BJCR
Brazilian Journal of Case Reports

PCAA
Publicações Científicas de Acesso Aberto

Case Report

Alternative Treatment for Iatrogenic Dermatoporosis

Fernanda Cassain [1,*], Marisa Gonzaga [2], Jeovana Soares [1], Renata Viana [2], Márcio Serra [3]

[1] Private practice, Ceará, Brazil.
[2] Private practice, São Paulo, Brazil.
[3] Private practice, Rio de Janeiro, Brazil.

* Correspondence: cassain@yahoo.com.

Abstract: A healthy 60-year-old female patient, with a history of Quervain's Syndrome, presented with corticosteroid-induced dermatoporosis after receiving intra-articular corticosteroid injections. She experienced skin fragility and aesthetic discomfort due to dermal atrophy and a violaceous macule at the injection site. Treatment with calcium hydroxyapatite (CaHA) biostimulator was initiated, resulting in significant improvements in skin quality and pigmentation. Following two sessions, the patient reported enhanced self-esteem and satisfaction with the treatment outcomes. This case underscores the potential of CaHA as an effective therapeutic option for managing early stages of dermatoporosis.

Keywords: Senile purpura; Dermatoporosis; Calcium hydroxyapatite; Skin regeneration.

Citation: Cassin F, Gonzaga M, Soares J, Viana R, Serra M. Alternative Treatment for Iatrogenic Dermatoporosis. Brazilian Journal of Case Reports. 2025 Jan-Dec;05(1):bjcr37.

https://doi.org/10.52600/2763-583X.bjcr.2025.5.1.bjcr37

Received: 10 September 2024
Accepted: 8 November 2024
Published: 21 November 2024

1. Introduction

Dermatoporosis is a common condition in elderly patients, characterized by the fragility of blood vessels due to the atrophy of cutaneous tissues. It is a chronic syndrome of excessive skin insufficiency and fragility, first described by Kaya and Saurat in 2007 [1]. This condition is typically caused by chronic sun exposure, aging, and pharmacological factors, leading to dark purple bruises commonly found on the extensor surfaces of the hands and forearms. These bruises arise without apparent trauma, fade after a few days, and leave a brownish discoloration due to hemosiderin deposits. The condition is often associated with atrophy of cutaneous and subcutaneous tissues, leading to both aesthetic and potential functional challenges for affected individuals [2].

Topical or intralesional corticosteroids, especially in elderly patients, can lead to skin atrophy and increase susceptibility to trauma. These medications exert an inhibitory effect on the proliferation of keratinocytes and on the synthesis of collagen (types I and III), as well as inhibiting fibroblasts activity, resulting in reduced hyaluronic acid in the extracellular matrix, ultimately causing dermal atrophy [3, 4]. Moreover, corticosteroids impair the function of hyaluronan-containing lysosomes in epidermal keratinocytes, further compromising skin integrity [5].

Although corticosteroid-induced cutaneous atrophy reveals no significant inflammatory cells infiltration, microscopic examination reveals epidermal and dermal atrophy, flattening of rete ridges, and decreased melanin production. These changes, along with reduced collagen synthesis, contribute to the increased fragility of the skin and subcutaneous tissues [6–8]. A systematic review, including 87 studies, on extra-articular corticosteroid injections reported soft tissue atrophy, ranging from 1.5% to 40%. Skin hypopigmentation was also reported to occur in up to 4% of the cases, highlighting the clinical significance of this complication [9].

Currently, there is no well-established treatment for dermatoporosis, such as corticosteroid-induced tissue atrophy, and the choice of treatment and intervention often depends on the severity and extent of the lesion. While fat grafting may be an effective treatment option in more pronounced cases [10], bio-stimulators such Calcium Hydroxyapatite (CaHA) may become a promising alternative in early stages of dermatoporosis. CaHA not only may potentially restore tissue volume but also stimulate collagen production improving skin resilience and reduce fragility [11, 12].

This paper presents a case of chronic actinic purpura, successfully treated with Calcium Hydroxyapatite.

2. Case Report

A 60-year-old female patient, with no significant comorbidities, was diagnosed with Quervain's Syndrome and received intra-articular injections of betamethasone dipropionate and disodium phosphate in the extensor compartment. While this treatment relieved her joint pain, it resulted in an iatrogenic secondary dermatoporosis, causing dermal atrophy and the appearance of a violaceous macule at the injection site. Accordingly, to Kaya classification [1], patient presented stage 1 of dermatoporosis, experiencing skin fragility and aesthetic discomfort (Figure 1A). The symptoms lasted for 4 years. Previous topical treatments provided no significant improvement, and no previous invasive procedures were attempted prior to the reported intervention.

The treatment here reported consisted of two injections sessions using a collagen biostimulator based on calcium hydroxyapatite (CaHA) - STIIM (by Ilikia, CGBio – Korea) – which presents a Lattice-Pore technology. The product was diluted to 1:2 (0.75 ml of CaHA in 1.25 ml saline solution and 0.25 ml of 2% lidocaine hydrochloride with epinephrine). A 22G blunt cannula was used to inject the product in a fan-technique pattern, depositing approximately 0.75 ml per vector (Figure 2). Due to logistical considerations, the sessions were spaced 40 days apart. The injections were administered retrogradely in the subdermal plane, ensuring even product distribution.

Figure 1. The images illustrate the area treated before and after the intervention. A. The pre-treatment image shows the condition of the skin prior to the treatments, highlighting dermal atrophy and the violaceous macule resulting from dermatoporosis. B. The second image, taken 40 days after the first session of treatment with CaHA, reveals significant improvements in skin quality and pigmentation, demonstrating the effectiveness of the treatment. C. The third image, obtained four months after the completion of treatment with CaHA, shows visibly healthier and even more skin, with considerable aesthetic improvement compared to the initial state.

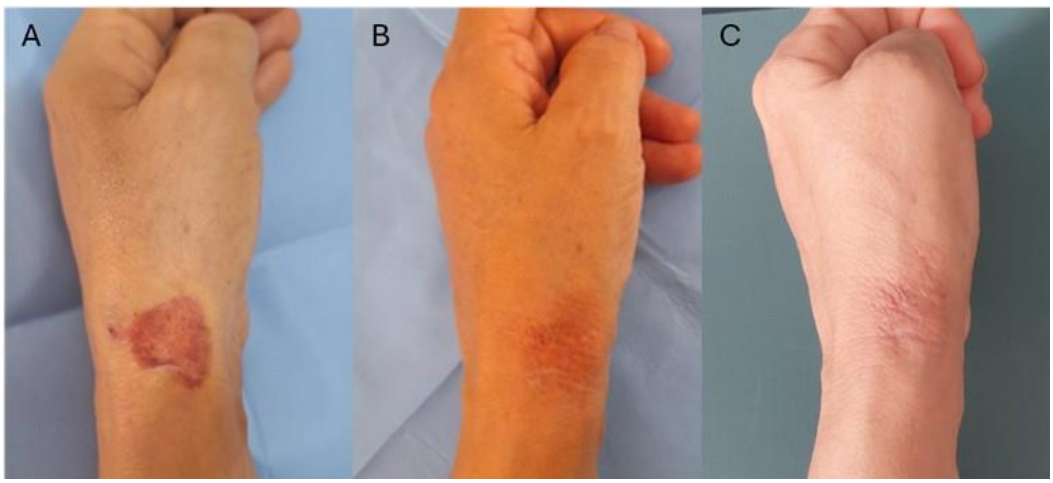
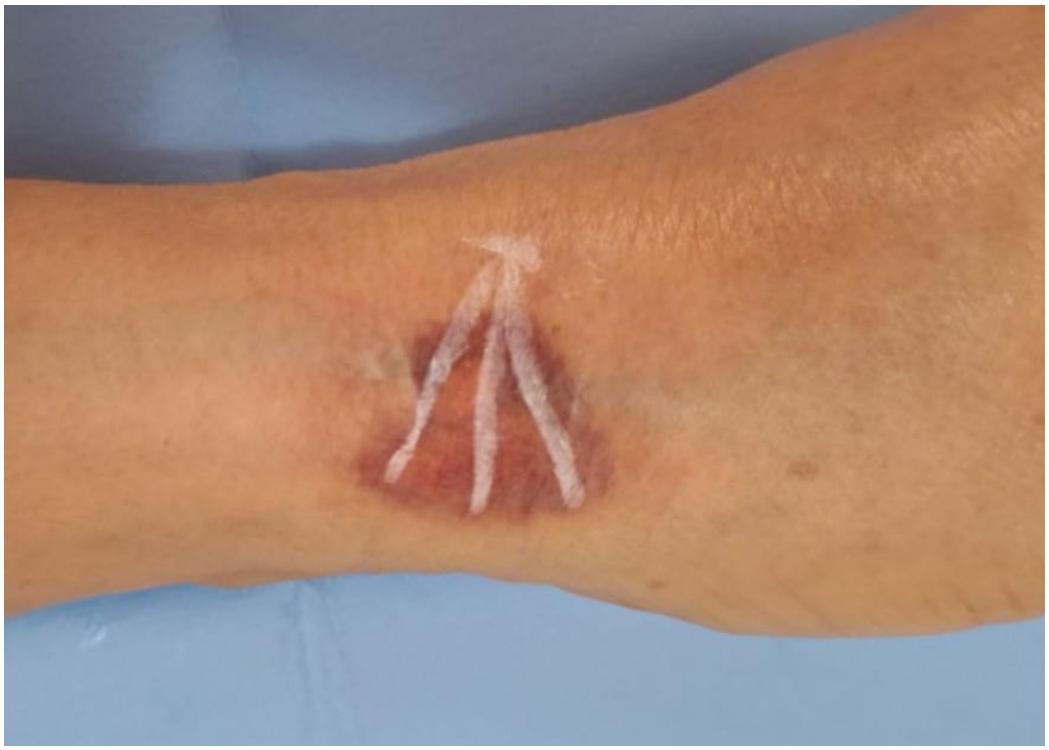


Figure 2. The fan-technique marking indicates the specific pattern for the application of diluted calcium hydroxyapatite (CaHA). This technique ensures even distribution of the product during retroinjections, allowing for optimal coverage and effectiveness in the targeted area.



Forty days after the first session, a notable improvement in skin quality was observed when compared to pre-treatment images (Figures 2A and 2B). This improvement was further enhanced after the second session (Figure 2C). Four months post-treatment, the area showed significant restoration, particularly in terms of pigmentation. No adverse events were reported, and the patient expressed a high satisfaction with the outcome, highlighting also a positive impact on her self-esteem.

3. Discussion

The case involved a 60-year-old woman who developed dermal atrophy and a violaceous macule after a single intra-articular corticosteroid injection. The condition persisted for over four years, causing significant skin fragility and aesthetic discomfort. Two sessions of treatment with a CaHA-based collagen biostimulator resulted in substantial improvements in skin quality and pigmentation, with no adverse events. The patient expressed high satisfaction with the results.

Secondary iatrogenic dermatoporosis refers to a form of dermatoporosis caused by the use of certain medications, such as the chronic use of topical or systemic corticosteroids [1]. In this case, we hypothesize that extravasation of the corticosteroid into the surrounding tissue led to dermal atrophy. While topical treatments failed to provide long-term improvement, the application of CaHA stimulated dermal regeneration, enhancing collagen production and elasticity [11].

Previous report has demonstrated the successful use of calcium hydroxyapatite for treating actinic purpura, a condition characterized by dark purple macules resulting from cutaneous fragility. CaHA may enhance the protection of dermal vessels by promoting dermal thickening, thereby preventing erythrocyte extravasation and hemosiderin deposition [13]. Additionally, by stimulating the expression of collagen types I and III, elastin, and neovascularization, CaHA promotes firmer and more elastic skin, which may reduce the incidence of vascular ruptures and result in clinically perceptible improvements in

actinic purpura and patients with cutaneous atrophies [13]. We did not find cases in the literature like the one described in this case report. However, it is important to acknowledge that this hypothesis is based on limited case reports, and further research is needed to confirm these findings. Future clinical trials should aim to assess the long-term efficacy of CaHA in a broader patient population.

3. Conclusion

This case highlights the potential of calcium hydroxyapatite (CaHA) as a viable treatment for early stages of dermatoporosis. Despite the limitations of case reports, such as small sample sizes, this case demonstrates the efficacy of CaHA in restoring the skin. Future clinical trials are needed to fully assess the long-term efficacy, safety, and optimal dosing of CaHA in managing skin conditions such as dermatoporosis.

Funding: Not applicable.

Research Ethics Committee Approval: We declare that the patient approved the study by signing the informed consent form, and that the study followed the ethical guidelines established by the Declaration of Helsinki.

Acknowledgments: Not applicable.

Conflicts of Interest: The authors declare no conflicts of interest.

References

1. Kaya G, Saurat JH. Dermatoporosis: A Chronic Cutaneous Insufficiency/Fragility Syndrome. Dermatology. 2007;215(4):284–94.
2. Hafsi W, Masood S, Badri T. Actinic Purpura. 2024.
3. Oikarinen A, Autio P. New aspects of the mechanism of corticosteroid–induced dermal atrophy. Clin Exp Dermatol. 1991 Nov 27;16(6):416–9.
4. Abraham A, Roga G. Topical steroid-damaged skin. Indian J Dermatol. 2014;59(5):456.
5. Barnes L, Tran C, Sorg O, Hotz R, Grand D, Carraux P, et al. Synergistic Effect of Hyaluronate Fragments in Retinaldehyde-Induced Skin Hyperplasia Which Is a Cd44-Dependent Phenomenon. PLoS One. 2010 Dec 16;5(12):e14372.
6. Dahl PR, Zalla MJ, Winkelmann RK. Localized involutional lipoatrophy: A clinicopathologic study of 16 patients. J Am Acad Dermatol. 1996 Oct;35(4):523–8.
7. Ahmed I. Post-Injection Involutional Lipoatrophy. Am J Dermatopathol. 2006 Aug;28(4):334–7.
8. Pace CS, Blanchet NP, Isaacs JE. Soft Tissue Atrophy Related to Corticosteroid Injection: Review of the Literature and Implications for Hand Surgeons. J Hand Surg Am. 2018 Jun;43(6):558–63.
9. Brinks A, Koes BW, Volkers AC, Verhaar JA, Bierma-Zeinstra SM. Adverse effects of extra-articular corticosteroid injections: a systematic review. BMC Musculoskelet Disord. 2010 Dec 13;11(1):206.
10. Imagawa K, Ohkuma S. A case of fat injection for treating subcutaneous atrophy caused by local administration of corticosteroid. Tokai J Exp Clin Med. 2010 Jul 20;35(2):66–9.
11. Aguilera SB, McCarthy A, Khalifian S, Lorenc ZP, Goldie K, Chernoff WG. The Role of Calcium Hydroxylapatite (Radiesse) as a Regenerative Aesthetic Treatment: A Narrative Review. Aesthet Surg J. 2023 Sep 14;43(10):1063–90.
12. Tzikas TL. A 52-Month Summary of Results Using Calcium Hydroxylapatite for Facial Soft Tissue Augmentation. Dermatologic Surgery. 2008 Jun;34(s1):S9–15.
13. de Souza GP, Serra MS. Treatment of actinic purpura with calcium hydroxyapatite. Surgical and Cosmetic Dermatology. 2018;10(4):353–6.