Epidermal Inclusion Cyst following Percutaneous Trigger Finger Release

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Abstract

Keywords

- complication
- epidermal inclusion cyst
- percutaneous
- release
- trigger finger

Epidermal inclusion cyst is a benign lesion that commonly occurs due to inclusion of epidermal cells into the dermal or deeper layers in a trauma event. Percutaneous release is a minimally invasive technique, and good surgical outcomes can be achieved. However, the percutaneous procedure is a puncture injury, and the epidermal inclusion cyst is reasonable to become a possible complication. In this article, we presented a case of trigger finger in left middle finger. The patient underwent percutaneous release as the treatment and a second percutaneous release 5 months later due to recurrence of the symptoms. An epidermal inclusion cyst was noted 5 months thereafter, and it was treated with excision. With this case, we need to be more aware of this possibility if a mass lesion without infection signs occurs in the released area and recommend sonography if there is a mass lesion a few months after the procedure.

Introduction

Trigger digit is a common problem encountered in clinical practice. Intratheath injection of steroid is a good first-line treatment, and good outcomes can be achieved.¹ If nonoperative treatments fail, further surgical treatment should be considered. Open release and percutaneous release of the involved pulley are both commonly used methods and both can have good surgical outcomes.² Percutaneous release is a minimally invasive technique that can be performed with a puncture wound. However, complications are still a concern due to the nature of the blind performance under the skin.

Epidermal inclusion cyst is a benign lesion that commonly occurs due to inclusion of epidermal cells into the dermal or deeper layers in a trauma event. The epidermal cells with growth ability can reproduce and produce the keratinous debris that can then form a cyst containing lamellated keratin.^{3,4} The tumor grows slowly, forming a round shape with the whitish color of the keratin.

Case Report

A 68-year-old woman was well without any underlying medical disease. She visited our clinic due to recurrent trigger

finger (Quinnell grade III) in the left middle finger (LMF), which had been treated once with intratheath steroid injection 5 months previously.⁵ Percutaneous release was then performed to treat her trigger finger. The surgery was performed under local anesthesia as an office-based surgery by a surgeon whose expertise was level III (experienced specialist) in Tang's grading system and who had performed more than 1,500 percutaneous release operations for trigger digits by the time of the surgery.⁶ The percutaneous release was performed using an 18-gauge needle. The patient's symptoms were relieved in the postoperative 2-week follow-up. However, the symptoms recurred 4 months later, and the patient came back to our clinic 5 months after the surgery. The percutaneous release was performed again for the LMF. The follow-ups revealed that the triggering had been completely relieved.

However, the patient came back to our clinic 8 months after the second surgery and complained that a gradually growing and protruding mass had appeared at the released area 5 months after the second release. She denied any traumatic episode involving the left hand after the last operation. The mass was whitish in color just beneath the skin (► Fig. 1). No Kanavel's signs were found at the involved LMF.⁷ Aspiration was performed, but only a small amount of whitish fluid could be drawn. Painkillers and oral antibiotics were

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Fig. 1 Photograph 8 months after the second percutaneous release showing a protruding mass, whitish in color, beneath the skin.

Fig. 2 Photograph 20 months after the second percutaneous release showing an enlarged mass.

prescribed, due to a suspected diagnosis of furuncle formation. At the follow-up 1 week later, no change in the mass was seen. Aspiration was performed again, and it showed the same results. No microorganism source could be identified from the microorganism culture of the first-time aspirated fluid. The patient did not want treatment for the mass, because her life was not affected by the lesion. The mass grew in size gradually and protruded more on the skin, so she came back to our clinic 12 months after the second aspiration (► **Fig. 2**). The protruding mass showed mild erythematous change and a central whitish color; it had increased in size from that of 1 year before. However, the oval protruding mass was firm and without infection signs. Operative exploration was explained to the patient and then performed.

With a 1-cm oblique incision, a whitish, oval tumor with a well-demarcated and smooth margin was noted just under the skin layer. In the pathology examination, the tumor revealed a laminated content. An epidermal component with much keratin debris was noted (► **Figs. 3 and 4**). Epidermal inclusion cyst was confirmed.

After excision of the cyst, the patient achieved complete resolution of the symptoms and no recurrence was seen at the 3-month follow-up.

Discussion

Percutaneous release of trigger digits was first introduced in 1985, and the safety of the procedure and its excellent

Fig. 3 Content of the tumor showing whitish debris.

outcomes were reported.⁸ However, owing to the proximity of the neurovascular bundles, the vulnerability of the neurovascular structures was a concern related to percutaneous release, particularly in the thumb and index finger. Of the reported complications, a tumor-like lesion arising after the percutaneous-release procedure could be infection,

Fig. 4 Photograph showing stratified squamous cell epithelial lining and eosinophilic keratin debris in the cystic cavity (hematoxylin-eosin stain; 100x).

hematoma, scar formation, traumatic pseudoaneurysm, and traumatic neuroma.^{9–13} These problems could be differentiated based on local skin presentation, duration of occurrence, and the characteristics of the mass. To our knowledge, there have been no reports of epidermal inclusion cyst formation related to the percutaneous release of trigger digit, although there was a case report of epidermal inclusion cyst formation after a bacillus Calmette-Guerin vaccination.¹⁴

The pathogenesis of the formation of the epidermal inclusion cyst is very clear and reasonable, in that the puncture injury brings the epidermal element into the dermis layer, and then the epidermal element continues growing into the lesion. Percutaneous release is an epidermal injury, and it is reasonable that this would lead to the occurrence of the epidermal inclusion cyst, especially after repeated instances of percutaneous release. However, we cannot confirm which percutaneous release or even if the previous intrasheath steroid injection caused the tumor, although only a 25-gauge needle was used for the intrasheath injection. The needle size could affect the amount of puncture injury, but it could also affect the applicability of the pulley release. Also, some other causes could be possible for the cyst formation in this case, but those pathogenesis would be less common.

Based on our experience with this case, we believe that the diagnosis could be made earlier. In the clinical checkup for cases with a protruding mass with central white and peripheral erythema, infection with pus accumulation should be highly suspected. If there are few infection signs, other pathogenesises should be considered. Also, cases in which no pus can be drawn out and no microbacteria can be grown in the contained fluid could indicate a diagnosis other than pyogenic accumulation. A sonographic examination, if available, could be

also helpful for the diagnosis. We also recommend sonography if there is a mass lesion a few months after the procedure.

In this case, we reported the appearance and pathogenesis of epidermal inclusion cyst formation, which occurred after percutaneous release of the trigger digit. In cases with a slow-growing, protruding mass after percutaneous release, surgeons should consider this possible diagnosis earlier, if other common etiologies are not likely.

Conflict of Interest

None.

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