



Beautiful Buttocks: Characteristics and Surgical Techniques

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Introduction

The buttocks are an important element of sexual attraction and a major component of the concept of beauty in most cultures and ethnic groups. Consequently, for several decades, a number of surgeons have been attempting to correct abnormalities or deficiencies in the shape and volume of this region, either by resection and skin adjustments, placement of gluteal prostheses, liposuction and lipoinjection, or other techniques. However, to date there are no anthropometrical studies and aesthetic analyses of the gluteal region that define the anatomical features of beauty that should be preserved or recreated, the extent to which projection or volume should be increased, and the proper harmonic proportions between the buttocks and the rest of the body.

To make teaching easier in our postgraduate course, we decided to study what characteristics

and anatomical features or details contribute to attractive buttocks. In addition, we wanted to determine the ideal postero-anterior projection point for each body archetype. Once we had this information, we divided the anatomical variables of the gluteal region into categories to establish a classification system that could be used to identify the surgical techniques necessary to correct each set of defects and sculpt the details that differentiate attractive buttocks from those with good projection and volume but lacking harmony with the rest of the body.

Aesthetic analysis of the gluteal region

To determine those anatomical features that make the gluteal region attractive and seductive, we studied 2400 photographs of nude females ages 20 to 35 viewed from behind, in different postures and actions, and from different time periods (1954

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through 2001) as a way to identify each of the features and anatomical elements that create harmony and beauty. The final analysis included 1320 photographs in which the gluteal region was seen full from behind, in three-quarter-profile from behind, and in full profile (lateral view). Other views included subjects standing up or lying face down, in full extension, and in slight flexion (no more than 15°) while walking. The selected photographs were analyzed by six certified plastic surgeons who pointed out which buttocks they considered attractive and harmonious, and those features on which this attractiveness depended.

Based on the analysis performed, four features stood out that were considered consistent features of beauty based on several anatomical structures of the gluteal region. These defining features may appear all together or independently from each other (Fig. 1).

- I. **Lateral depression.** A hollow on the lateral aspect of each buttock, bounded at the deepest point by the greater trochanter, superiorly by the insertion and belly of the gluteus medius, inferiorly by the insertion of the vastus lateralis, posteriorly by the insertion of the quadratus femoris, with the gluteus maximus belly over the latter.

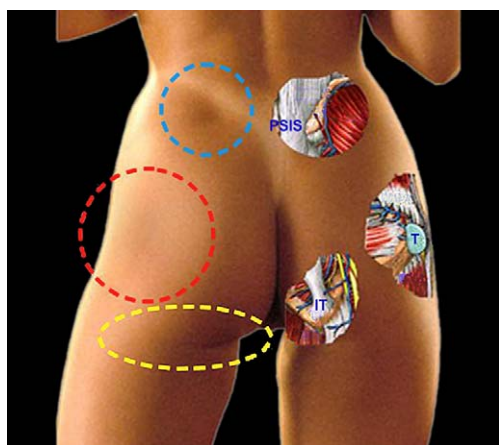


Fig. 1. Consistent features of beautiful buttocks: Lateral depression formed by the lateral border of the gluteus maximus, the quadratus femoris, and the insertions of the gluteus medius and vastus lateralis to the greater trochanter. Infragluteal fold created by the ischial tuberosity, the insertions of the semitendinous muscle and long belly of the biceps femoris, and the lower border of the gluteus maximus. Supragluteal fossettes (one on either side), over the posterior superior iliac spine, created by the multifidus muscle, the lumbodorsal aponeurosis and the insertion of the gluteus maximus. V-shaped crease, arising in the proximal portion of the gluteal crease.

- II. **Infragluteal fold.** This fold is the horizontal crease under the ischial tuberosity. Its inferior border is formed by the insertions of the semitendinous muscle and the long belly of the biceps femoris in the ischial tuberosity. Superiorly it is formed by the lower border of the gluteus maximus. It arises in the median gluteal crease and follows a lateral curve, with a proximal concavity. It should not extend laterally beyond the union of the semitendinous muscle with the biceps femoris.

- III. **Supragluteal fossettes.** These are the two depressions or dimples located on either side of the medial sacral crest. They are formed in their deepest part by the posterior superior iliac spine and, medially, by the multifidus muscle. In a more superficial plane, they are bounded by the lumbodorsal aponeurosis, and inferiorly and laterally by the insertion of the gluteus maximus.

- IV. **V-shaped crease.** This feature was observed in 45% of the photographs. The V crease is formed by two lines arising in the proximal portion of the gluteal crease. The two sides of the V extend toward the supragluteal fossettes and are formed by the insertion of the gluteus maximus into the lumbodorsal aponeurosis. The V-shaped crease measures no more than one third of the distance between the gluteal crease and the supragluteal fossettes.

An additional feature that may contribute to beautiful buttocks is lumbar hyperlordosis. This hyperextension of the spine in the lumbosacral region is an ethnically based feature specific to people of African descent. It also may be caused by a forced posture since childhood that results in the sacrum being horizontalized an average of 5° to 7°. In the lateral view the buttocks give the impression of greater projection than actually exists. This lumbar hyperlordosis is typically produced by the muscles in this region.

Anthropometrical analysis of gluteal projection

We concluded that antero-posterior projection is the feature of the gluteal region most responsible for its attractiveness. However, to determine the ideal projection, we had to first establish fixed landmarks that are easily identifiable, either visually or by palpation. These include: (A) the greater trochanter, (B) the point of maximal projection of the mons pubis, (C) the point of maximal gluteal projection, and (D) the anterior superior iliac spine. Once these anatomical landmarks were established,

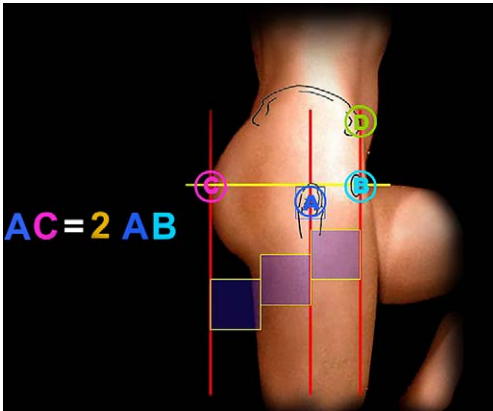


Fig. 2. (A) Greater trochanter. (B) Point of maximal projection of the mons veneris (pubis). (C) Point of maximal gluteal projection. (D) Anterior superior iliac spine. The CB line points to the maximal ideal projection of the buttocks. The ideal proportion is a 2:1 ratio between AB and AC.

we drew a vertical line through point A (which is the body's *gravity line* or axis of balance) [1]; a second parallel line through points D and B; and a third horizontal line through points C, A, and B, perpendicular to the other two and equivalent to the one described by González-Ulloa in 1979 [2]. This third horizontal line gives us the ideal plane of maximal gluteal projection (Fig. 2).

With all these parameters in mind, we set out to apply them to photographs of 132 women, 16 to 62 years old, 155 cm to 170 cm in height, and no more than 5 kg overweight. On examining points A, B, and C, and the vertical lines crossing them, we identified 32 women, with height and weight as

described, with an attractive gluteal projection. In this subgroup, we determined that the distance between points A and B is equal to half the distance between points A and C, which gives us a 2:1 ratio (Fig. 2).

When doing the same measurements in 100 patients who requested gluteal enhancement, we realized that 27 of them apparently had no gluteal projection, even though they kept the 2:1 ratio in the A-C and A-B distances. This was because of an excess of lumbar, supragluteal, and subgluteal fat, which concealed the actual gluteal projection. In this same group of patients, 35 women stated their request for more projection in this area while being satisfied with the volume. Additional measurements revealed that the ratio among the distances A-C and A-B was lower than 2:1, usually 1.5:1, and 30% of patients were found to have paralumbar and subgluteal lipodystrophy. Nineteen patients seemed to have an adequate gluteal projection; however, on examination, a lack of volume and hyperlordosis (a more horizontal sacrum) were found, with a 2:1 or slightly lower ratio. Furthermore, 13 women with an ideal or lower-than-ideal weight had a lack of volume and projection, with a ratio below 2:1. Finally, six patients over 55 years old showed signs of aging in the gluteal region, such as atrophy of the skin, fat, and muscles, and ptosis of the tissues in the area.

Five categories of buttock characteristics

For didactic purposes, we classified our photographic measurements and observations of buttock projection and other factors that contribute to or detract from the ideal into five types:

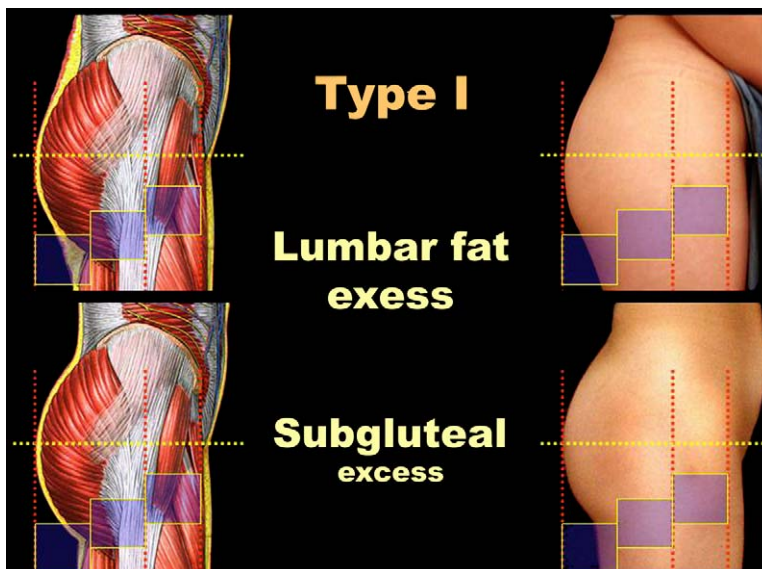


Fig. 3. Type 1. AC:AB ratio 2:1 or greater. Excess perigluteal fat.

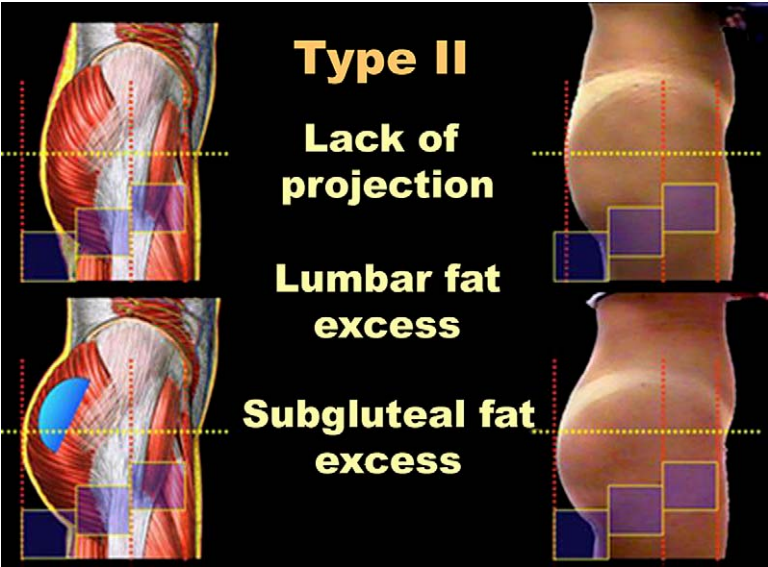


Fig. 4. Type 2. Ratio under 2:1. Adequate volume, lack of projection.

Type I. Patients have a 2:1 or higher projection ratio, adequate volume, and good projection, but an excess of supragluteal, paralumbar, and subgluteal fat (Fig. 3).

Type II. Patients have a ratio lower than 2:1, with enough volume and latero-lateral projection but little antero-posterior projection. Thus, these patients have an appearance of wide hips with relatively flat buttocks. They usually also have an excess of supra- and subgluteal tissue (Fig. 4).

Type III. This group encompasses women with lumbosacral hyperlordosis. Usually, the

projection ratio is 2:1 or slightly lower. The horizontalization of the sacrum gives the appearance of a large antero-posterior projection. However, patients lack volume and side-to-side projection, and sometimes there is an excess of subgluteal fat (Fig. 5).

Type IV. These women usually have an athletic build and are very thin or at their ideal weight, with no excess fat and with a lack of volume and projection of the gluteal muscle mass, which leads to an android (cylindrical) pelvis. This category includes patients with a ratio below 2:1 and a lack of both

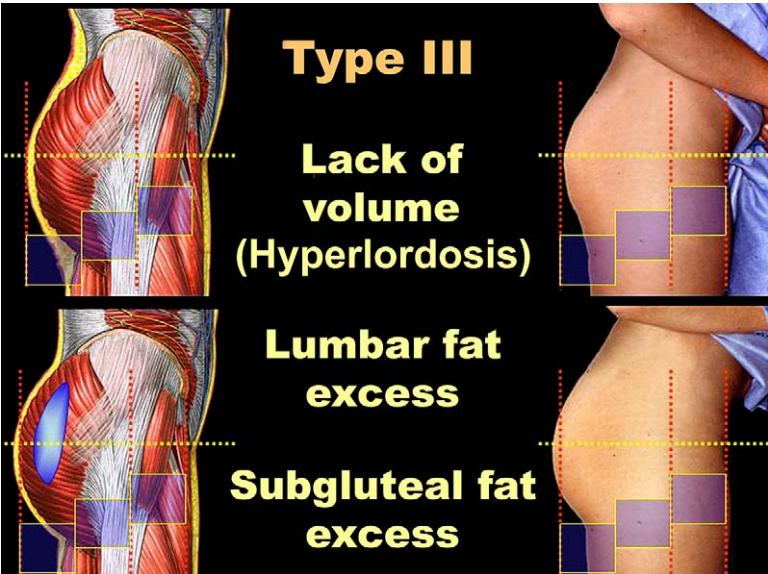


Fig. 5. Type 3. 2:1 ratio or greater. Lack of volume, usually with lumbar hyperlordosis.

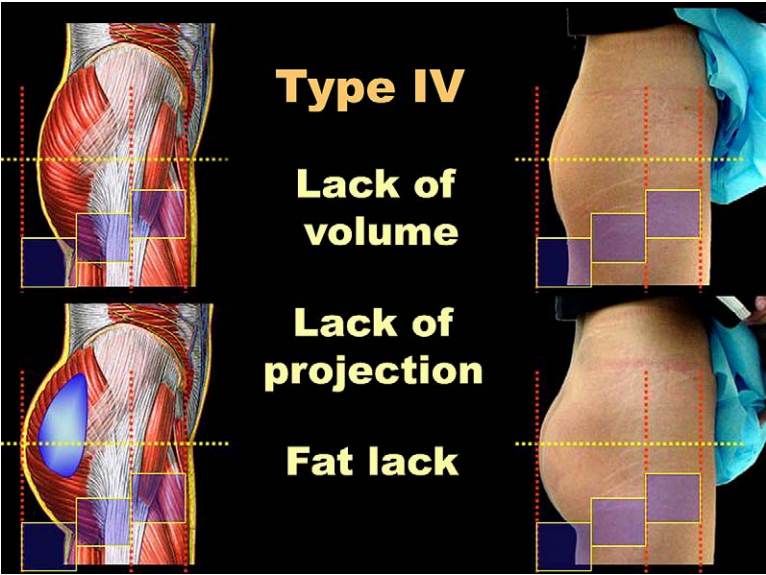


Fig. 6. Type 4. Ratio less than 2:1. Lack of antero-posterior and side-to-side projection due to a lack of volume.

projection and volume; occasionally, there may be some excess subgluteal fat (**Fig. 6**).

Type V. These patients are older women with “senile buttocks” characterized by hypotrophy of skin, fat, and muscle, and ptosis of tissues in the area (**Fig. 7**).

Surgical plan for the various types of buttocks

Once these categories were established, we were able to outline a gluteal treatment plan for each buttock type.

Type 1. Since these patients have acceptable projection and volume, and they have an excess of fat only in the paralumbar and supra- and infragluteal regions, they can be managed solely with lumbar, supragluteal, and subgluteal liposuction, as well as liposuction in the trochanteric region [3]. Subgluteal liposuction to emphasize the fold may eventually lead to gluteal ptosis, especially when it extends lateral to the mid gluteal line.

Type 2. In these patients with adequate gluteal volume but inadequate antero-posterior projection, we recommend using a round, small-based, high-profile gluteal implant of the Robles design (Silimed, Rio, Brazil) [4]. This type of implant offers

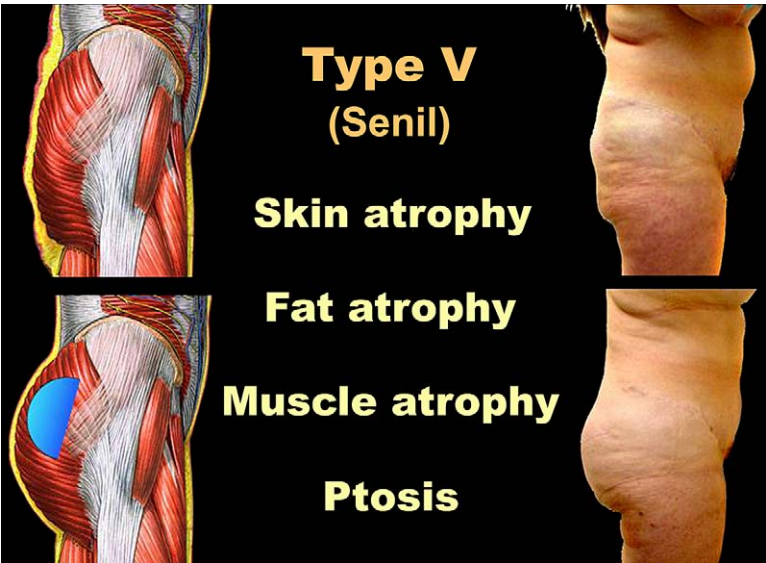


Fig. 7. Type 5. Senile buttocks. Hypotrophic, ptotic tissues.

antero-posterior projection without increasing side-to-side projection, which is adequate because of the patient's own gluteal volume. In addition, we perform liposuction in those areas of the buttocks that need it.

Type 3. In these cases, lumbosacral hyperlordosis because of horizontalization of the sacrum simulates a large gluteal projection. However, there is usually a lack of gluteal volume and therefore little side-to-side (medial and lateral) projection. Furthermore, the profile of the buttock makes a straight line with the thigh because of subgluteal lipodystrophy. To correct these defects, we recommend almond-shaped gluteal implants, with a wide base and low profile [5]. This Otero design implant (Silimed) produces good medial and lateral projection but little antero-posterior projection. As with the above types, liposuction is usually needed in the perigluteal region to emphasize the infragluteal fold.

Type 4. In these cases, we recommend a wide-based, high-profile implant of the Vergara design (Silimed) [6]. These implants produce good medial and lateral as well as antero-posterior projection. If any region shows lipodystrophy, liposuction is also performed.

Type 5. These patients are usually at least 50 years old. All body tissues and especially the buttocks begin to show signs of atrophy and ptosis, with a lack of tone and turgor. These defects cannot be corrected solely with the use of gluteal implants and liposuction. In most cases, some kind of skin excision is needed, a variety of which have been described in the literature [7–9].

Surgical technique

The surgical technique we use is based on the one described by Robles and colleagues [4], with some variations. The main difference lies in the preoperative planning and marking, which we do with the patient in a standing position so the midline can be accurately drawn (Fig. 8, line A). Next, the patient is asked to sit on the edge of the examination table so the sitting line can be marked exactly where the buttocks rest on a flat surface. This line usually coincides with the greater axis of the piriformis muscle and is perpendicular to the midline (Fig. 8, line B). Another line is drawn 1 inch above and parallel to the sitting line to demarcate a safety zone. Dissection should not extend below this line to avoid injuring the inferior gluteal vessels and nerves (Fig. 8, line C). Once these lines are drawn, the anterior superior iliac spines are located and a line drawn from each of them to the coccyx so they meet in the midline (Fig. 8, line D). With these oblique lines in place, we palpate the point of

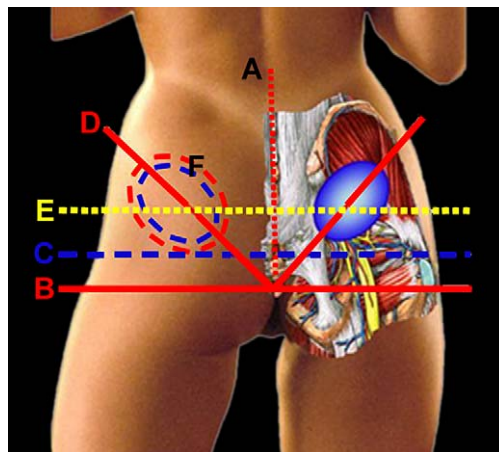


Fig. 8. A, midline; B, sitting line; C, line of the safety zone; D, oblique lines from the anterior superior iliac spines to the coccyx; E, line over the point of maximal projection of the mons pubis, indicating the ideal point of maximal gluteal projection; F, outline of the implant's base plus margins for dissection. The point of maximal projection of the implant should be placed under the intersection of lines D and E.

maximal projection of the mons pubis and draw a horizontal line, perpendicular to the midline, that crosses the two oblique lines. This is the ideal location of the point of maximal gluteal projection and the point of maximal projection of the implant (Fig. 8, line E).

As the final step in the surgical planning, the outline of the implants is drawn overlying the oblique lines to make sure that the point of the implant's maximal projection coincides with the ideal point of maximal buttock projection. If the implant is almond-shaped, care should be taken to align its greater axis with the oblique line. This guarantees the implant will have the same direction as the greater axis of the muscle belly. If the implant is round, the only concern is centering it beneath the point of maximal projection. We often mark an outline 2 to 3 cm outside the proposed implant pocket to serve as a guide for dissection (Fig. 8, outline F). Once the implant pocket is marked, we outline the areas that will receive liposuction (Fig. 9).

The patient is positioned on the operating table in the prone position. The operation begins with liposuction of the areas previously outlined. Then a 6- to 7-cm-long incision is made in the midline, about 5 to 7 cm above the anus. The various tissue planes are incised down to the deep layer of the superficial fascia but not into this layer, which should not be disturbed because it lies immediately above the presacral fascia. Once in this plane, two parallel incisions are marked lateral to the midline and 1 to

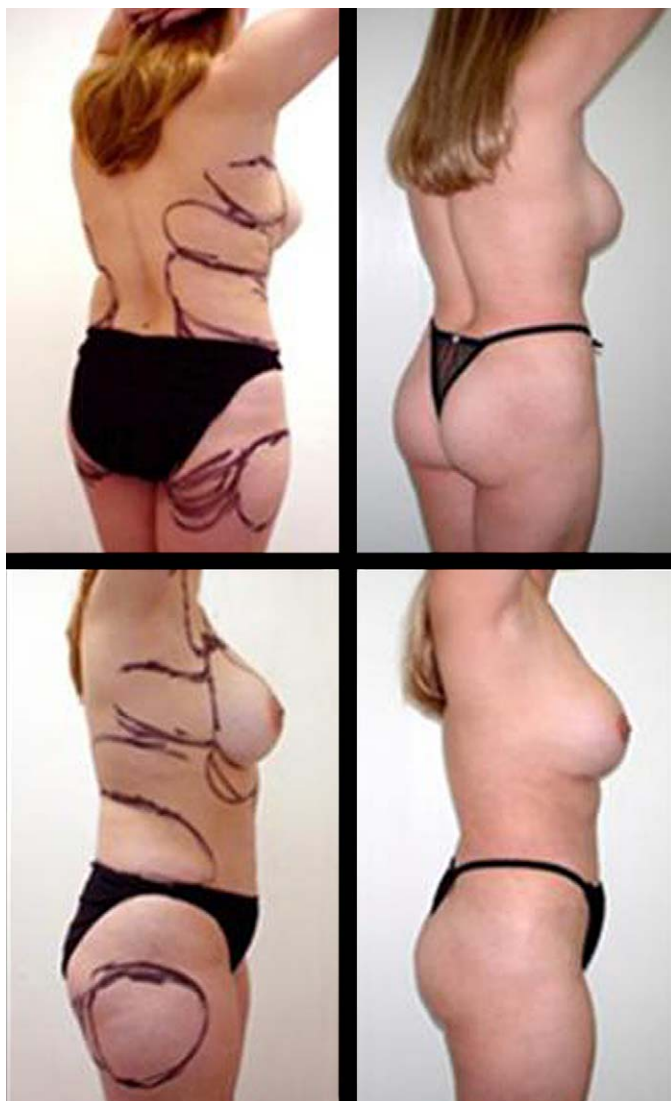


Fig. 9. Marking of the areas for liposuction.

2 cm apart, which will allow access to the right and left buttocks (Fig. 10).

To prevent injury of the presacral fascia, the lateral dissection must be carefully performed above the deep plane of the superficial fascia and continued to the insertion of the gluteus maximus and 1 cm beyond the muscle belly. The superficial fascia is then incised and the muscle fibers are separated parallel to the fibers down to the deep fascia, taking care not to create a cavity inside the muscle. The deep fascia is incised and the subgluteal plane entered. The initial dissection is easy and bloodless, but upon arriving in the upper lateral quadrant of the gluteus muscle, dissection often becomes more difficult due to the intermingling of aponeurotic fibers of the gluteus maximus and

gluteus medius. In the lower quadrants, dissection between the gluteus maximus and the piriformis muscles is quite difficult. To avoid injury to the neurovascular bundle, we perform no dissection in this area. Hemostasis is checked and the implant is inserted (Fig. 11), making sure that it is placed in the correct axis and beneath the ideal point of maximal projection.

Deep planes are closed with absorbable sutures. When suturing the skin, full-thickness subdermal stitches are placed first, anchored to the edge of the presacral fascia between the two incisions made in it. This is done to indent the skin and simulate the gluteal crease (Fig. 12). Skin closure is completed with either interrupted stitches or with a continuous intradermal suture, and the wound is

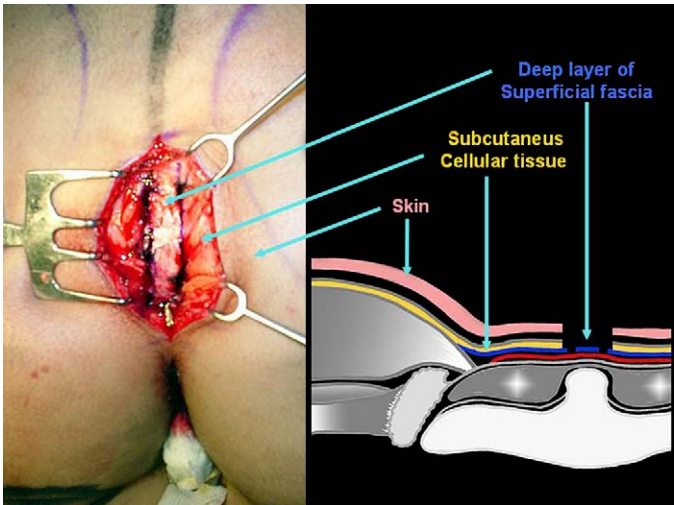


Fig. 10. Dissection by planes down to the deep layer of the superficial fascia. Two incisions are marked parallel to the midline, 6 to 7 cm long and 1 to 2 cm apart, to enter the right and left buttocks.

sealed with collodion. The patient wears a girdle with gluteal openings for 4 to 6 weeks.

Discussion

To our knowledge, our aesthetic and anthropometric analysis of the gluteal region for surgical purposes is the first study of its kind. We consider our proposal to be a starting point from which other clinical investigators may modify or add to the measurements and parameters. Our suggested classification system is in no way intended to be a gold standard but merely a guide for surgical decision making when considering whether and where to place gluteal implants, choose the most appropriate implant type, and decide whether and where liposuction should be performed.

This classification of buttocks into the five types also facilitates teaching residents and other surgeons how to perform an aesthetic analysis of the buttocks. Thus, when we speak of a Type 1 buttocks, we understand that the patient has adequate projection and volume, but these features are concealed by supra-gluteal, perilumbar, subgluteal, and sometimes trochanteric fat (Fig. 13). In these cases, liposuction may help to create a well-defined infragluteal fold, although excessive liposuction can predispose to gluteal ptosis. A Type 2 patient is one with an acceptable volume but not enough projection (Fig. 14). When we classify a patient as having Type 3 buttocks, we mean the patient has sufficient antero-posterior projection but inadequate volume, which produces a lack of medial and lateral projection. This buttock type is usually associated with ethnic or postural hyperlordosis (Fig. 15).

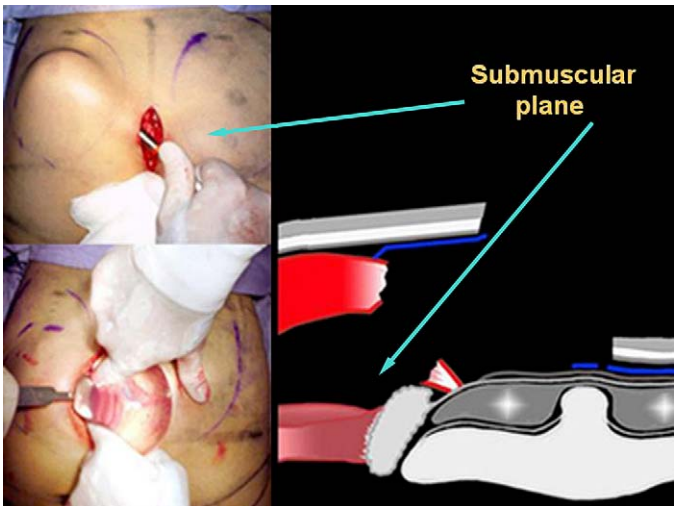


Fig. 11. Dissection of the subgluteal cavity and placement of the implant.



Fig. 12. Dermal suture to emphasize the gluteal crease. Immediate pre- and postoperative views.

While the types help us to understand the kind of defect or defects, they also guide us to the surgical procedure required to best correct them and produce the optimal results. For instance, a Type 4, thin woman with an android pelvis and little antero-posterior and medial to lateral projection is an ideal candidate for wide-based, almond-shaped, Vergara-

style implants to achieve good projection (**Fig. 16**). In contrast, a Type 5, senile buttock is best corrected with the skin resection and subcutaneous fat repositioning of a buttock lift, with or without gluteal implants (**Fig. 17**) [3,7,8].

The goal of this paper is to outline a way of identifying aesthetic defects of the buttocks by

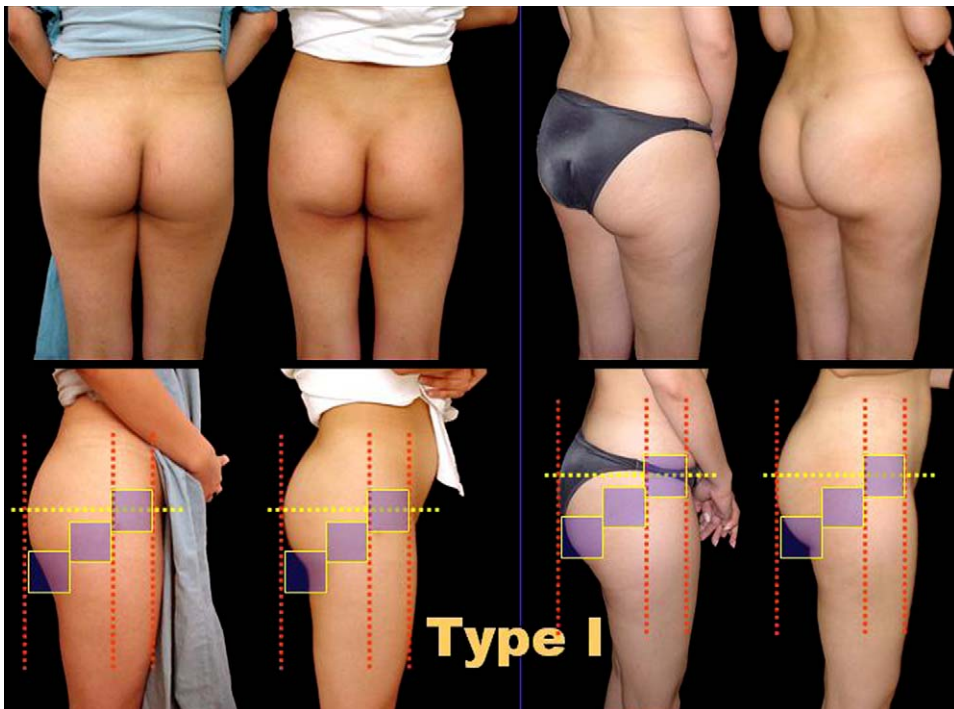


Fig. 13. Type 1 patient. Pre- and postoperative views. Only liposuction was performed.

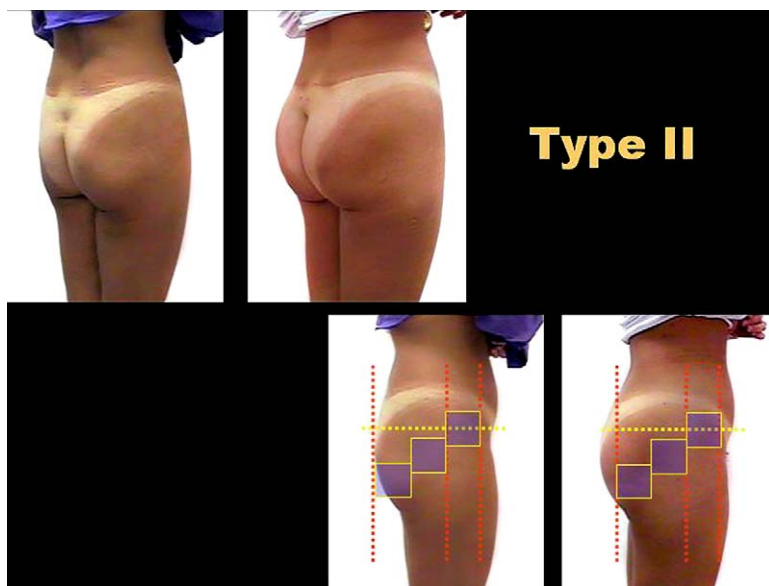


Fig. 14. Type 2. The preoperative view shows an adequate volume, with lack of projection and excess perigluteal fat. Postoperative with round, high-profile prostheses.

contrasting them with the features present in women considered to have beautiful buttocks. This classification system is based on the observations of a series of photographs of a large number of women. By comparing beautiful buttocks to those with less than ideal features, we were able to define five buttock types. A small number of patients who underwent gluteal augmentation as “sample cases” demonstrated the validity of the proposed surgical techniques described here. We encourage the larger plastic surgery community to explore this method further and either validate or reject this approach to gluteal recontouring.

The preoperative markings we use facilitate the safe and anatomical placement of gluteal implants that have maximal projection above the sitting line [2] and are aligned with the greater axis of the muscle belly, ie, the oblique line from the anterior superior iliac spine to the coccyx. This positioning creates or emphasizes the lateral depression of the buttocks, as well as the small V-shaped crease arising from the upper end of the gluteal crease.

Robles and colleagues [4] described several reasons for placing gluteal implants in the submuscular space. We agree that the submuscular plane offers advantages that other planes do not.

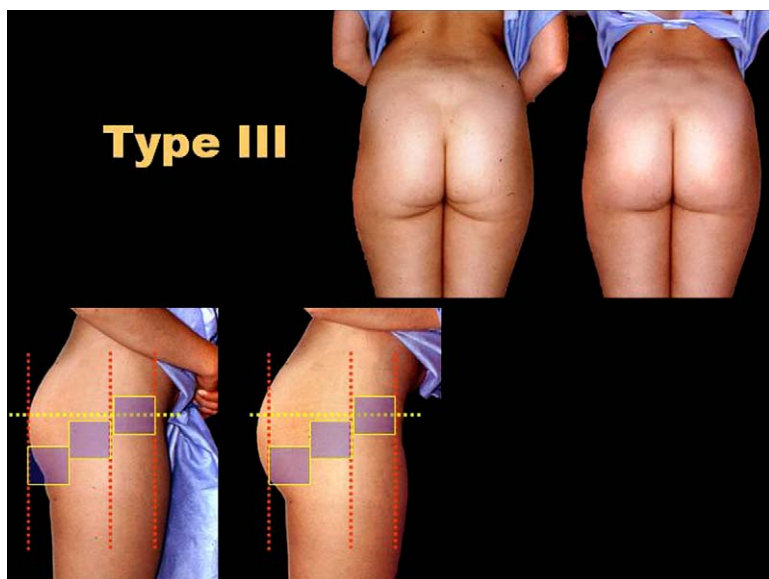


Fig. 15. Type 3. Hyperlordosis, excess fat, and double infragluteal fold. Lack of antero-posterior and lateral-to-medial projection. Wide-based, almond-shaped, low-profile prostheses were placed.

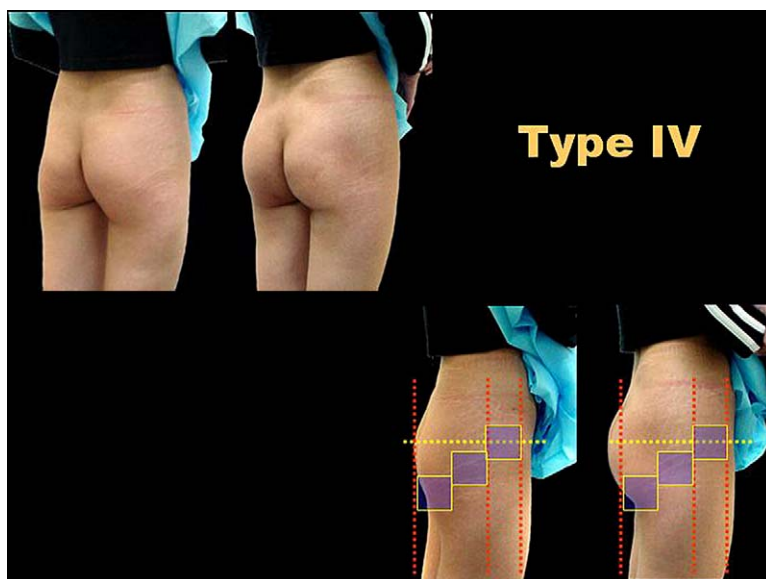


Fig. 16. Type 4. No projection and no volume. Almond-shaped prostheses with a very wide base and very high profile are necessary.

Submuscular positioning provides an actual cavity between the gluteus maximus, gluteus medius, and piriformis muscles. In addition, the dissection is virtually bloodless because it is bounded by muscle fasciae and, consequently, easy to dissect, with minimal risk of injury to the muscles or neurovascular structures. Furthermore, it is easily approached from the intergluteal crease. The main disadvantage is the difficulty of identifying the correct plane.

The placement of gluteal implants in the subcutaneous space described by González-Ulloa [2] has several drawbacks, including ptosis of the implant,

capsular contracture, malposition, and seromas (Fig. 18). These problems often predispose to subsequent removal of the implant. Placement of implants in the intragluteal, or intramuscular, space [6] has other disadvantages. The main drawback is the difficulty of consistently dissecting the gluteus maximus muscle with a uniform thickness. If the dissection is uneven or too superficial, visible and palpable irregularities may be produced (Fig. 19). In addition, bleeding from the muscle dissection is often significant, and obtaining adequate hemostasis often makes the procedure more complicated and prolonged.

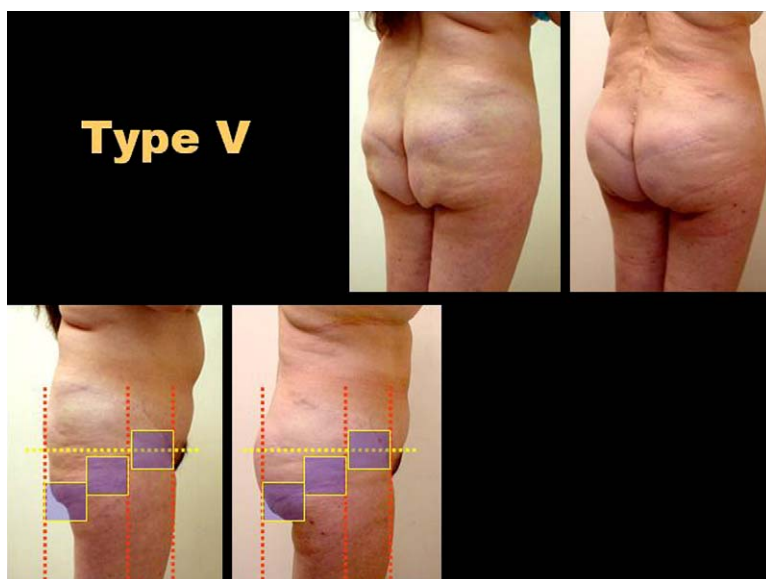


Fig. 17. Type 5. Senile buttocks. A dermocutaneous adjustment (skin excision) is performed. High-profile implants with any shape may be used.

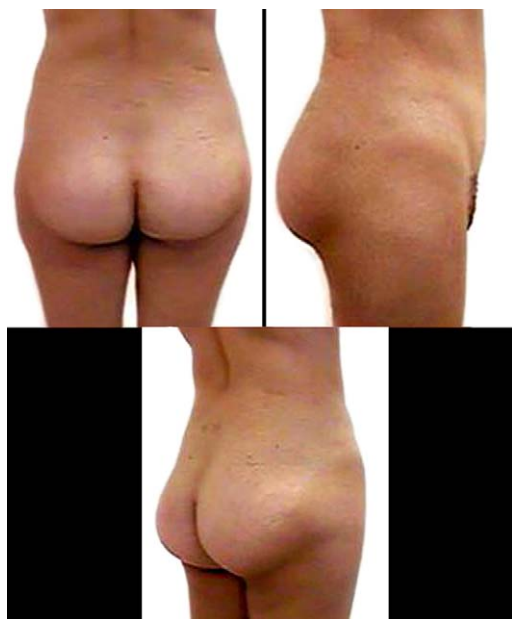


Fig. 18. Three-year postoperative view after placement of prostheses in the subcutaneous space. Severe capsular contracture and ptosis of the implants have occurred.

Summary

In summary, the ideal buttocks involve more than projection and volume. A balanced, harmonious proportion with the rest of the body is a hallmark of gluteal beauty. Surgeons must be familiar with those features that characterize beautiful buttocks before they can attempt to recreate them. The outcomes of gluteal augmentation or other buttock contouring procedures improve when surgeons first perform systematic aesthetic and anthropometric analyses that characterize the different types of buttock deformities and apply this information to plan the most appropriate surgery for each patient. Careful marking of the ideal implant location, as well as safe and accurate surgical techniques for

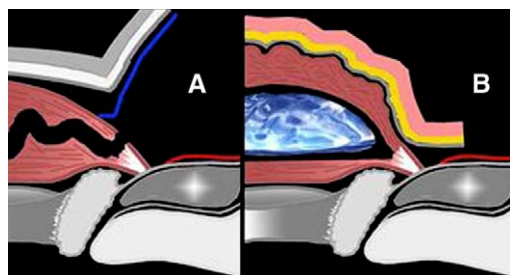


Fig. 19. (A) Intragluteal dissection. (B) Once the prosthesis is in place, internal pressure makes ripples visible on the skin surface.

liposuction and implant placement, make it possible for us to achieve optimal postsurgical results that produce increased patient satisfaction and enhanced body image.

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