

Unique Variation of Barber's Disease: A Case Report

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Summary: Barber's disease is an occupational-related disease in which small hair fragments penetrate the dermis of the hand. Although there is limited literature related to the topic, barber's disease classically involves the interdigital space of hairdressers' hands. In this case report, we report an undescribed variation of the condition. The case involves a female hair stylist who presented to the office with numerous hair splinters under the nail plate of her dominant thumb. Subsequent evaluation revealed cystic destruction of the distal phalanx of the thumb. Despite preoperative suspicion for osteomyelitis, pathology revealed reactive bone fragments associated with surrounding tenosynovial tissue and no evidence of osteomyelitis. The proposed etiology of this finding is the inflammatory process related to a hair abscess that formed with a sinus originating in the lateral nail fold. The goal of the case report is to bring to light yet another variation of barber's disease. (*Plast Reconstr Surg Glob Open* 2022;10:e4513; doi: 10.1097/GOX.0000000000004513; Published online 16 September 2022.)

Barber's disease is an acquired occupational disease caused by short hair clippings that penetrate the dermis of the hands. It is most commonly associated with barbers and hair stylists who are exposed to the short, needle-like, hair clippings produced when trimming a male client's beard or head. Interestingly, it has also been reported in other professions such as dog groomers and sheep shearers.^{1,2} The described disease classically involves the interdigital spaces of the hand.³ The purpose of this case is to report an undescribed variation of barber's disease involving the paronychium, which led to the erosion of the distal phalanx.

CASE PRESENTATION

A 46-year-old, right-hand-dominant White female hair stylist presented to our clinic with complaints of right thumb swelling that had waxed and waned for 8 months. Initial treatment with separate courses of cephalexin and clindamycin was unsuccessful with recurrence of the symptoms. On examination, the patient had several hair fragments beneath the nail, tenderness over the distal phalanx, and evidence of chronic paronychia. X-ray of the thumb revealed cystic changes of the distal phalanx (Fig. 1). A subsequent magnetic resonance image (MRI)

showed an ill-defined area of decreased T1 and contrast enhancement within the distal phalanx along with associated contrast enhancement of the overlying nailbed. With the ongoing pain and suspicion of osteomyelitis, we offered the patient surgical exploration.

Under a digital block and finger tourniquet, the ulnar one-quarter of the right thumb nail plate was avulsed, where numerous 1–2 mm short hair fragments were uncovered. More interestingly, a sinus in the ulnar paronychial fold was identified from which additional hair fragments were expressed (Fig. 2). Further exploration revealed volar extension down to an erosive cyst in the distal phalanx where additional hair fragments were present (Fig. 3). Decortication and sequestrectomy of the cavity were performed with a rongeur and curette. Debrided soft tissue and bone were sent for microbiology and pathology. The cultures of the tissue revealed skin flora. Surprisingly, pathology revealed reactive bone associated with surrounding tenosynovial tissue and no evidence of osteomyelitis. The incision was closed with absorbable suture, and a soft sterile dressing was applied.

At 4-month follow-up, the patient's right thumb was well healed and had pain-free full range of motion (Fig. 4). She has since returned to work as a hairstylist and uses protective gloves.

DISCUSSION

Barber's disease is a seldomly reported condition. It was first described at the San Francisco Dermatology Society in 1942 by Allington and Templeton⁴ and Templeton,⁵ and since that time, limited additional reports have been published. In most reports, the

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Fig. 1. Preoperative x-ray demonstrating cystic destruction of the distal phalanx of the thumb.

condition is described as a small, symptomless opening on the dorsum of the interdigital web.³ In other cases, patients routinely extract hair fragments from the sinuses in the webspace of their hands. The basis of the lesions' pathology stems from the imbedding of a hair fragment into the epidermis and subsequently penetrating the dermis, thus inciting a foreign body reaction. The subsequent chronic inflammatory response can lead to formation of sinuses and cysts.⁶ Microscopic review of the tissue by Joseph and Gifford⁷ described a pseudofollicle formation lined primarily with keratin. These tracts can be simple and superficial or develop into deeper tracks that communicate with a cyst within the dermis or subcutaneous tissue.

After an extensive review of the limited published literature, there is only one other reported case of barber's disease affecting the fingertip as opposed to the interdigital webspace. Grant and Mahaffey⁸ report of a young barber who developed a sinus of the pulp



Fig. 2. Intraoperative photograph demonstrating numerous hair fragments originating from sinus in the ulnar paronychium.

of the long finger. Surgical exploration of the patient had similar intraoperative findings as we found with our patient. The cyst and sinus tract had no significant bacterial growth except for skin flora, and bright field microscopy confirmed chronic inflammation of the soft tissue.

Barber's disease more commonly affects the dorsal interdigital web space as opposed to the fingertip pulp as a result of the less robust epidermis and dermis on the dorsal surface of the hand. The ridged skin from hands is on average 400–600 μm thick compared with the non-ridged skin, which is in the range of 75–150 μm .⁹ Layer-by-layer dermal analysis by Vela-Romera et al¹⁰ demonstrated that most layers of ridged skin were thicker than those of nonridged skin, with the only exception being the basal layer, which consisted of a similar caliber of a single-cell layer in both skin types. With these structural differences, the palmar skin is more resistant to environmental factors, such as hair fragments.



Fig. 3. Intraoperative photograph depicting dissected sinus extending down to cyst eroding into the distal phalanx of the thumb.

Unique to our case is the sinus origin in the paronychium of the finger. The paronychium is a vulnerable location for external factors to evade the natural defense system such as the thick epidermis of the palmar aspect of the hand. In our case, the patient sustained multiple hair splinters under the nail plate and in the ulnar nail fold. The ensuing pathological response was similar to what has been previously published. The waxing and waning nature of the symptoms confirmed the chronicity of this pathological process.

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Fig. 4. Postoperative photograph 4 months after surgery.

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