Development of Multiple Epidermal Inclusion Cysts after Topaz Microtenotomy for Plantar Fasciitis: A Case Report

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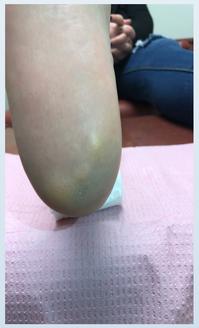
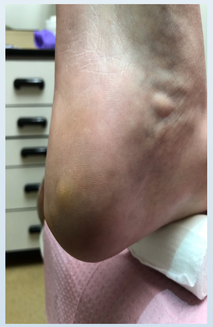
Statement of Purpose and Literature Review

Epidermal inclusion cysts are slowly developing intradermal lesions which develop after implantation of epidermal tissue into dermal tissue.[1,2,3] Less than 10% are thought to occur in the lower extremities.[6] Epidermal cysts of the foot secondary to trauma from surgical procedures are a known complication of minimally invasive surgery with elevated risk of development demonstrated in the literature.[11] Epidermal cyst development following the Topaz procedure has been described infrequently in the literature and Topaz is generally regarded to be a safe procedure with low complication rate.[9,12,14,15] Review of the literature reveals only one other published case study regarding the formation of an epidermal inclusion cyst secondary to percutaneous Topaz coblation in the United Kingdom.[9] There does not appear to be a report of multiple cysts developing after the procedure.

Therefore, the aim of the current report was to describe a case of pathology-confirmed epidermal inclusion cysts of the plantar heel which developed after undergoing Topaz coblation.





Figures 1 and 2: Clinical appearance of the cysts at the right plantar heel upon presentation to our clinic in October 2018.

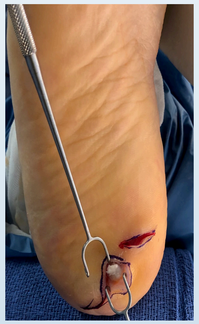


Figure 3: Cyst visible upon making the lateral lazy-S style incision.

Case Study

A 37-year-old female presented to our clinic with persistent right heel pain. Her past medical history was significant for diabetes mellitus, hypertension, and tobacco usage. She had a past surgical history notable for having Topaz coblation performed in November 2017 after being diagnosed with plantar fasciitis, which entailed 25-30 entry punctures to her right heel about the insertion of the medial plantar fascia with an angiocath needle. Post-operatively, she developed cysts along her plantar heel which caused her significant discomfort with ambulation and weightbearing. In February 2018, three cysts were surgically removed. Pathologic sections demonstrated a uniloculate, stratified squamous-lined cyst within the superficial and mid-reticular dermis and granular layer within the cyst's lining. The lumen was filled with basket-woven keratogenous debris, which were consistent with a ruptured epidermal inclusion cyst. After surgical removal in February 2018, the cysts reformed within two months and in June 2018 were again removed.

At the time of presentation to our clinic in October 2018, physical examination revealed three cysts to the plantar right heel (Figures 1 and 2). One cyst was located proximal-medially measuring 0.5 cm x 0.5 cm, a second cyst at the center measuring 0.6 cm x 0.4 cm, and a third was present lateral-distal measuring 1 cm x 1 cm. The cysts were firm and painful to palpation. Right foot radiographs from October 2018 revealed no significant underlying osseous deformity. Magnetic resonance imaging (MRI) was obtained in January 2019 to better evaluate the cysts and to determine if there were additional cysts present. MRI demonstrated three dermal-based cyst-like areas along the plantar aspect of the heel. The patient's pain had worsened and was only relieved with rest. She found it difficult to carry out her activities of daily living and therefore was amenable to surgical intervention to attempt resection of the cysts again. The operation was performed in February 2019. Under tourniquet, two separate incisions were used to remove the three cysts. Medially a transverse incision was utilized while the two lateral cysts were accessed with a lazy-S incision (Figure 3). In total, it appeared that three cysts were removed as well as two areas of possible foreign body granuloma (Figure 4). Pathologic evaluation revealed findings consistent with epidermal inclusion cyst and ruptured epidermal cyst with foreign body giant cell reaction and surrounding keratinous debris (Figure 5). At two weeks post-operatively, she was pain-free with no clinical signs of recurrence and was able to be weightbearing. By one month, she was completely healed and back to her normal activity levels and able to ambulate without pain. At six months post-operatively, no further cysts were noted to the patient's heel (Figure 6).

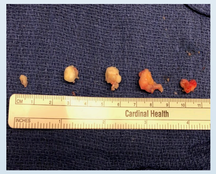


Figure 4: Intra-operative appearance of the removed cysts. In total, it appeared that three cysts were removed and at least two areas of possible foreign body granuloma were also removed.

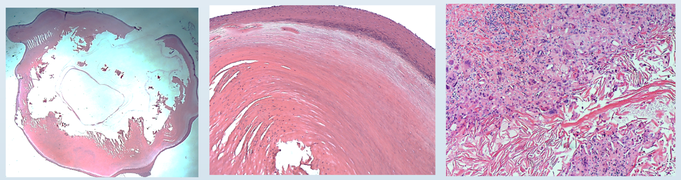


Figure 5: Sections of the specimens sent for pathologic evaluation revealed epidermal inclusion cysts with foreign body giant cell reaction and surrounding keratinous debris.

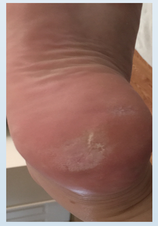


Figure 6: Clinical picture at 6 months post-operatively with no further demonstration of any additional epidermal cysts.

Analysis and Discussion

Recommended treatment for epidermal inclusion cysts is surgical excision. It is important to ensure the whole cyst is excised, including its capsule, and that extension of the cystic boundaries is carefully demarcated to ensure complete removal and prevent re-growth or recurrence of these lesions.[3,10] While reported complications of this procedure infrequently in the literature, we believe this is the first report to document a case of multiple epidermal cysts after this procedure. Inherent to the nature of the Topaz procedure, each puncture of the plantar soft tissues possesses the ability to induce trauma and thus cyst formation. We believe in the present case, the patient developed multiple cysts which slowly developed over the course of one year from the initial procedure. We cannot completely exclude the possibility that these were recurrence of the same lesions after excision. However, recurrence of epidermal cysts of the foot is rare and the rate of recurrence of these lesions specifically as it pertains to the foot have not yet been studied to our knowledge.

In conclusion, this case demonstrates that of a patient with multiple epidermal cysts which developed after the Topaz procedure. Epidermal inclusion cysts of the heel can cause patients significant discomfort with completing daily weightbearing activities and other activities of daily living. We present this case to highlight this complication of a minimally invasive procedure which is reported infrequently in the literature and to stress the importance of complete excision of such lesions to improve patient satisfaction and outcomes.

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