Case Report

Thigh Augmentation: Submuscular Placement of a Silicone Gel-Filled Prosthesis

Jaime Anger, MD

Dr. Anger is from the Department of Plastic Surgery, Hospital Israelita Albert Einstein, Sao Paulo, Brazil, and is a member of the Brazilian Society of Plastic Surgery and an international member of the American Society for Aesthetic Plastic Surgery.

The development of silicone prostheses for augmentation of the calf and buttocks has led a small number of our patients to consider the use of implants for aesthetic thigh augmentation. In this article, we report a new thigh augmentation technique using submuscular placement of silicone gel-filled implants. Fresh cadaver dissections were performed to measure the space between the gracilis muscle and adductor magnus and longus that defined the type and the size of the implant. The procedure was performed with the patient in a supine position, using a posterior approach through an incision in the gluteal fold. A space was dissected between the gracilis and the adductor magnus for placement of an asymmetric calf implant. Two patients received 180 cc implants; a third patient received a 140 cc implant. There were no complications and results were satisfactory. (Aesthetic Surg J 2005;25:.)

Although thigh augmentation at the medial border is still rarely performed in our practice, the media attention attendant on development of silicone implants for calf and buttocks augmentation has led a small number of patients to consider the use of such implants for aesthetic correction of the thigh.

In 1995, Kon reported the treatment of a patient with thigh atrophy by placement of a custom-made smooth silicone gel-filled implant at the lateral border of the thigh. The implant was placed subcutaneously. To our knowledge, Kon’s paper is the only report of such a procedure. The main challenge in placing a gel-filled implant subcutaneously in the thigh is the need to maintain long-term implant stability, allowing the patient full freedom of movement, particularly in the lower limbs. Our experience with breast augmentation procedures suggested that submuscular implant placement would be the optimal solution for correction of the thigh. After reviewing the anatomy of the medial compartment of the thigh, we considered the option of locating the implant beneath the gracilis muscle and over the adductor magnus and longus muscles. Bloch studied the anatomy of the gracilis muscle in fresh cadavers in 1984 and reported on its measurements and blood supply. Based on his results, we repeated the fresh cadaver dissections and found sufficient space between the gracilis muscle and the adductor magnus muscle to maintain an implant without damage to the blood vessels or nerves (Figure 1). Our measurements revealed a maximum space that was 23 cm long and 5.5 cm wide at the superior portion, and somewhat narrower at the inferior portion (Figure 2, A). These dimensions made it possible to use commercially available asymmetric calf implants for thigh augmentation (Figure 2, B). Based on these findings, we developed a technique for medial thigh augmentation using a submuscular approach. In this article, we describe the technique and report on the results in 3 patients.

Surgical Technique

Preoperative markings were made with the patient in the supine position. The available space was marked at the medial border. A calf model implant was placed in the proposed position, and the inferior and superior edges were marked (Figure 3).

With the patient in the ventral position, a 5 cm access incision was made at the medial part of the posterior gluteal fold. Dissection was performed medially and
downward toward the superior mark at the medial border of the thigh (Figure 4). The gracilis muscle was digitally separated from the adductor magnus muscle, creating a small opening. A long dissector with a 5 cm width and a “spoon-like” edge (Figure 5) was placed at this opening and the space between the 2 muscles was gently dissected downward until the inferior mark was reached, always maintaining the relationship with the medial border of the thigh.

After creation of the pocket, the implant was introduced through the gluteal incision. Care was taken to ensure that the implant was placed completely between the muscles. No drainage was used. The incision was closed in layers. Postoperatively, the patient was dressed in a pressure garment, with graded stockings worn over the garment (Figure 6). The patient was allowed to walk with the garment and stockings on the first postoperative day. Patients were able to walk normally after 2 days and resume activities of daily life after 5 days.

Figure 1. Fresh cadaver dissection showing the gracilis muscle displaced with 3 vascular pedicles at its anterior border.

Figure 2. A, B, A 180 cc (23.1 X 5.8 cm) asymmetric calf implant placed between the gracilis muscle and the adductor magnus muscle.

Figure 3. The implant position is marked preoperatively.
Results

Between August 2003 and March 2004, 3 patients were treated with this surgical technique. In 2 cases, 180 cc asymmetric calf implants (23.1 X 5.8 cm) were placed; the third patient received a 140 cc implant (19.7 X 5.4 cm). Patients were able to walk normally after 2 days and resume activities of daily life after 5 days. There were no complications. One patient reported intermittent pain during the first 3 postoperative days. Patients were highly satisfied with the results (Figures 7 and 8).

Discussion

The lack of tissue volume at the medial border of the thigh is associated with thin patients or with age atrophy in older patients. The most frequent complaint is an unaesthetic thigh contour when wearing stretch garments that expose the lack of contact between the thighs, even when the legs are brought together.

Subcutaneous volume augmentation in the thigh is challenging because of the difficulty in maintaining the aesthetic results after placement of prosthesis in the sub-

Figure 4. A 5-cm access incision in the posterior gluteal fold and the position of the tunnel to be dissected to reach the gracilis muscle are marked.

Figure 5. A dissector is used to create the pocket.

Figure 6. A pressure garment and graded stocking are worn postoperatively.
cutaneous pocket and the danger of complications. The results of augmentation with fat grafting or other type of fillers are neither permanent nor stable. Placement of an implant in the submuscular pocket can prevent implant displacement or migration only if the space is well dissected and if the implant is smaller than the pocket, resulting in total muscle coverage.

The posterior access was preferred because of vascularization of the gracilis muscle. More than 90% of the dissections revealed 3 or 4 pedicles reaching the muscle through its anterior border. Anterior access from the inguinal fold involves the risk of possible damage to the femoral vessels and branches. Moreover, a posterior incision placed at the gluteal fold results in a less visible scar compared to the anterior approach.

The dissection between the muscles is simple to perform, with minimal risk of bleeding—even during blind dissection—if carefully performed. Submuscular placement helps to both protect the implant and achieve a more natural-looking result, particularly at the inferior portion of the thigh. Because the muscular pocket includes the sartorius muscle, the implant is completely immobilized. Postoperative recovery is not difficult, and the patient can resume normal activities in a few days.

Figure 7. A, C, Preoperative views of an xx-year-old woman. B, D, Postoperative views 8 months after thigh augmentation.
Longer-term follow-up in a larger patient series is necessary to draw conclusions about the stability and security of the described procedure. Nevertheless, the technique appears to be promising because of its simplicity, the lack of complications, and the high degree of patient satisfaction.

References

Reprint requests: Jaime Anger, MD, Av. Brigadeiro Luiz Antonio, 3889, 01401-001 Sao Paulo, Brazil.

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doi:10.1016/j.asj.2004.11.001
AQ1 AUTHOR: Deleted dash before cc throughout article, OK?
AQ2 AUTHOR: Replaced “paper” with “article”, OK?
AQ3 AUTHOR: Same as query 2.
AQ4: Author: the Results section mentions 3 patients, not 2.
AQ5: Author: Could you be more specific about how the gracilis was identified and differentiated from the adductor magnus and semimembranosus muscles? Our technical editor noted that this was more difficult to do in the proximal leg than it is distally.
AQ6: Author: Was the inferior extent of the pocket secured in any way to prevent the implant from sliding down toward the knee?
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