A rare case of a subungual epidermoid cyst treated by surgical excision maintaining maximal functionality

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Key words: dystrophic nail plate; submatrical tumor; subungual epidermoid cyst; subungual tumor.

INTRODUCTION

Some typical but nonspecific clinical manifestations of benign or malignant tumors of the subungual nail unit are tenderness of the nail plate, increased sensation of pain, slow nail growth, dyspigmentation, and nail dystrophy up to partial or complete nail loss. Differential diagnoses of tumors of the subungual nail unit can be classified into *benign solid tumors*, such as glomus tumor, keratoacanthoma, hemangioma, subungual exostosis, and soft tissue chondroma; *benign cystic tumors,* such as epidermoid cysts and mucoid cysts; and *malignant tumors*, such as squamous cell carcinoma and melanoma.[1] Given the rarity of some of these lesions, clinical diagnosis can be difficult, and further diagnostic steps are necessary to rule out slowly growing malignant tumors of the nail unit.

Physical examination and radiological imaging are noninvasive tools for more accurate differentiation between benign and malignant tumors of the nail bed. High-resolution ultrasonography with color doppler and magnetic resonance imaging (MRI) can be useful to rule out vascularity or bone involvement in subungual tumors.[1]

If a tumor of unknown origin is suspected, it is necessary to obtain tissue for histologic examination. Even if the origin is suspected to be benign, surgery is usually needed because of pain or functional limitations. Knowledge of the anatomy and physiology of the nail unit, combined with minimally invasive techniques, will help to avoid permanent damage, ranging from dystrophic growth to complete nail loss.[2]

Abbreviation used:

MRI: magnetic resonance imaging

CASE REPORT

A 54-year-old man consulted our dermatology outpatient clinic with a 1-year history of a slowly growing dystrophic nail plate of the left thumb that was sensitive to pressure. The patient recalled traumas with subsequent recurrent subungual hematomas of the thumb, as shown in the photograph from his first visit to our department (Fig 4, *A*).

Physical examination revealed a whitish-colored, nodular-shaped lesion in the middle of the proximal nail bed, which was visible through the nail plate of the left thumb. The nail plate distal to the subungual lesion was thin and dystrophic, chipping easily at the fingertip, and the nail plate sitting on top of the tumor was also thinned.

We performed T2-weighted MRI to rule out bone and vascular involvement. The MRI revealed a slightly visible tumorous broadening of the left thumbnail with adjacent tissue reaction but intact cortical bone (Fig 1).

Extirpation under Oberst block anesthesia with a tourniquet using a glove was performed to combine diagnostic exploration with treatment of the subungual tumor. The middle third of the nail plate was carefully incised and lifted, sparing the lateral two thirds. A whitish encapsulated nodule was identified through a small arcuate incision in the nail matrix and carefully removed. Two resorbable 8-0 surgical

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Funding sources: None.

IRB approval status: Not applicable.

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JAAD Case Reports 2021;8:67-70.
2352-5126

https://doi.org/10.1016/j.jdcr.2020.12.018

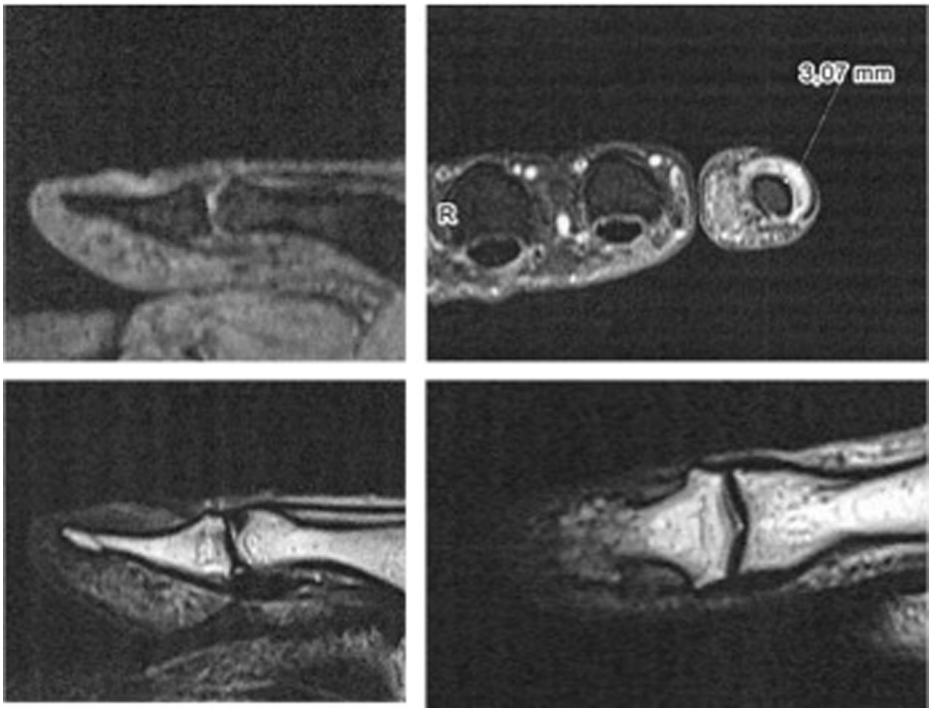

Fig 1. Magnetic resonance imaging (MRI) prior to the operation showing a tumorous broadening of the thumbnail with adjacent tissue reaction but no bone involvement.

sutures were placed to readapt the matrix. The nail plate was then flipped back and secured with cyanoacrylate adhesive glue applied to the nail plate. The lateral two thirds of the nail plate served as splints to stabilize the repositioned middle of the nail plate. The following week, a gel coating (clear shellac) was applied over the whole thumbnail to further stabilize the nail plate and seal the incised nail ends to avoid mechanical trauma (Fig 2).

Light microscopy revealed fragments of a cyst with epithelium, showing a granular cell layer toward the interior compact orthokeratotic horn (Fig 3). The dermis showed extended infiltrates dominated by multinuclear giant cells containing phagocytized keratin. This confirmed the diagnosis of an (irritated) epidermoid cyst, with granulomatous foreign body reaction, after previous rupture, and no indication of malignancy.

One week after surgery, the patient presented at a follow-up visit and was already pain free. Following surgery, the patient sent monthly updates and reported no pain. Five months after the operation, the nail was completely regrown with no residual indication for surgical intervention (Fig 4).

DISCUSSION

Epidermoid cyst is a frequent benign growth that is commonly found on the trunk but can occur anywhere on the body. There are only a few case reports describing palmar, plantar, or, as in our case, epidermoid subungual cysts.[3-6] The clinically indistinguishable isthmus catagen cyst, also referred to as trichilemmal cyst, can be histologically distinguished by the missing granular layer and is found on the head in up to 90% of cases. The term "onycholemmal cysts," which sometimes occurs in the literature, refers to isthmus catagen cysts that are found in the area of the nail unit of the finger or the toe. Onycholemmal cysts are frequent incidental findings that are up to 1 mm in diameter and lined with concentric keratin.[7]

The pathologic mechanism of epidermoid cysts in the subungual space is still controversial. Two main hypotheses under discussion are previous trauma with entrapment of epidermal tissue and embryonic cell rest.[8] Epidermoid cyst of the thumb was first described in 1930 by Harris.[9] Since then, several more cases of epidermoid cysts of the terminal phalanx have been reported, the majority with a history of previous trauma of the affected finger.[4,6,10]

This case report should raise awareness of epidermoid cysts in the differential diagnosis of subungual tumors and share our experience from clinical presentation to final diagnosis. Epidermoid cysts are usually asymptomatic, but they can cause tremendous pain and consequently handicap when located in the subungual space. The treatment of choice is surgical resection, which is also performed to

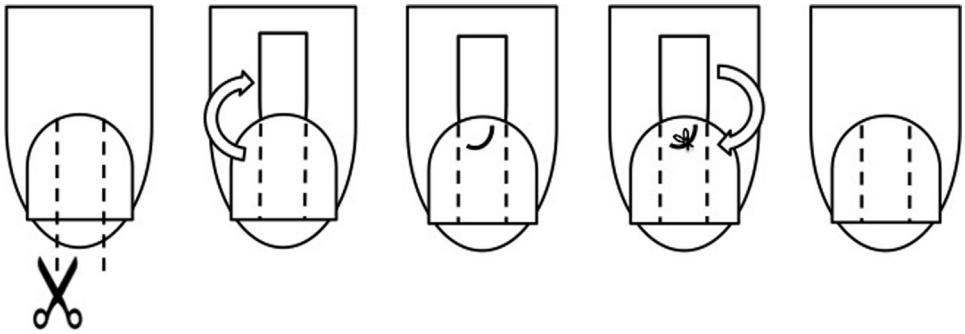

Fig 2. With a right-handed and left-handed scissors and the flat part of the scissors always facing toward the middle, the middle third of the thumbnail is cut and lifted up so that the matrix becomes visible. A small arcuate incision in the matrix is used to extirpate the tumor. Then the incision is closed with 1 or 2 single button sutures. The nail is then repositioned, and a cyanoacrylate adhesive on top seals the incision in the nail.

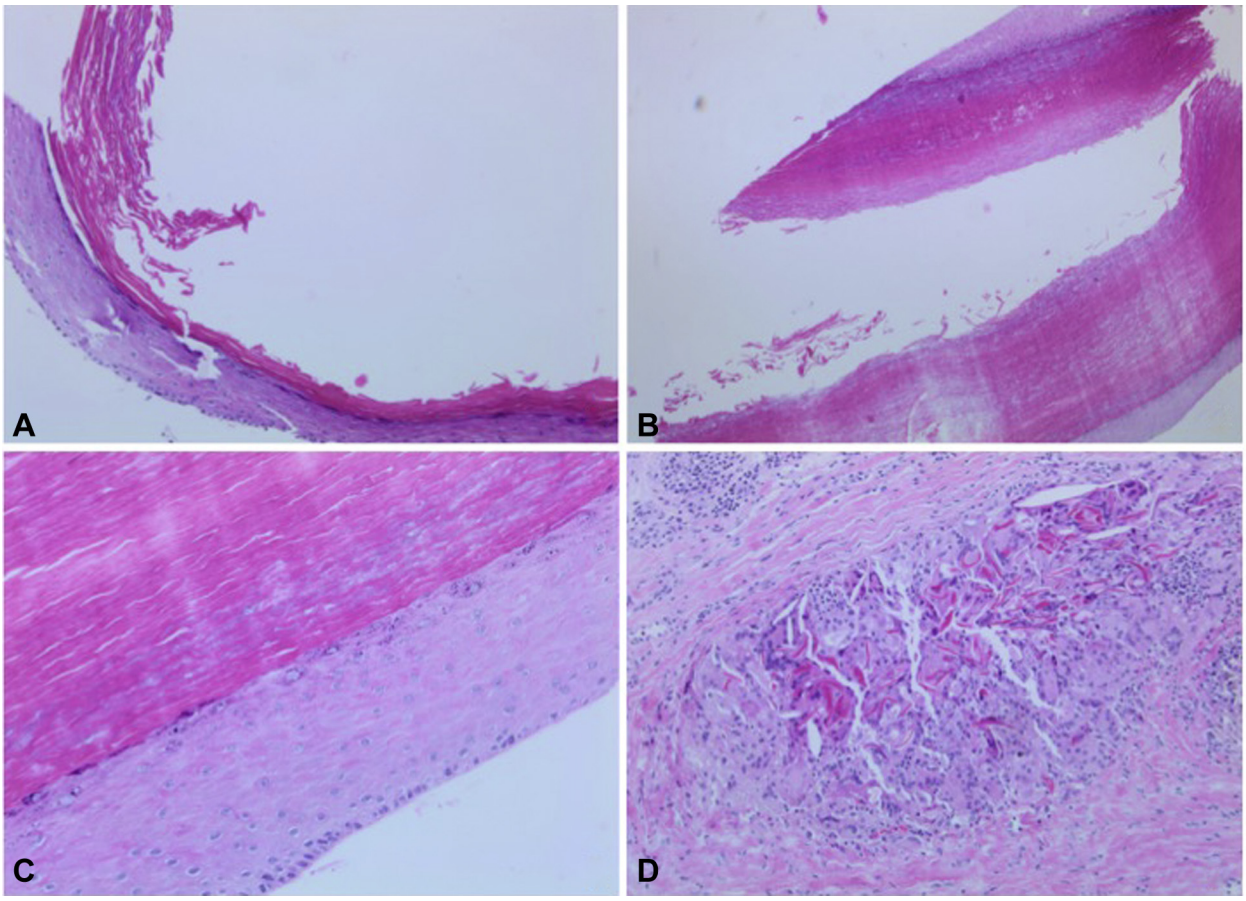

Fig 3. Light microscopy shows fragments of a cyst, the wall shows a granular cell layer, and the inner part is filled with compact orthokeratotic horn. (Hematoxylin-eosin stain; original magnifications: **A** and **B**, ×40; **C** and **D**, ×200.)

confirm the diagnosis histologically. In this particular location, a very precise excision to remove the complete cyst wall helps to avoid recurrence and consequent reoperation in this delicate area. Although horizontal or longitudinal incisions of the matrix were favored in the past for fear of fissuring of the nail, in our experience, an arcuate incision is best suited to allow for complete removal of submatrical growth with no risk to subsequent nail growth when performed delicately, as demonstrated here. This case report provides an elegant example of an excision where the finger regained functionality

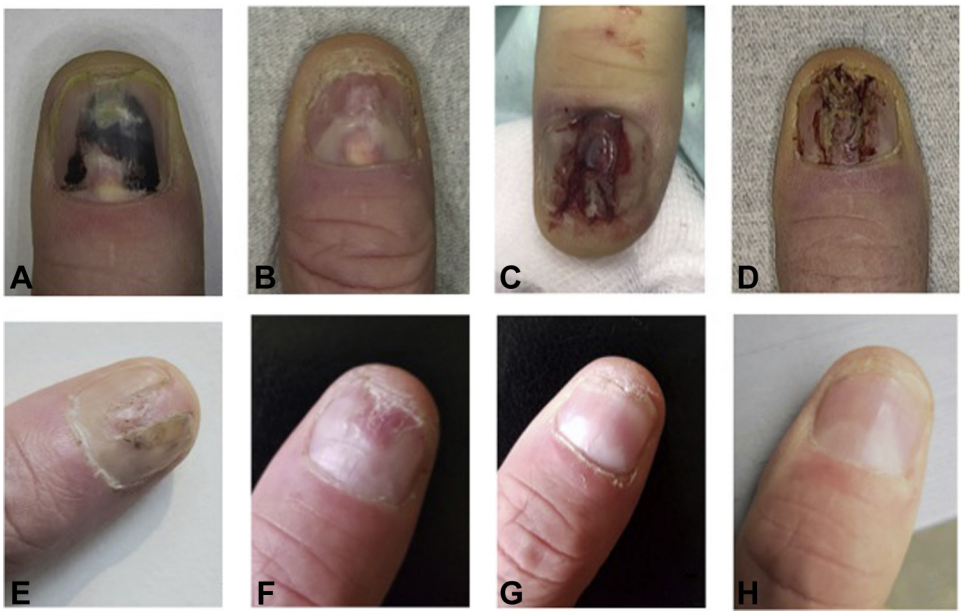

Fig 4. **A**, The patient's first visit to our practice with a subungual hematoma of the left thumb. **B**, He returned after the hematoma had dissolved. Note the subungual swelling and discoloration in the matrix. **C**, Immediately after surgery. The middle third of the nail is almost paper-thin. **D**, Follow-up 1 week after surgery. **E-H**, Follow-up 2, 3, 4, and 5 months after surgery.

immediately after surgery due to stabilization of the surgical site by the laterally remaining untouched nail splints and the application of cyanoacrylate adhesive immediately after surgery and later gel coating to protect the nail plate.

Conflicts of interest

None disclosed.

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