Original Contribution

Pincer nail: aesthetic concept in surgery

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Summary

Although pincer nail deformity (PND) treatment is time consuming independent of whether it is based on surgical or conservative procedures, long lasting beneficial results are found only after surgical intervention. Typically destruction of the lateral matrix horns either surgically or by phenol cauterization or even ablation of the matrix is performed. In the past these procedures mainly aimed at relief from pain; however, currently more patients ask for the preservation of the nail unit and a good cosmetic outcome. Today reconstructive results that meet the patient expectations are available. An adapted novel surgical method which will preserve the matrix horns while correcting the shape of the phalanx and preventing renewed adhesion of the nail bed to the phalanx is presented. Therefore the restoration of a normal width-to-length ratio of the nail plate with a cosmetically appealing result becomes possible.

Surgical steps in an affected right toenail are presented.

Keywords: aesthetic nail, pincer nail, surgery

Case history

A 46-year-old male presented with a tubular deformity of the nail plate of the right great toe that was pinching the medial nail bed. The pathology caused progressive digital discomfort and pain, hindering the patient from normal walking. The close-up view of the right toenail shows a plicated nail demonstrating the overcurvature of the nail plate that consequently increases distally (Fig. 1a,b).

Radiographic examination showed a regular interphalangeal joint. An enlargement of the base of the distal phalanx with prominent medial osteophyte formation and an osteophyte formation on the terminal tuft of the great toe were observed. Some structural diminution of the bone of the distal phalanx was found (Fig. 2a,b). Fungal nail infection was excluded by microscopic examination and negative cultures.

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Methods

First, the nail plate was dissected from the nail bed with a Freer septum elevator and a mosquito hemostat. The nail plate showed a trumpet like formation on its distal part whereas there was only an unremarkable transverse curvature in its proximal part (Fig. 3).

After proximal-to-distal avulsion of the nail plate the subungual hyperkeratosis was carefully dissected of the distal nail bed. An incision was made on the tip of the digit about two millimeters beyond the distal groove of the hyponychium. Sharp dissection was used to release the curved nail bed corium and paronychial fold from their bony attachments all the way back under the germinative matrix. The nail bed could now be elevated and flattened and the distal dorsal bony excrescence was cut off with a bone rongeur levelling any edges.

A tract for placement of a dermal graft was created. The small strip of dermis was harvested from the lower leg as varicose vein surgery was performed simultaneously. With assistance of both suture and goretex insertion needle the graft was pulled into the tunnel under the nail bed to flatten the germinal and sterile matrix. Finally, the

Figure 1 Pincer nail of the great toe: (a) dorsal view and (b) frontal view.

Figure 2 Radiographic examination shows lateral osteophyte at the base of (a) the phalanx and (b) distal traction osteophyte and diminution of bone in distal phalanx.

Figure 3 Tubular deformity of the nail plate, especially in the distal part.

Figure 4 Separated and flattened nail bed, positioning dermal graft (arrow).

graft was trimmed and the incisions closed (Figs 4 and 5). Silicon sheeting was placed temporarily into the nail fold to prevent adhesion. Twenty months postoperatively pain was relieved and the nail shows a normal transverse curvature (Fig. 6).

Discussion

The progressive tubulization of a nail does not only represent a cosmetic deviation but is an important health problem that causes substantial discomfort in daily life. Acquired and hereditary cases were reported, but the underlying pathogenesis is still not clear.

Hereditary forms are often symmetrical with similar changes seen in other family members. There is evidence for an autosomal-recessive inheritance pattern.[1] Several conditions may lead to the acquired form. Most often acquired forms of pincer nails are due to osteoarthritis of the distal interphalangeal joint (DIPJ) and foot deformation with osteophyte formation laterally to the base of the phalanx.[2] Furthermore, several dermatoses, of which psoriasis is the most frequent one, and also tumors of the nail apparatus, such as epidermoid cysts or myxoid pseudocysts among others, lead to PND.[3,4] Although there is no

Figure 5 Sutured incisions with flattened nail bed.

single conclusive etiology, subperiosteal appositions on the base of the phalanx are observed in many cases. Accordingly the enlarged base of the distal phalanx is thought to have a significant influence on the curvature of the nail plate. This is due to firm adherence of the nail bed corium to the bone through ligament-like collagen fibers. The exerted traction of the nail plate to the tip of the phalanx might also induce the so called traction osteophytes. Moreover the observed diminution of soft tissue and even bone may be due to persistent pressure (Figs 1 and 2).[5]

With conservative procedures such as clipping, thinning of the nail plate, and orthonyx with steel or plastic braces, relief of symptoms is possible providing the treatment is maintained; however, recurrence rates are high. Therefore many authors are convinced that conservative treatment provides only temporary relief.[6]

Nail avulsion was the procedure of Cornelius and Shelley[5] who presented the first three cases of PND in 1968, but recurrence was seen after regrowth of the nail plate. Baran[7] recommended destruction of the matrices by electrocauterization at the expense of the nail. In 1992 Haneke[2] suggested phenol matrixectomy of the lateral matrix horns and to remove the traction osteophyte through a median incision of the nail bed. He closed all incisions and used reverse tie-over sutures to stretch the nail bed over the bone. With this procedure aesthetic results were quite convincing. In 2000, Brown *et al.*[8] reported successful treatment with one slightly curved nail on 6 patients with an average follow-up of 251/2 months. Dermal grafts were harvested and the space between paronychial folds and phalanx was augmented. Bone changes were not treated.

The case presented herein is representative for PND.

The relationship of bone to nail tissue is of distinct importance as the phalanx defines the shape of the nail. Bony excrescences should be removed whenever possible. In addition, dermal grafting is an excellent substitute to the loss of soft tissue and prevents shrinking and adherence of the nail bed to the distal phalanx.

The demonstrated surgical procedure tailored to the individual case resulted in an overall aesthetic nail with excellent adherence.

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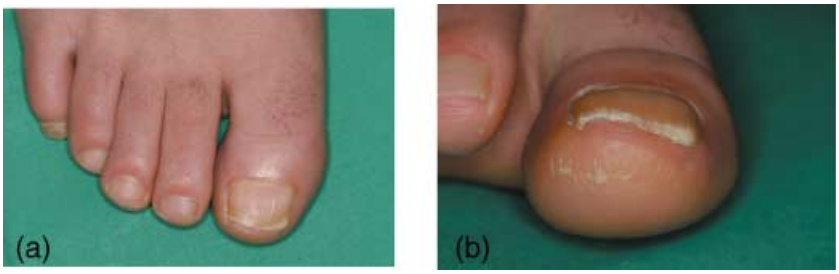

Figure 6 Final result on (a) dorsal view and (b) frontal view 20 months after surgery.

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