgeons was higher with regard to buttocks.

Regarding the prevention of complications, the amount of fat and where it is infiltrated are two of the variables to be considered to prevent local reaction and fat necrosis.

According to Carpaneda's principle,^[29] in which the fat graft survives up to 1.5 mm in radius, we used only 3-mm or thinner cannulas to inject. Fat embolism syndrome did not occur in any of our cases, but it is an entity that deserves special attention because its occurrence is not explained solely by fat grafting and has been reported even after liposuction of smaller volumes in sole surgical procedures.³⁰⁻³² The relationship of multiple factors in the occurrence of this syndrome warrants additional studies aimed to clarify its causes during liposuction.

There are important aspects about the surgical technique that are essential for good results. Liposuction with the tumescent technique allows the surgeon to suction the fat needed to achieve a good body contouring despite the aspirated volume, which represents a limiting factor.^[33-35] Likewise, the tumescent technique allows the aspiration of very clean fat. We had no need for additional procedures to clean the fat tissue, as other authors have described.^[23-25] Letting the fat rest for a while allows us to get clean fat for infiltration.

Infiltration is always made at the top of the gluteus medius in an oval or circular pattern, depending on each patient. The infiltration of the upper region works by elevating the buttocks. The grafting of fat in different planes and in various directions ensures symmetrical results. Furthermore, using a continuous movement of the syringe during the infiltration of fat and in different planes prevents fat necrosis and accumulation of large amounts of fat in one area. By applying these principles, our complications have decreased, and the results have improved considerably over time.

The improvement that can be achieved with the combined technique of liposuction and fat grafting depends on the amount of fat that can be removed from adjacent areas of the buttocks and the amount of volume that is needed in the gluteal region. When more fat is aspirated, the result is more evident. For this reason, the best results are obtained when the required increase is less than 460 cc. We avoid grafting large volumes (>600 cc) because they give the buttocks an unnatural appearance, with a “balloon” shape, which leads fading of the cosmetically nice curves related to it.^[2, 21] Although we cannot objectively and precisely measure the survival of injected fat, this technique is simple and low cost, with minimal morbidity and an excellent result. The gluteal shape obtained after prolonged follow-up is satisfactory and demonstrates a significant survival of the fat tissue over a long period of time. Good results depend not on a large increase of the buttocks but on the combination of two procedures used in a harmonious manner to give the patient an ideal body contour by removing fat deposits with liposuction and the application of fat where it is needed.

CONCLUSIONS

This buttock augmentation technique is simple and inexpensive, with minimal morbidity and excellent long-term patient satisfaction. It is important to note that a good result depends not on a lot of fat infiltration but on the harmonious combining of the two surgical procedures—the elimination of fat by liposuction and fat grafting for buttock sculpting—for lasting results.

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