An Unusual Complication following Gluteal Fat Grafting: A Case Report

Ariel Neiman, MD*
Omer Sadeh, MS†
Shay Dudaie, BS†
Aziz Shoufani, MD*

Summary: Subfascial abscess of the lateral thigh is a relatively uncommon complication following gluteal fat grafting due to their subclinical presentation. Despite its rarity, subfascial abscesses can be dangerous and life-threatening when diagnosis is delayed. In this case report, we present a 28-year-old woman who presented to our hospital with swelling and erythema following a gluteal fat grafting procedure performed abroad. Our initial treatment which included transcutaneous drainage and systemic antibiotics was unsuccessful. This conservative approach was influenced by the patient’s initial procedure and attempt to conserve aesthetic appearance. The severity of the complication was not entirely known until advanced radiological imaging (computer tomography imaging) was performed several days after hospitalization and revealed large subfascial abscess. Surgical drainage with fasciotomy was required due to a persisting high fever and fluid accumulation in the lateral thigh. Approximately 1L of purulent fluid was collected, containing large bulks of fat particles and blood clots that drained from the subfascial space. The wound was left open and treated with vacuum-assisted closure. Direct penetration of cannula through fascial layer, insertion of harvested fat that exceeds intrinsic properties of fascia, or unknown intercompartment connections can lead to deep subfascial migration of fat. Aggressive measures that include immediate advanced radiological imaging should be performed when the severity of damage and migration of injected fat are unknown. Transcutaneous drainage is not effective for subfascial abscesses due to formation of large fat particles and blood clots that cannot be drained. Immediate incision and drainage should be considered for similar cases. (Plast Reconstr Surg Glob Open 2021;9:e3515; doi: 10.1097/GOX.0000000000003515; Published online 8 April 2021.)

CASE REPORT

An otherwise healthy 28-year-old woman presented to our emergency room with severe intense pain of the lateral right thigh 4 days after she underwent gluteal augmentation with a fat grafting procedure done abroad. Details regarding the surgical procedure were not attainable, but postsurgical incisions were noted in the superior gluteal regions most consistent with gluteal augmentation findings. Initial physical examination showed good general condition, body temperature of 36°C, and severe swelling of the right thigh with mild erythema. Blood tests revealed elevated WBC count (18,000/mm³) and CRP level 27. A Doppler ultrasound ruled out deep vein thrombosis. She was admitted to our plastic surgery department for observation and pain control. On postoperative day (POD) 5, Cefazolin 1g TID was administered for suspected cellulitis. On follow-up during hospitalization, POD 4–7 showed mild improvement in the swelling of the right thigh and treatment are discussed.

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reduced pain. On POD 7, the patient’s body temperature rose to 39°C, with elevated WBC count and CRP level. A computed tomographic scan image with contrast material confirmed subfascial accumulation of fluid (2.7 × 8 × 21 cm) in the lateral aspect of the thigh suspected for abscess (Fig. 1). Additionally, subfascial fat accumulation below the right gluteus medius and minimus, with no signs of abscess, was noted on imaging. Transcutaneous drainage of the lateral thigh abscess with an FR10 catheter was done under ultrasound control. The drain was left in place for continuous drainage. On POD 9, 2 days following the drainage insertion, 350 cm³ liquified fat was collected. Clinical improvement included the elimination of fever, and substantial reduction in swelling and edema. On POD 10, the drainage stopped, leading to drain removal. Drain abscess cultures grew *Enterococcus faecalis*, prompting infectious disease specialists to recommend ampicillin, metronidazole, and ciprofloxacin. On POD 12, the patient’s body temperature rose above 39°C, and WBC levels to 20,000/mm³. A second transcutaneous drainage was done under ultrasound control, which yielded 100 cm³ of purulent fluid (Fig. 2). The intravenous antibiotics regimen did not change. On POD 13, elevation in body temperature and in WBC count (20,000/mm³) persisted. Further, MRI imaging showed residual collections in the lateral aspect of the right thigh. Considering the clinical situation and the MRI finding, immediate surgical drainage was done under general anesthesia. This resulted in approximately 1 L of purulent fluid, which contained large bulks of fat particles and blood clots that drained from the subfascial space (Fig. 3). (See Video [online], which displays intraoperative findings.). The wound was left open and treated with vacuum-assisted closure. At POD 48, a delayed closure was done.

**DISCUSSION**

Our patient developed a high fever and abscess in the lateral thigh following a gluteal fat grafting performed abroad. This twice prompted transcutaneous drainage under ultrasound with a catheter drain. The patient’s aesthetic procedure prompted us to delay an invasive and
aggressive procedure in our initial conservative approach to avoid any unnecessary disfigurement. Despite this consideration, surgical drainage with fasciotomy was required due to a persisting high fever and fluid accumulation in the lateral thigh.

Subfascial abscesses are difficult to diagnose. The absence of local inflammation signs are due in part to the infection residing deep within the tissues, resulting in a delayed diagnosis. In our case, mild erythema and severe swelling were the only symptoms at admission. Early radiological studies can facilitate diagnosis of deep infections.

Transcutaneous drainage under ultrasound was not sufficient in this case, despite the drainage of a large amount of purulent fluid. This is evidently due to the aggregation of large fat particles and blood clots that could not be removed and that blocked the drains. The transcutaneous drainage ultimately provided partial treatment, which gave the impression of improvement, yet resulted in an extended hospital stay.

Grafted fat intended for gluteal augmentation should be placed exclusively in the subcutaneous space. It is unclear how the grafted fat intended for the gluteal region reached below the vastus lateralis fascia. The first explanation relates to direct penetration of the cannula through the muscle fascia layer of the lateral thigh, which could cause the fat to collect underneath the vastus lateralis muscle fascia. The second explanation relates to the fat underneath the gluteus muscle fascia. Notably, the computer tomography imaging of our patient revealed fat-filled accumulation in the gluteal muscles. We suggest 2 explanations for the migration of fat from the subfascial gluteal space to the subvastus lateralis space. The first relates to direct subfascial diffusion from the subfascial gluteal space to the subvastus lateralis space. The second relates to undocumented intercompartment connections between the gluteal region and the lateral thigh.

Delvecchio et al.1 investigated the migration of injected fat into the gluteal muscle and the relation of pressure with each intramuscular injection, a phenomenon termed “Deep Intramuscular Migration.” The authors noted a sudden drop in injection resistance during a series of gluteal subfascial fat injections, followed by a decrease in pressure. This raises the possibility of fat migration into a deeper plane and other compartments due to the increased pressure. An alternative explanation by Wall et al.4 expresses the concern of possible fat migration from the subcutaneous to the subfascial space. They described the potential recipient-site pressure gradient that can occur during lipofilling, relevance of fascial integrity, and the resultant path of least resistance for fat flow.

CONCLUSIONS
Subfascial abscesses can be dangerous and life-threatening when diagnosis is delayed. Advanced radiological imaging should be implemented immediately when patients present with unusual complications. Transcutaneous drainage is insufficient for subfascial abscesses due to the accumulation of large fat particles and blood clots that cannot be drained. Therefore, early incision and drainage should be considered at an earlier stage regardless of possible deformities following an aesthetic procedure. Further anatomical studies should be performed to evaluate the possible migration patterns in subfascial lipofilling.

Aziz Shoufani, MD
HaEmek Medical Center
Yitshak Rabin Boulevard 21
Afula 1834111
Israel
E-mail: shoufani_az@clalit.org.il

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