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Retronychia: A Paradigm Shift?

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Keywords
Retronychia · Nail avulsion · Topical steroids

Abstract
Retronychia is an increasingly known cause of paronychia. It was classically regarded as an indication for total nail plate avulsion, but recent case series have questioned the real need for this approach. In order to establish a proper recommendation for patients presenting with retronychia, we retrospectively reviewed all articles with retronychia case reports. Total nail plate avulsion is still the most efficient treatment option. Topical steroids and other noninvasive approaches can be useful in some early, mild cases, but further prospective studies are needed in order to access their efficacy.

Introduction

Retronychia describes a combination of nail plate ingrowth into the proximal nail fold and often the generation of multiple misaligned proximal nail plate lamellae [1]. Its pathophysiology seems to include repetitive microtrauma as a frequent trigger, leading to disruption of the nail's longitudinal growth and complete separation from the matrix [2, 3]. Subsequently, as the new nail plate begins to grow, the older one is pushed upward, leading to inflammation of the proximal nail fold, xanthonychia, onycholysis, and granulation tissue formation [1, 4–7].

Based on the initial case reports, a poor clinical response to conservative measures was described and proximal nail avulsion was regarded as the treatment of choice [1]. However, recent case series have questioned the need and benefit of surgical therapy, suggesting other noninvasive measures as a therapeutic option in the early stages of retronychia [7, 8]. Considering these new findings, our study aimed to retrospectively analyze all cases of retronychia published since 1999, in order to review the current therapeutic options.

Methods

This was a retrospective study performed using Embase and PubMed's database. On January 21, 2019, a search was made for the term "retronychia," and all articles that resulted from this search were analyzed. Publications with no clinical reports were then excluded. The reference lists of all included articles were also retrieved and those who meet our inclusion criteria were also assessed. Using Microsoft Excel software, we collected all data regarding epidemiology, clinical findings, and therapeutic options described in these articles. We then summarized their results in order to present our conclusions.

Results

Thirty-four articles met our inclusion criteria [1, 2, 4–34]. This yielded 247 described cases of retronychia documented in 182 females (73.6%) and 52 males (21%) – sex was not specified in 13 patients. The mean age

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Table 1. Therapeutic options in retronychia

Therapeutic option	Cases, *n*	Complete resolution (*n*)	Partial resolution (*n*)	No improvement (*n*)
Surgical				
Total nail plate avulsion	104	96% (100)	2.8% (3)	0.9% (1)
Partial nail plate avulsion	2	0	100% (2)	0
Conservative				
Topical corticotherapy	70	38.6% (27)	22.8% (16)	38.6% (27)
Chemical avulsion	8	75% (6)	25% (2)	0
Taping	5	40% (2)	60% (3)	0

at diagnosis was 31.2 years (10–88 years; not recorded in 13 cases).

In 139 cases (56.8%), a precipitating event was determined. Fifty-seven patients (23%) had a previous history of acute trauma, 53 patients (21.4%) had microtrauma history related to sports (such as running, walking, tennis, or gymnastics), and 28 patients (11.3%) reported wearing inappropriate footwear (e.g., high heels and tight shoes). Some patients presented with anatomical changes of the foot itself (7 cases with lateral toe deviation and 4 cases with hallux reflex hyperextension).

The mean time elapsed between the beginning of nail symptoms and a correct diagnosis was 6.58 months (1–48 months). However, this information was missing in 91 patients (36.8%).

There were 200 cases of toenail retronychia (80.9%) and 26 cases on the fingernails (10.5%). There was no mention of the affected nail in 21 patients. In cases of toenail retronychia, the hallux was affected in 184 cases (92%) and a bilateral involvement was specified in 34 cases (24.8%). The most affected fingernails were those of the right index finger (6 cases), the right thumbnail [5], and the left thumbnail [3]. Involvement of two or more fingernails was documented in 4 cases.

Therapeutic options were specified in 176 cases of retronychia (Table 1). Regarding surgical approaches, two techniques were described: (1) complete nail plate avulsion: used in 104 patients (58.4%) with 96% of cases achieving a complete resolution, a partial improvement was documented in 3 patients (2.8%) and no improvement was reported in another case (0.9%), recurrences were observed in 5 patients with complete resolution (5%), with a mean recurrence time of 27.4 weeks (7–49 weeks); (2) partial avulsion: documented in 2 patients but both recurred (mean recurrence time of 10 weeks; 2–18 weeks).

Nonsurgical approaches were also described by some authors. Topical corticotherapy was used in 70 patients with retronychia (28.3%). Based on published data, there were 27 patients with complete resolution (38.5%) and 16 cases with partial improvement (22.8%). Treatment failure was documented in 27 cases (38.5%).

Other noninvasive approaches have also been proposed. In 2015, Ventura et al. [4] used taping in 5 patients, with complete resolution in 40% ($n = 2$) and partial resolution in 60% ($n = 3$) of cases. In 2019, Vastarella et al. [8] suggested that chemical avulsion with a topical ointment composed of 50% urea and salicylic acid 10% in white petrolatum could also be an option in mild retronychia patients. They reported 8 cases treated with this approach, and a complete resolution was obtained in 75% of patients ($n = 6$). Partial resolution was noticed in 2 cases and 1 patient recurred.

Discussion

Based on the current data, retronychia seems to be a condition that typically affects younger women and is triggered by acute trauma or microtrauma related to sports or use of inadequate footwear. It mainly occurs on the big toenails, but despite being an increasingly known cause of paronychia, there is still a significant delay in diagnosis.

Regarding the different therapeutic options, there is a clear shift in recent articles, with conservative therapy being increasingly applied [4, 7, 8]. Chemical avulsion and taping were tried with moderate success by some authors in early, uncomplicated cases [4, 8]. However, these results are based on small cases series and we need more data in order to evaluate the reproducibility of these approaches.

Topical steroid therapy is the most studied conservative therapeutic option in retronychia, as it has been applied in 28.3% of total cases. However, there are clear contradictions between some clinical series, with some authors describing an overall lack of response [8] and others arguing that it can be used as a first-line treatment in mild cases [7].

Based on our review, there are no prospective clinical trials comparing surgical and conservative treatment in retronychia patients. As such, a definitive recommendation regarding retronychia approach cannot be made. Total nail plate avulsion is by far the most efficient treatment. However, given the lack of significant side effects of topical steroid therapy and the good response reported by some, we acknowledge that this approach might be of use in mildly symptomatic patients, especially when addressed early in the course of disease.

Conclusion

Total nail plate avulsion seems to be the most efficient option for retronychia. Topical steroids and other noninvasive approaches are being increasingly used for mild uncomplicated cases. Further prospective studies are needed in order to access the efficacy of these conservative approaches.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

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Author Contributions

Tomás Pessoa e Costa has contributed in the conception and design of the work; in the acquisition, analysis, and interpretation of data for the work; and in the drafting and revision of the work. He approved the version to be published and agreed to be accountable for all aspects of the work, ensuring that future questions related to the accuracy or integrity of any part of the work will be appropriately investigated and resolved.

Ana Luísa has contributed in the conception and design of the work; in the acquisition, analysis, and interpretation of data for the work; and in the drafting and revision of the work. She approved the version to be published and agreed to be accountable for all aspects of the work, ensuring that future questions related to the accuracy or integrity of any part of the work will be appropriately investigated and resolved.

André Lencastre has contributed in the conception and design of the work; in the acquisition, analysis, and interpretation of data for the work; and in the drafting and revision of the work. He approved the version to be published and agreed to be accountable for all aspects of the work, ensuring that future questions related to the accuracy or integrity of any part of the work will be appropriately investigated and resolved.

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