



Surgical & Cosmetic Dermatology

ISSN: 1984-8773

Sociedade Brasileira de Dermatologia

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Surgical & Cosmetic Dermatology, vol. 14, e20220064, 2022
Sociedade Brasileira de Dermatologia

DOI: <https://doi.org/10.5935/scd1984-8773.2022140064>

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Surgical approach to retronychia refractory to clinical treatments

Abordagem cirúrgica de retroníquia refratária a tratamentos clínicos

DOI: <http://www.dx.doi.org/10.5935/scd1984-8773.2022140064>

ABSTRACT

Retronychia is an inflammatory onychopathy characterized by the disordered growth and stacking of nail plates, associated with an imbalance in the matrix production of plaques, which tend to overlap. This condition may be associated with trauma, evolving with an inflammatory reaction along the proximal nail fold and granulation tissue formation. We report the case of a patient with retronychia in the left hallux, submitted to surgical treatment after failure of therapeutic responses with previous clinical treatments. The surgical approach led to the avulsion of the overlapping nail plates and the excision of voluminous granulation tissues, achieving adequate postoperative evolution.

Keywords: Nail diseases; Nails; Nails ingrown

RESUMO

Retroníquia é uma onicopatía inflamatória caracterizada pelo crescimento desordenado e empilhamento de lâminas ungueais, associados ao desequilíbrio na produção matricial de placas, que costumam se sobrepor. Este quadro pode estar associado a trauma, evoluindo com reação inflamatória junto à dobra ungueal proximal e formação de tecido de granulação. Relatamos o caso de um paciente com retroníquia no hálux esquerdo, submetido a tratamento cirúrgico após falhas de respostas terapêuticas a tratamentos clínicos prévios. A abordagem cirúrgica levou à avulsão das lâminas ungueais sobrepostas e à exérese de volumosos tecidos de granulação, com adequada evolução no pós-operatório.

Palavras-chave: Doenças da unha; Unhas; Unhas encravadas

How do I do it?

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Financial support: None.

Conflict of interest: None.

Submitted on: 24/06/2021

Approved on: 18/08/2021

How to cite this article:

Ferreira IG, Giacomet L, Dornelles AC, Minotto R. Surgical approach to retronychia refractory to clinical treatments. *Surg Cosmet Dermatol*. 2022;14:e20220064.



INTRODUCTION

Retronychia is an inflammatory onychopathy whose etiopathogenesis is still poorly understood. It is characterized by the disordered growth and overlapping of nail plates, associated with an imbalance in the matrix production of plaques and inflammation in the region of the proximal nail fold.¹⁻³ The term “retronymia” originates from the Latin “retro” (“backward”) and Greek “onychia” (“nail”), being first described by De Berker and Renall in 1999 during the 8th Congress of the European Academy of Dermatology and Venereology.^{4,5}

The primary triggering mechanism of retronychia is nail microtrauma, which causes the nail plate to lose its attachment to the matrix, leading to new matrix production of plaques and the growth of a new blade under the previous one. This rare condition mainly affects the hallux, and factors such as wearing tight, non-malleable shoes and activities associated with repetitive trauma (running, mountaineering, dancing, among others) can precipitate it.^{2,3,6-8}

In refractory to clinical treatments, the surgical approach can be adopted for diagnostic and curative purposes, and it's performed through the avulsion of the overlapping nail plates and excision of the granulation tissue.^{3,6,9} This study aimed to describe a surgery technique adopted in the case of retronychia in the hallux.

METHODS

We report the case of a 35-year-old man, without comorbidities, presenting pain, swelling, and redness in the proximal nail fold and left hallux cuticle, with evolution for about four months. He used antibiotics (cephalexin and amoxicillin) and anti-inflammatory drugs, in addition to topical use of clotbetasol, including occlusive mode, fusidic acid, mupirocin, and gentamicin, without improvement. The signs and symptoms arose from the habit of supporting the distal ends of the hallux on the floor while working on the computer at the home office due to the covid-19 pandemic. He denied a similar previous condition and the use of tight shoes, even referring to using flip-flops, socks, or even being barefoot.

On examination, the nail apparatus of the left hallux showed erythema and an inflammatory aspect of the nail folds, edema and apparent hypertrophy of the hyponychium region, onycholysis, white-yellowish chromonychia, and granulation tissue emerging under the cuticle (Figures 1 and 2).

Ultrasonography showed significant thickening of the proximal nail fold and a hypoechoic halo around the nail matrix, associated with disruption of the proximal portion of the ventral nail plate, suggestive of a fragment. No bone remodeling was identified. The Doppler revealed an increase in flow near the proximal nail fold and matrix (Figure 3).

The surgical procedure started with the patient being placed in the supine position, supporting the affected limb, flexed, on padded support, with the sole on the surface of the operating bed. Then, the organization of the operating table, local



FIGURE 1: Dermatological examination of the left hallux shows voluminous granulation tissue at the proximal nail border – longitudinal and frontal planes

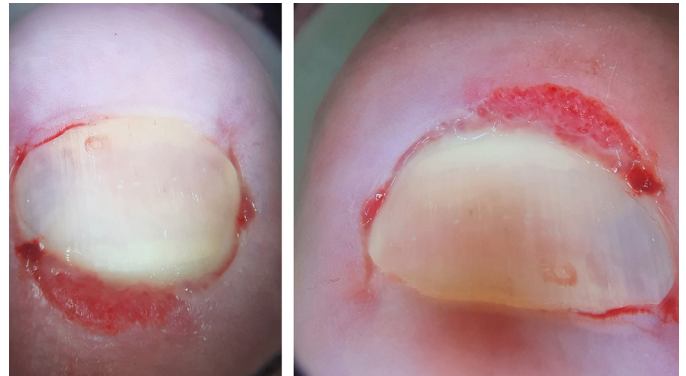


FIGURE 2: Dermoscopy of the nail plate of the left hallux, demonstrating voluminous granulation tissue under the proximal nail border

antisepsis, and placement of surgical drapes were conducted.

Local anesthesia was performed by anesthetic block (digital, distal, bilateral of the affected hallux) with lidocaine 2% without vasoconstrictor. Subsequently, hemostasis was performed using a number 2 Penrose drain, in a tourniquet, followed by the detachment of the first nail plate and retraction of the proximal nail fold with an electrocautery tip (Figure 4). The detachment of the nail plate evidenced voluminous granulation tissue, which was excised, then proceeding with the removal of the second and third nail plates, in sequence.

Then, the excision of granulation tissue and inflammatory debris was performed in-depth, with total cleaning of the cavity with saline solution. The proximal nail fold was repositioned with the placement of wide-lumen latex surgical drain, with the distal end advancing over the bed to drain postoperative secretions (Figures 5 and 6). We then proceeded to bilateral suture using 5-0 mononylon and applying a bulky containment

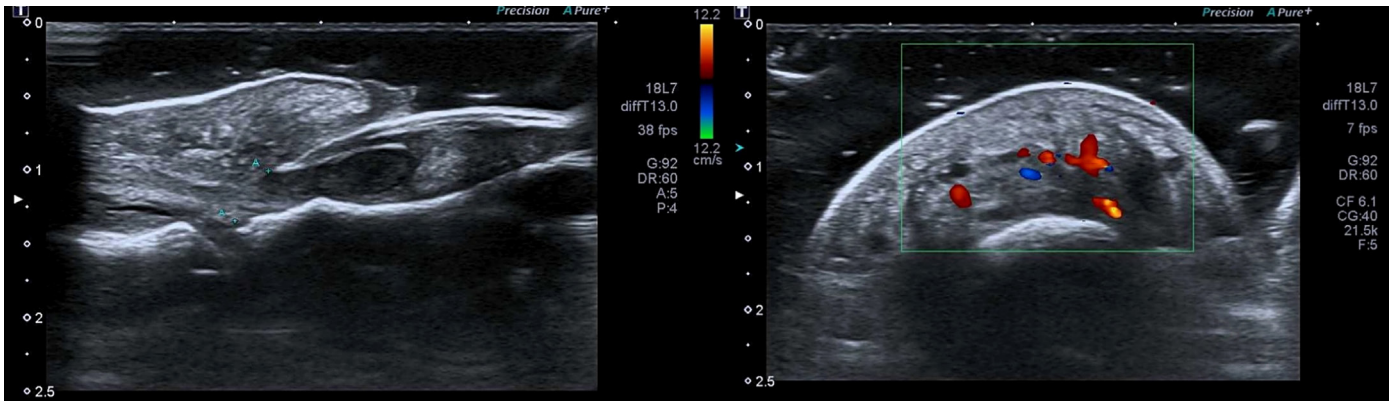


FIGURE 3: Doppler ultrasound of the left hallux, in lateral and frontal sections, showing overlapping nail plates below the proximal nail border and increased blood flow in the granulation tissue region

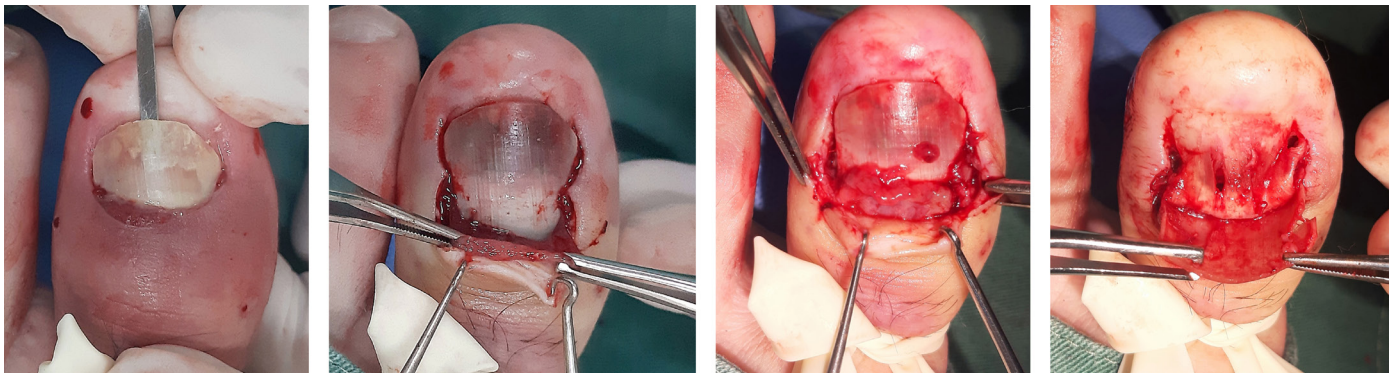


FIGURE 4: Sequence of the operative act: initial detachment of the first plate, folding of the proximal nail fold, exposure, and removal of granulation tissue under the fold, folded plate, and visualization of the second dystrophic plate under the first

dressing with mupirocin, gauze, and crepe bandage. The patient was instructed to perform daily dressings, in addition to the use of antibiotics, anti-inflammatories, and analgesics.

RESULTS

The patient had a good postoperative recovery, with clinical improvement (Figure 7). The anatomopathological examination showed chronic ulcerated inflammation with the formation of exuberant granulation tissue in the nail bed (Figure 8).

DISCUSSION

We present a case report of retronychia with extensive inflammatory reaction in a young patient, evolving with paronychia and pain in the left hallux. The diagnosis of retronychia is based on clinical manifestations, including paronychia, onychomadesis, chromonychia, reduction and nail growth interruption, and formation of new plaques in conglomerates, in

addition to the granulation tissue production, emerging under the nail fold.^{1-3,6} Also, other nail changes can be observed, such as xantonychia, onycholysis, and subungual hematoma.^{2,6} Despite the characteristic clinical picture, cases of retronychia are often underdiagnosed, making ultrasound an essential diagnostic resource.²

In this regard, Fernández et al. established diagnostic ultrasound criteria for retronychia: the presence of a hypoechoic halo or band around the origin; distance between the nail plate origin and the distal phalanx base (≥ 5.1 mm in the hallux and/or difference ≥ 0.5 mm regarding the contralateral hallux); proximal nail fold thickness (≥ 2.2 mm for men or ≥ 1.9 mm for women and/or ≥ 0.3 mm concerning the contralateral hallux). Thus, the simultaneous presence of three criteria may indicate the diagnosis of unilateral retronychia, and, in bilateral cases, the presence of at least two criteria, one of which is the presence of a hypoechoic halo, may favor the diagnosis.¹⁰

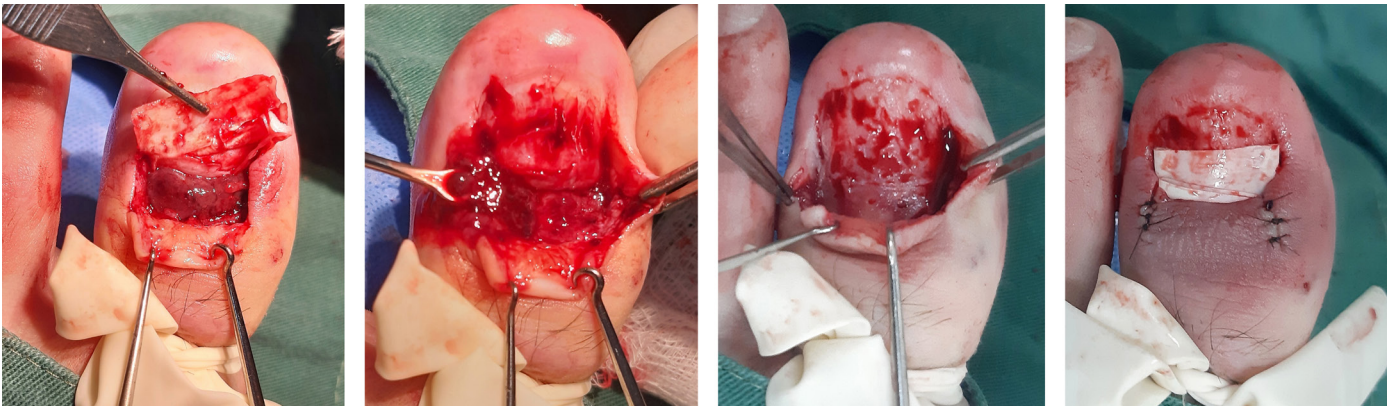


FIGURE 5: Sequence of the operative act: detachment of the second plate and visualization of abundant granulation tissue in-depth, removal of the granulomatous material, removal of the third fragmented and dystrophic plate, removal of devitalized tissues on the bed, cleaning, and washing of the cavity, placement of a latex, proximal fold repositioning, suture

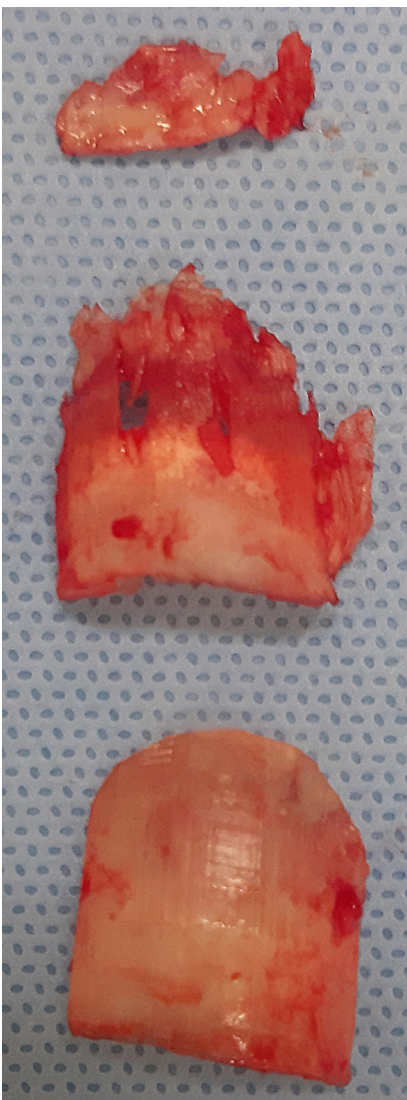


FIGURE 6: Nail blades excised during nail surgery for retronychia in the left hallux*

*Slides exposed in sequence, from the first to the last plate removed, from bottom to top

In the case reported here, ultrasonography demonstrates the three diagnostic ultrasonographic criteria (increased distance between the nail plate origin and the distal phalanx base; increased proximal nail fold thickness, and a hypoechoic halo below the origin of the plaque). There is also a growth in blood flow in the dermis of the nail fold posterior to Doppler.

Regarding the retronychia treatment, in mild forms, a conservative approach can be adopted, considering that some of these types may spontaneously involute. Conservative therapy includes using adhesive tape and orthoses to fix the “loose” nail plate in the proximal region or applying topical corticosteroids to the proximal nail edge. Topical therapy can act by reducing inflammation and swelling in the proximal nail fold, as observed by Lencastre et al., where topical steroids, associated or not with occlusion, showed a complete or partial clinical response in 41.1% and 28.5% of cases of retronychia, respectively.¹¹ However, despite the clinical improvement, recurrences in these situations are frequent.

Thus, in advanced and/or recurrent cases, the surgical approach is more indicated, promoting the resolution of the condition from the avulsion of the overlapping nail plates and excision of the granulation tissue,^{1,3,6,7} as performed in the reported case. The histopathological examination is not essential for diagnosis; however, it is recommended that the excised material is sent to pathological analysis to exclude the diagnosis of neoplasms of the proximal nail fold, as conducted in this case.

Concerning the postoperative complications, they involve onychocryptosis, micronychia, onychodystrophy, and periungual tissue hypertrophy.^{1,3,6,7} Post-surgical recurrence is rare, but it can occur. Therefore, patients should be instructed on preventive measures to avoid triggering factors such as the use of properly sized shoes, correction of orthopedic disorders of the feet, and deviations in nail growth.^{3,6,9}



FIGURE 7: Postoperative dermatological examination at 14 days and after 60 days, in sequence

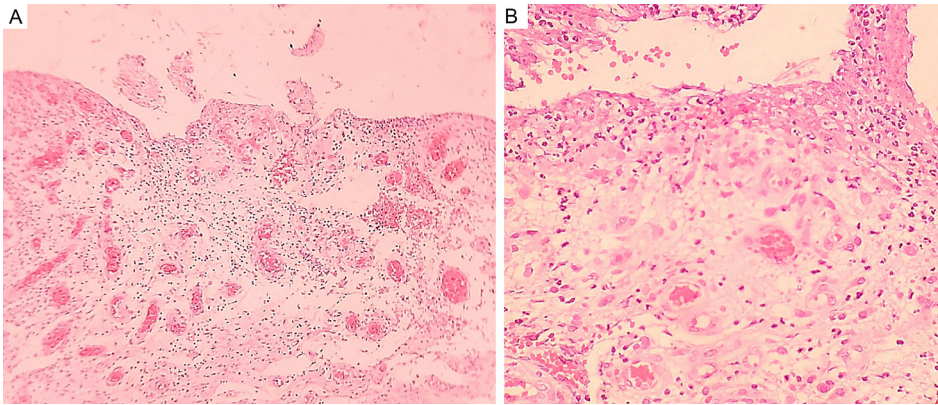


FIGURE 8: Histopathological examination of the excised granulation tissue, showing neutrophilic infiltrate, extravasation of red blood cells, and fibrin deposits in the dermis: Hematoxylin & eosin staining 100x **A** and 400x **B**

CONCLUSION

We described the surgical technique adopted in the case of exuberant retronychia without previous clinical response. We observed an abundant amount of granulation tissue intraopera-

tively, including under the plates, emphasizing the severity and peculiarity of the case, rarely reported in the literature. It's noteworthy that the technique described is one of the possible options for the surgical treatment of these cases. ●

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