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Clinical Anatomy in Aesthetic Gluteal Body Contouring Surgery

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In any emerging area of plastic surgery, clinical anatomy plays a critical role in improving outcomes. Aesthetic gluteal body contouring surgery is no exception to this tenet. In this rapidly growing and evolving field, avoiding complications is imperative for the continuing advancement and acceptance of this group of procedures into the armamentarium of every plastic surgeon. This review highlights some of the clinically relevant anatomy important to improving patient satisfaction and avoiding complications.

Topical anatomical landmarks

Fig. 1 illustrates a number of superficial anatomical landmarks that have clinical relevance to gluteal augmentation with either alloplastic implants or autologous tissue [1–8]. Not only do these landmarks provide a "road map" for the procedure, but they have significant implications for the postoperative appearance of specific gluteal features (Fig. 2) judged to be appealing by our society [9].

The iliac crest, which forms the superior border of the buttocks, is a palpable and often visible landmark for guiding incision placement in a posterior buttock lift or circumferential body lift (CBL) with autologous gluteal augmentation (discussed in another article of this volume). The incision placement can be varied superiorly or inferiorly with respect to the iliac crest to achieve a more aesthetically pleasing postoperative result.

The posterior superior iliac spines (PSIS) form two distinct depressions in the sacral region that result from the confluence of the PSIS, the multifidus muscles, the lumbosacral aponeurosis, and the insertion of the gluteus maximus. These anatomical depressions are characteristics of attractive buttocks and attempts should be made to create, define, or unmask this anatomical structure to improve surgical outcomes [9].

These depressions serve as the superior corners of the "sacral triangle," which is defined by the two PSIS and the coccyx as the inferior border of the triangle [1]. This triangle is aesthetically pleasing and its borders should be enhanced during surgery if possible. Liposuction, an "inverted dart" modification of the posterior CBL incision (Fig. 3), and a sacral triangle plateau flap (Fig. 4) are all surgical maneuvers aimed at enhancing the sacral triangle [10,11]. A recent publication on gluteal aesthetic units, which are illustrated in Fig. 5, describes how to enhance the sacral triangle and other gluteal

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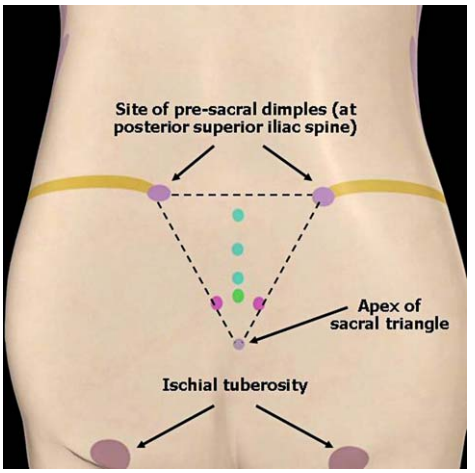

Fig. 1. Superficial anatomical landmarks: iliac crest, posterior-superior iliac spine (PSIS), sacrum, coccyx, and ischial tuberosity.

units during body contouring procedures [10]. The sacral triangle also should be marked before augmentation with implants and serves as the medial borders of the dissection (Fig. 6). The positions of submuscular, intramuscular, and subfascial implants in relation to fascial and muscular structures are shown in Fig. 7.

Another important topical landmark is the lateral trochanteric depression formed by the greater trochanter and insertions of thigh and buttocks muscles, including the gluteus medius, vastus lateralis, quadratus femoris, and gluteus maximus. This depression is important in the aesthetics of an athletically toned buttock, although some ethnic groups—such as African Americans and US Hispanics—prefer that the trochanteric depressions not be emphasized or even filled if pronounced. See the article by Roberts and colleagues elsewhere in this issue for further exploration of this topic.

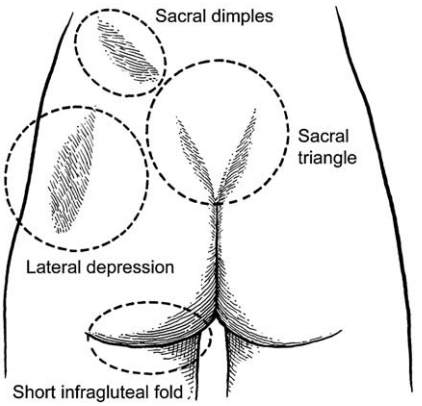

Fig. 2. The sacral dimples, sacral triangle, lateral depression, and a short infragluteal crease and important gluteal aesthetic landmarks.

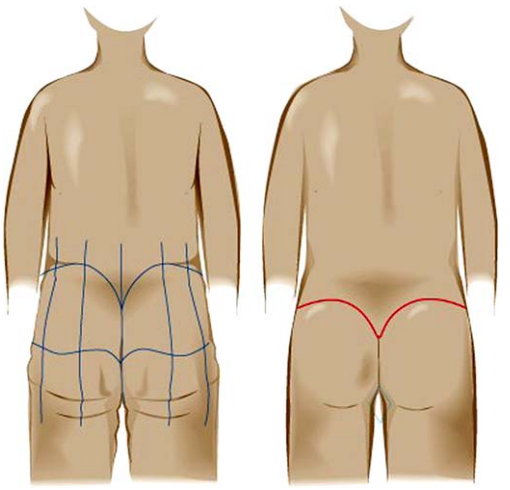

Fig. 3. Preoperative markings and postoperative position of the "inverted dart" modification to the posterior circumferential body lift incision.

The infragluteal fold serves as the inferior border of the buttock proper and is formed by thick fascial insertions from the femur and pelvis through the intermuscular fascia to the skin. These structures create the fixed, well-defined sub-gluteal sulcus [12]. The length and definition of the infragluteal fold play important roles in aesthetically pleasing buttocks. A longer infragluteal fold suggests an aged, ptotic, and deflated-looking buttock with skin and fascial excess. In contrast, a shorter infragluteal fold contributes to a full, taught, and youthful buttock [13]. The ischial tuberosities, while not a part of the buttock proper, are the bony prominences upon which people sit.

Subcutaneous fat distribution

Projection of the buttocks in humans was likely an evolutionary adaptation to erect posture and bipedal locomotion. Most of this projection derives from the mass of the gluteus maximus muscle and associated lumbar lordosis of the spine. The amount of subcutaneous fat content also contributes to buttock projection and accounts for the round shape of the buttocks. This fat, along with its fascial investments, forms the lower border of the buttock proper. Subcutaneous fat content in the buttock region is usually greater in women versus men, infants versus adults, and in some ethnic groups. It is postulated that these differences in subcutaneous gluteal fat play a role in padding the buttock region for sleeping in the supine position and evolved as an adaptive mechanism for heat dissipation while maintaining sufficient adipose stores critical to normal physiology [14].