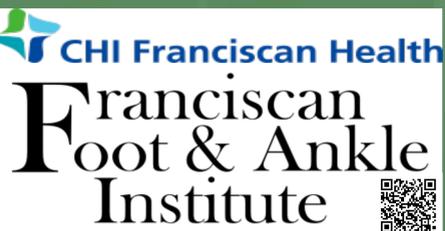


Utilization of a Peroneus Brevis Muscle Flap for Calcaneal Fat Pad Atrophy Secondary to Radiation Treatment: A Case Report and Treatment Course

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Statement of Purpose

It has been well documented that peroneus brevis muscle flaps are an excellent option for coverage of small to medium sized soft tissue defects of the distal lateral lower extremity. A unique indication for the muscle flap includes restoring the calcaneal fat pad when there is significant and painful atrophy.

Literature Review

Peroneus brevis muscle flaps are widely used for distal lateral lower extremity soft tissue defects due to their reliable blood supply, minimal donor site morbidity and lower technical demand as compared to other muscle flaps.^{1,2,3} The efficacy and utility of this muscle flap has been well documented in the literature. Since the first discussion of a distally based peroneus brevis flap in 1997, the indications for this flap have vastly expanded and the technique has been simplified into 5 steps.⁴ It has been documented that partial or full flap necrosis is a common complication, with an occurrence of up to 41%.⁴ However with advancements in post-operative dressings and wound care modalities this complication can be managed.^{3,4} In this case report, we present a patient with a unique indication for a distally based peroneus brevis flap.

Case Report

The patient is a 40-year-old male who presented with a painful lateral calcaneal scar after removal of clear cell sarcoma and subsequent radiation treatment (Figure 1). A staged procedure was planned. The index procedure included a peroneus brevis muscle flap and application of external fixator to allow for stability and full flap incorporation. A secondary procedure, performed 7 weeks later, included external fixator removal and skin graft application (Figure 3).



Figure 1. Pre-operative clinical picture



Figure 2. Intra-operative picture of muscle flap after placement



Figure 3. Intra-operative picture of skin graft placement



Figure 4. 12 month post-index procedure clinical picture

Intra-operatively adequate bulk and length from the peroneus brevis muscle to restore the calcaneal fat pad was found (Figure 2). Slight distal tip necrosis was seen at 2 weeks post index procedure, but was managed adequately with serial debridements. Following the secondary procedure, epithelialization was seen over the majority of the muscle flap. Complete muscle flap incorporation and donor site closure with 90% epithelialization was noted at 6 months post-index procedure. At 12 months post-index procedure, a small soft tissue defect with granular base remained on the plantar lateral aspect of the calcaneus (Figure 4); however, the patient reports significant improvements in pain scores, subjective ambulatory tolerance and improved quality of life.

Analysis & Discussion

The traditional applications for the peroneus brevis muscle flap are well recognized and utilized. Painful calcaneal fat pad atrophy is a less commonly seen pathology; however, when assessing these patients the peroneus brevis muscle flap should be considered as a viable option to restore the fat pad, relieve pain and improve patient function. Our case example demonstrates successful use of the peroneus brevis muscle flap for this novel indication.

References

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