

A Systemic Approach to Liposculpting the Female Buttocks and Lateral Thighs

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ABSTRACT

From January 2005 to June 2004, 20 female patients had liposuction gluteal area, trochanteric region and hips. Some of them had liposuction performed in different areas of the body to improve contour.

The ages of the patient ranged from 22 to 40 years old (mean, 27 years). Liposuction was done with a tumescent technique. Cannulas used were side opening types, using number 4 for deep suction and number 3 for intermediate suction, with different amount and level of suction according to each individual case. Beginning from the third day postoperative, all patients were instructed to do special training exercise program, advocated by a professional trainer to strengthen the glutei muscles, lower abdominal musculature and muscles of the back. Endermologie was performed for each patient from the second week.

The results were evaluated by the patients and the surgical team with preoperative and postoperative photographs. Follow-up ranged from 3 months to 18 months, with a mean of 7 months. No patients were dissatisfied with the results, and all patients considered their results; moderate, good or excellent.

Liposuction complications consisted of stiffness at the insertion points; lumpiness; and slight asymmetry, which resolved with conservative treatment.

The presented practice plan in this study addresses the majority of concerns, eliminates most of the fears and provides consistent reproducible results with a program incorporating deep and intermediate liposuction, endermologie and exercise.

Optimal results can be achieved in buttock, hip and thigh contouring with blending of the adjacent areas and producing a smooth contour transition between suctioned area while maintaining the body's natural curves, helped identifying the regions of suction in the thigh, buttocks and hip.

INTRODUCTION

Recreating an improved body silhouette is accomplished using a circumferential approach to the body subcutaneous fat stores. A three-dimensional understanding of fat deposits and of their relationship to the underlying muscle unit and the overlying skin is essential in producing consistent aesthetic results [1].

An improvement in body contour is frequently requested by aesthetic surgery patients. At the present time, correcting the gluteal contour and thighs are one of the main objectives for patients who wish to obtain an adequate body shape. This demand rose dramatically in the last decade because of the development in the techniques of liposculpting with the introduction of tumescent technique and microcannulas in liposuction [2].

Two main problems remain facing the plastic surgeon with liposuction, the superficial adipose layer and the zones of adherence.

The superficial adipose layer is composed of dense fat lobules among numerous fibrous septae firmly attached to the overlying skin. Routine liposuction of this layer should be avoided because of the increased risk of contour irregularities, skin dimpling, waviness, hyperpigmentation and superficial burns [3].

The zones of adherence in the buttocks and thighs should also be avoided during liposuction. These are the lateral gluteal depression, gluteal crease, posterior inferior thigh, distal lateral thigh, and mid-inner thigh; doing so may result in contour deformities or asymmetry.

In most patients, liposuction is performed only in the deep and intermediate layers [4].

The deep layer represents the deepest one third of adipose tissue, situated immediately superficial to the underlying muscle fascia. The intermediate layer represents the middle third, with no distinct boundaries between it and the superficial or deep layer. The superficial layer, which is immediately adjacent to the dermis, should be approached during liposuction very conservatively and treated only in certain anatomic regions.

These factors limit the degree of improvement that can be obtained by liposuction surgery alone [3].

At the present time, patients have various, different alternatives because of the arrival of new techniques. Undoubtedly, one advance is the endermologie, which is a non-invasive mechanical method of "aspirated hypodermal mobilization" that mobilizes superficial adipose layer through a motorized rhythmic folding-unfolding and suction-assisted massage technique that has been advocated for body contouring and cellulite treatment [4].

Understanding of the aesthetically pleasing human form is fundamental. Many authors have described the aesthetically pleasing female silhouette. Viewed from behind, the lower torso-upper thigh area in women is characterized by a gently undulating double curve with a diminutive fullness at about the level of the iliac crest and a larger swelling at the trochanteric area. The hip and thigh protuberances are separated by the gluteal recess. This normal double curve, glorified by classical figurative painters, is anathema to women of the late Twentieth Century, who seek a slimmer, more boyish look. These women want ablation of the double curve and its replacement by a single smooth curve with slight convexity when viewed from behind [1].

The gluteal crease separates the posterior upper thigh from the buttock and extends laterally a variable distance from the medial thigh, typically ending about two-thirds of the way to the lateral most portion of the thigh. Viewed from the side, the youthful gluteal mass meets the upper thigh at an obtuse angle and the upper buttock projects as a rounded, subtle fullness slightly more than balance the anterior projection of the breasts [5].

Most reports have documented the need to address the hips and trochanteric regions as well as the bulk of the buttock. The frame of the buttock consists of the hip fat pad, which may merge with the upper outer quadrant of the buttocks producing an exaggerated appearance of width and height of origination; and the trochanteric fat pad, which may merge with the inferior outer quadrant of the buttocks producing an exaggerated appearance of width in the lower buttocks [6].

Actually there is a wide range of deformities affecting the hip region in females, and it has been classified by many authors as Pitman, who described three general types according to the amount of fat and tone of skin [7]. Gasparotti, et al., described four variations of saddlebag deformities [8].

Grazer and Klingbeil developed an anatomic classification of female hip and thigh deformities based on the deviation from normal.

Their classification was revised in 1984 to conform to the requirements of liposuction to treat type I through type VII deformities:

- Type I : Has excess subcutaneous fat in the medial thighs, often in combination with other body deformities.
- Type II : Typified by the saddle bag trochanteric bulge, is often seen in ectomorphs and mesomorphs.
- Type III: Combine a trochanteric deformity and an additional bulging of the upper hip or flanks.
- Type IV: Is a composite of type II and III, with a deepened midgluteal depression.
- Type V : Is typical endomorphic obesity.
- Type VI: Traumatic or congenital deformities.
- Type VII: Deformities typify the sagging and wrinkling buttocks caused by aging [5].

Although classification is extremely helpful, the surgeon must individualize the procedure for each patient. Numerous techniques have been described for the contouring of buttock, hip and thigh regions. Especially young plastic surgeons will be faced with a wide range of liposuction procedures with a wide range of possible complications. Also there is a paucity of literature describing an integrated approach to the management of this condition.

On this basis, a practice plan is presented in this study that addresses the majority of concerns, and eliminates most of the fears and provides consistent reproducible results with a program incorporating deep and intermediate liposuction, endermologie and exercise. The aim is to optimize the results of buttock, hip and thigh contouring with blending of the adjacent areas and producing a smooth contour transition between suctioned areas while maintaining the body's natural curves, helped by identifying the regions of suction in the thigh, buttocks and flanks.

PATIENTS AND METHODS

During eighteen months period, from January 2003 to June 2004, 20 female patients were operated on. They ranged in age from 22 to 40 years old (mean, 27 years). All had liposuction performed in the gluteal areas and the trochanteric region and hips, some of them had liposuction performed in different areas of the body to improve contour.

The types of deformities were different and not uniform, but all were within types II, III and IV of Grazer and Klingbeil anatomic classification.

Preoperative analysis were performed in all patients, these included the determination of hemoglobin and hematocrite levels; prothrombin time, and partial thromboplastin time; serum glucose, creatinine and urea level and liver enzymes. All patients were medically fit for operation. All patients were managed under anesthesiologist-monitored intravenous sedation or under general inhalational anesthesia. Antibiotic prophylaxis with 1gm. Of cephalexin, given two hours before surgery and continued once every 8 hours for 24 hours after surgery. In the immediate preoperative period a single hydrocortisone dose was given.

Intraoperative marking is performed with the patient nude and erect. Because gravity is important, the most prominent areas are marked with the patient erect. Left/right asymmetry and volumetric inequalities are noted for correction.

As all anatomic areas in the region of the hip, thigh and buttocks merge together with special curves, no single area can be approached alone. Each aesthetic unit should be framed during liposuction. We classified these regions into 9 specific areas as shown in the diagram and the areas approached are individualized to the patient's deformity and expectations. In the classification proposed all the regions were classified according to anatomic areas and merged intentionally into adjacent areas, these include:

- Area I : Includes the trochanteric region with the upper hip.
- Area II : The upper two thirds of the anterior thigh.
- Area III : The lower third of the buttock and the upper third of the posterior thigh.
- Area IV : The lower two thirds of the posterior thigh.
- Area V : The lower part of the flank, the upper third of the buttock and the lumbosacral region.
- Area VI : The middle third of the buttock.
- Area VII : The lower third of the anterior thigh and suprapatellar region.
- Area VIII: Medial aspect of the knee and lower third of the medial thigh.
- Area IX : The upper two thirds of medial thigh.

Liposuction was performed using the tumescent technique in all patients. A solution containing 25ml. 2% lidocaine, 1ml of 1 : 1000 epinephrine and 1000 ml of lactated Ringer's solution is injected in the deep and intermediate layers until the target tissues are turgid. Cannulas used were side opening types, using number 4 for deep suction and number 3 for intermediate suction, with different amount and level of suction according to each individual case. Amounts injected and aspirated are shown in table (1).

Table (1): Amount infiltrated, suctioned areas suctioned and complication.

Patient number	Amount infiltrated	Amount aspirated	Aeas suctioned	Other areas (amount suctioned not included)	Complications
1	2000	2650	I,II,III,V,VI		Stiffness at the insertion points
2	2500	3100	I,III,IV,V		—
3	1000	1000	I,III,V		—
4	2700	3300	I,III,V,VI	Liposuction of the abdomen	—
5	3000	5600	I,II,III,IV,V,VII,IX	Liposuction of the abdomen	—
6	2000	3590	I,II,III,V		—
7	2000	2600	I,II,III,V		—
8	3000	3400	I,II,III,V,IX	Liposuction of the abdomen	Lumpiness
9	1500	2200	I,II,III,V		—
10	1500	2150	I,II,III,V		—
11	2000	2500	I,III,V		—
12	2500	3000	I,III,V,VI		—
13	2500	3200	I,III,V,IX		—
14	1000	1700	I,III,V,VI	Liposuction of the abdomen	—
15	2500	2900	I,III,IV,V		—
16	2000	2600	I,III,V,VI		—
17	3000	3500	I,III,V,VI		—
18	1500	2000	I,III,V		—
19	1500	2100	I,III,V,VI		Slight asymmetry
20	2000	2800	I,III,V,VI		—

Postoperatively all patients wore an elastic garment for six weeks, changing the size whenever it becomes loose. Beginning from the third day postoperative, all patients were instructed to do special training exercise program, advocated by a professional trainee to strengthen the glutei muscles, lower abdominal musculature and muscles of the back. These training courses continued for at least six weeks. Twelve sessions endermologie were performed for each patient from the 14th day postoperative, three times weekly, each session lasts for 40 minutes [9].

In all patients, the results were evaluated with preoperative and postoperative photographs (Figs. 1,2). Evaluations considered the patient satisfaction and the assessment of the surgical team; a scale of 1 to 4 was used to rate the degree of patient and surgical team satisfaction (1, a bad result; 4, excellent improvement) [2].

RESULTS

The follow-up period ranged from 3 months to 18 months, with a mean of 7 months. In 4 patients liposuction was also done in areas other than those treated for gluteal and thigh improvement, three of them did liposuction of the abdomen, and one case did liposuction for both arms. No additional aesthetic procedures were performed in any patient. In all 20 cases the frame of the buttocks has been addressed, by sculpting the hip and the trochanteric region of the thigh (areas I, III, V). Debulking of the gluteal region, by suctioning area VI, was done in 8 cases only in order to achieve projection balanced with the anterior projection of the breast. Liposuction of the upper part of anterior thigh (area II) was done in 10 cases to avoid step deformity between area I and area II.

The volume of aspirated fat varied from 1000ml to 5600ml, with a mean of 2790 of aspirated fat from only the gluteal and buttock regions, while other areas suctioned were excluded from these calculations.

All patients continued the exercise program of 30 minutes daily to exercise the muscles of the gluteal regions, flanks and lower abdomen from the third day postoperative and for 6 weeks. And all patients did 12 sessions, each session 40 minutes, of endermologie starting from day 14 postoperative three times weekly done by a well trained nurse.

We had three complications, one case complained of stiffness at the insertion points of liposuction cannula, she was managed by local massage cream twice daily, the condition resolved after 2

months. One case presented with palpable irregularity in the buttock after 45 days from the procedure and was instructed to do another course of endermologie and the condition resolved completely after 3 months. The third case presented with slight asymmetry between the left and right sides, she was reassured and did another course of endermologie and was instructed to wear the elastic garment for another 6 weeks and she responded greatly to conservative methods.

According to the classification we have proposed areas suctioned were as the following: Areas I, III, V were suctioned in all case, area II was suctioned in 10 cases, area VI in 8 cases, while area IX in 3 cases and area IV in 2 cases, only in one case we suctioned area VII and in none of the patients we needed to suction area VIII.

All patients had improvement of the gluteal and thigh contour; none was dissatisfied with the results. Rating of the patients was, no cases with bad results, while one case has moderate result, three cases rated their results as good and sixth then evaluated the results as being excellent.

As regards the doctor's evaluation, there was none with bad results, two cases with moderate results, five cases with good results and thirteen cases with excellent results. The satisfaction ratings of the patients and surgical team are presented in table (2).

Table (2): Rating of the results of the patients and surgical team.

Result	Patients score	Surgical team score
Bad	—	—
Moderate	1	2
Good	3	5
Excellent	16	13

DISCUSSION

Women are frequently dissatisfied with the contour of their thighs and buttocks; therefore; these areas are among the most commonly requested areas for liposuction surgery. As is true with most localized fatty deposits, those on the thighs are usually inherited and rarely respond to diet or exercise [10].

Undoubtedly, one advance is the tumescent technique in liposuction and microcannulas [2]. However sculpting the buttocks and thighs are complex yet potentially gratifying subset in the concept of body sculpting.

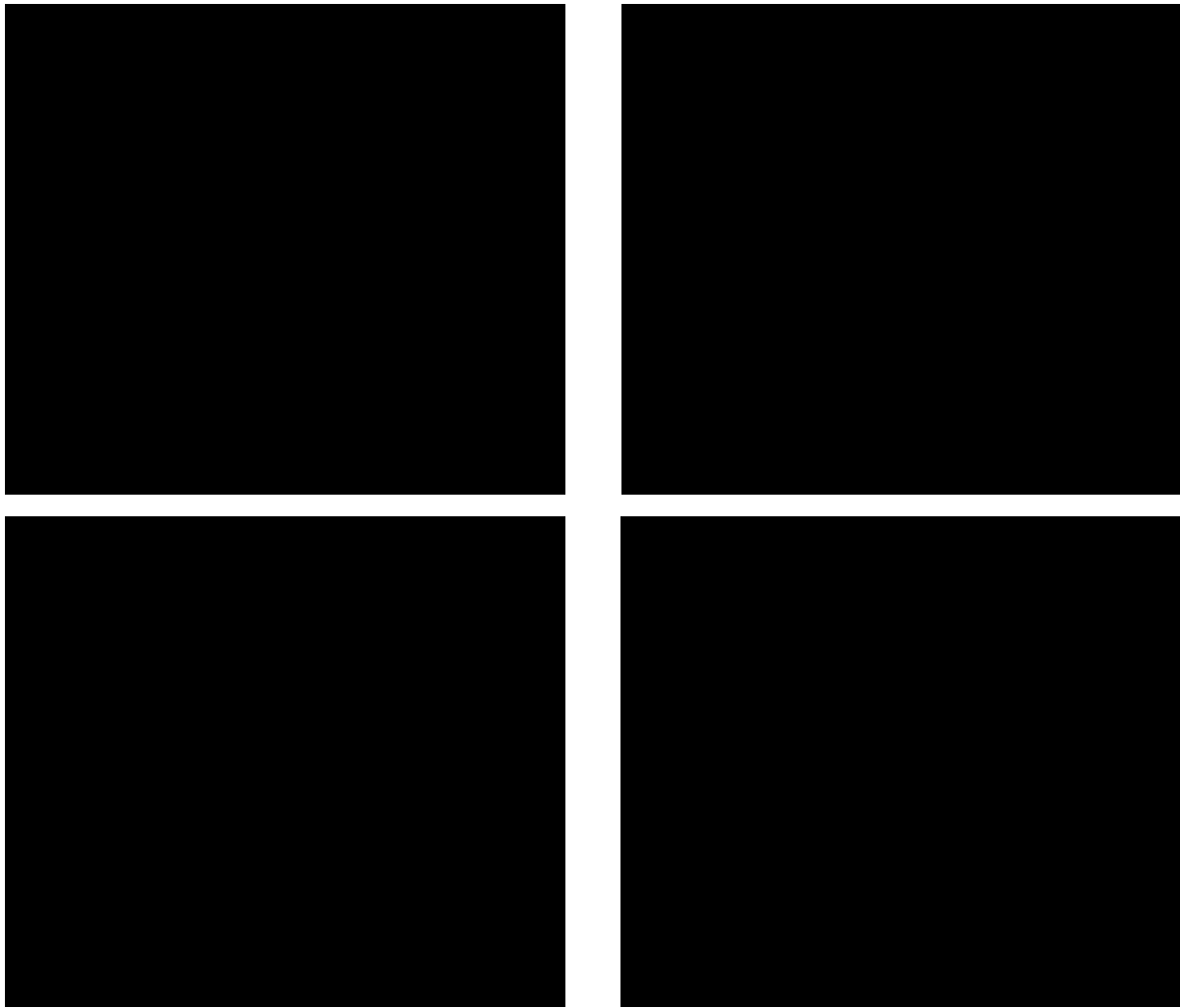


Fig. (1): A 26-year-old woman shown one week after liposuction surgery (Left). Preoperative marking is shown (Right). The patient acquired a better shape and projection after framing the buttocks (She also did liposuction abdomen).



Fig. (2): A 40-year-old woman showed three months after liposuction surgery of the thighs and completion of full exercise program and endermologie course (right side). Preoperative picture (Left side).

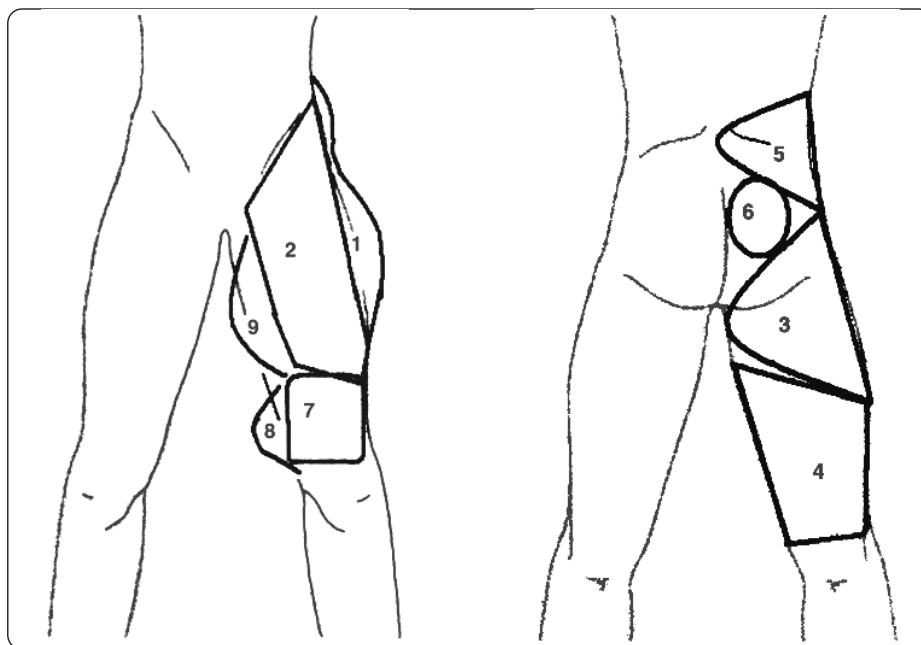


Diagram: The 9 specific liposuction areas of the hip, gluteal region and thighs.

Liposuction of the thigh and buttock has unique considerations that must be respected in order to obtain good results. An aesthetic appreciation of the frame of the buttocks, which consists of the hip, trochanteric fat pad, posterior thigh and the subunit of each buttock. All areas should be blending together to evoke a smooth, contoured silhouette [6].

In addition to the dysmorphic changes resulting from localized or diffuse fatty deposits of the thighs, the skin of the female thigh is prone to irregularities resulting from cellulite, waviness and poor skin tone.

Cellulite is a term used to describe the irregularities of the skin, mainly the thighs and buttocks of women. Although the origin of cellulite is not clearly understood, some investigators feel that it is a result of the attachment of fibrous bands from the dermis to the deep fascia, creating a quilting effect [7].

Others relate the problem to subdermal edema and liposclerosis [11]. Contrary to early expectations, liposuction has not been successful in reducing cellulite; even appear to worsen the problem [12].

Endermologie is a mechanical method for treatment of cellulite. The proposed method, "aspirated hypodermal mobilization", essentially sucks up a fold of skin and rolls it between two revolving

rollers, progressively disorganizing the adipose tissue and gradually smoothing it out over the course of several treatments [13].

The use of endermologie has also been recommended as an adjunct to liposuction, particularly after the tumescent technique [14].

Overall the contour of the thigh and buttocks is a function of the fat, skin, bone and the underlying musculature. Women who exercise vigorously will often have prominent projections [6]. The contour of the buttock is primarily determined by the gluteus maximus muscle and to a lesser extent the gluteus medius muscle. Incorporating special exercise programs in the cycle of body contouring helps to attain consistent, long-term results and to treat the minor post liposuction contour irregularities [1].

The described protocol was, thus, used to improve thigh and buttocks contouring, by incorporating liposuction surgery, endermologie and exercise program in one protocol. Aiming at optimum, predictable, reproducible results.

Considering the desires of our patients and using the principle of removing fat from where it is excess, respecting the aesthetic units and avoiding the zones of adherence and the superficial layers of fat. We obtained favorable results in our patients by using the proposed protocol with no bad results in both patients and surgeons score, while only

one patient evaluated his result as moderate and two cases were evaluated by surgeons as moderate results. All the remaining patients have excellent results as determined by the evaluation done post-operatively by surgeons and patients.

The complications that occurred were those common for these types of procedures, but less in type and frequency. Stiffness at the insertion points of cannula, mild lumpiness and light asymmetry, but all the complications improved by continuing the protocol of treatment. In which, endermologie will facilitate the egress of fluids, prevents fibrosis and dimpling and helps to produce a smooth contour transition between adjacent areas, while maintaining the body's natural curves and aesthetic units, improves minor post liposuction irregularities and increase slightly the projection of the buttocks in a natural way.

There are important aspects of the technique used that are essential to obtain good results. Doing liposuction with tumescent technique and micro-cannulas, allow the surgeon to suction the amount of fat necessary to obtain a good body contour without having the volume aspirated as a limiting factor. Avoiding the zones of adherence and avoiding superficial liposuction decreases greatly the post liposuction irregularities and lumpiness and avoids liposuction complications as, hyperpigmentation, skin sagging, asymmetry, and depressions and waviness.

Endermologie is an essential part in early post liposuction treatment, by the mechanical and physical properties it helps in avoiding most irregularities and lumpiness, helps skin to retract in a smooth natural way, while improving the cellulite and treating the superficial fat layer that was not addressed during liposuction.

Starting exercise early prevents deep lumps and augments the natural curves of the body.

In conclusion, good, predictable contour results are achieved when using and applying this protocol and by having the patient participate actively in

the body contour cycle. The technique has improved outcome, with better skin contraction and minimization of complications, resulting in the optimization of liposuction as a safe procedure.

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