

## Acquired nail plate deformity — what is your diagnosis?

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A 75-year-old patient presented with acquired nail plate deformity with subungual hyperkeratosis of both great toes associated with discomfort and pain (Fig. 1). The symptoms occurred several months before. He did not report the preceding local trauma of the affected nails or wearing unfitted shoes. The presence of onychomycosis was excluded based on direct mycological examination and culture. Besides, the patient had a history of hypertension, coronary artery disease, benign prostatic hyperplasia and dyslipidemia. Twelve months before the nail deformity occurred, he had started a therapy with bisoprolol (1.25 mg daily). The other medications the patient was taking (acetylsalicylic acid, ramipril, atorvastatin, doxazosinum) had been introduced a several years before. None of the patient's family members had similar nails or other dermatological diseases.



**Figure 1.** Clinical presentation — acquired nail plate deformity with subungual hyperkeratosis of both great toes associated with discomfort and pain

### Which diagnosis is most likely in our patient?

- A. pachyonychia congenita
- B. ingrowing nails
- C. pincer nails
- D. koilonychia
- E. Muehrcke's nails

For answer, see next page.

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## ANSWER: PINCER NAILS

Pincer nail (PN; incurved nails, unguis constringens, trumpet nail, omega nail) is a nail dystrophy characterized by transverse overcurvature of the nail plate along its long axis. The first description of this entity was reported in 1968 by Cornelius and Shelley [1]. In the past, pincer nails were often classified as a type of ingrown nails; however, the main difference between them is an abnormal shape of the nail plate in PN [2]. The incidence of PN is estimated to 0.9% [3].

The pathogenesis of PN is not fully understood, with a few mechanisms hypothesized by different authors, including the role of exostoses of the distal phalanx, ventral and dorsal side nail plate differences, enlargement of the base of the distal phalanx, as well as mechanical forces affecting the nail formation [4].

The etiology of PN may be either acquired or inherited. Hereditary PN deformity, an autosomal dominant disorder, is usually manifested by symmetrical changes in the nail plate and positive family history [5]. The most prevalent acquired factor is mechanical trauma, most commonly caused by using unfitted shoes. Another disorder related to PN is onychomycosis, which makes the nail plate thicker and stiffer. It has been reported that antifungal therapy may alleviate PN deformation, thus mycological examination should be performed in such patients [6]. PN may also be related with food deformity, osteoarthritis, tumors of the nail apparatus (e.g. implantation cyst, subungual exostosis or myxoid pseudocyst) [7]. Furthermore, this dystrophy was described in patients with systemic diseases including Kawasaki disease, gastrointestinal malignancies, psoriasis, systemic lupus erythematosus, lupus nephritis and chronic renal failure [8].

Drug-induced pincer nail deformity seems to be rare, with reported cases linked to beta-blockers or pamidronate intake, but underlying mechanism has not been explained [9, 10]. According to available data, 6- to 12-month preceding history of beta-blockers intake should be considered, and deformity should be reversible after causative drug elimination.

Clinically, PN deformity concerns mainly big toenail, but all toenails or fingernails may be affected. This deformation may cause pain and discomfort during daily activities and pose a cosmetic discontent.

Morphologically, there are three types of PNs: trumpet nail deformity, tile nail and plicated nail. Trumpet nail deformity is the most common type in which the overcurvature increases in proximal to distal part of the nail. In this type the lateral nail plate border rolls under itself, forming a cylinder or omega shape. The nail bed gets pinched due to the fact that the transverse diameter of the nail is decreased and the distal border is lifted up distally by the traction exerted on the distal dorsal tuft. The lateral plate margin

may break through the epidermis and produce granulation tissue. The second type, plicated nail, is characterized by moderate convexity, with the lateral plate edges sharply turned down, to form a vertical sheet pressing into the lateral nail grooves. The last type, tile nail deformity, has a transverse overcurvature along its longer axis with the lateral nail edges remaining parallel, forming a tile shape. This type may be asymptomatic and more often seen in tall young people [6, 8].

Main indications for PN treatment are pain and inflammation. There is no one recommended treatment method — with conservative and surgical approach possible. Selection of treatment depends on the severity of nail deformation, disease symptoms such as pain caused by wearing shoes, associated comorbidities, as well as patient's preferences and expectations.

The conservative treatment includes application of urea cream or thioglycolic acid, nail grinding with nickel-titanium wires or application of orthonyx braces. All of those are used to flatten the nail surface. Conservative treatment is usually recommended for mild to moderate pincer nail deformity. In case of patient's comorbidities like diabetes or peripheral vascular disease, the conservative techniques are preferred because the healing after surgical treatment might be longer. The conservative treatment causes less discomfort, thus is preferred by most patients. Disadvantages are a longer period of treatment and higher recurrence rates [11]. Surgical methods include nail plate avulsion, total or partial excision of the nail bed with reconstruction based on skin or mucosal grafting or different flap-techniques (Haneke's technique, zigzag nail bed flap, three flap technique, five-flap z-plasty technique, inverted T incision method), total or partial matricectomy with carbon dioxide laser or phenol as well as removal of coexisting tumors of the nail apparatus [4, 12, 13]. Surgical methods are preferred in severe PN deformity and associated with better long-term outcome; however, they are associated with periprocedural pain and possibility of complications, including impaired healing or infections.

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