e-ISSN 3050-8460
Journal of Dermatology Research
JOURNAL OF DERMATOLOGY RESEARCH
ATHENAEUM SCIENTIFIC PUBLISHERS

Case Report

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Facial Dystrophic Calcinosis Cutis Secondary to Comedonal Acne

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Citation: JA Palanivel, et al. Facial Dystrophic Calcinosis Cutis Secondary to Comedonal Acne. J Dermatol Res. 2026;7(1):1-4.
https://doi.org/10.46889/JDR.2026.7105

Received Date: 01-01-2026
Accepted Date: 26-01-2026
Published Date: 02-02-2026

Abstract
Dystrophic Calcinosis Cutis (DCC) is the most common form of calcinosis cutis characterized by deposition of calcium salts in damaged or scarred tissue. DCC occurrence is considered as an uncommon complication of chronic cutaneous inflammation despite a normal calcium and phosphate metabolism. Acne vulgaris is a widespread, long-standing inflammatory dermatological condition, often resulting in scarring and pigmentation. However, chronic inflammatory acne predisposing to aberrant calcification is less reported.
We present the case of a young female with long-standing acne who developed multiple facial DCC, incidentally identified during routine comedone extraction. This case highlights the importance of recognizing rare presentations associated with acne and adopting an individualized therapeutic approach. Timely diagnosis not only aids in preventing mismanagement but also contributes to achieving optimal clinical and cosmetic outcomes.

Keywords: Dystrophic Calcinosis Cutis; Acne Vulgaris; Comedone Extraction

Introduction
Acne is a common inflammatory condition both in adolescence and adulthood. The common complications of acne include post-inflammatory hyperpigmentation and scarring [1]. While generally considered a benign condition, acne vulgaris can lead to long-term physical scars and emotional challenges, emphasizing its importance beyond a mere cosmetic issue. The stigma associated with acne often leads to emotional distress, low self-esteem, social withdrawal and neglect of proper treatment [1]. Despite being common, the condition varies widely in its clinical presentation and response to treatment, requiring personalized approaches for effective management. An uncommonly reported side-effect due to acne-induced chronic inflammation of the skin is Dystrophic Calcinosis Cutis (DCC) [2,3]. We report a young female presenting with multiple facial DCC, which was coincidentally noted during comedone extraction.

Case Report
A 29-year-old female patient presented with acne, multiple comedones and acne scars. She had suffered from acne since her teenage and had visited many physicians for the same. While she transiently responded to the medications, she noticed that her acne was always recurrent and there were few comedones which were persistent long-term. There were occasions when she used over-the-counter topicals for her acne. When she visited us, she had multiple skin-coloured papules and comedones predominantly on the cheeks and forehead. The comedones were more visible on the stretching of the skin (Fig. 1). On questioning, the patient revealed that her skin always felt bumpy, but did not specifically cause any symptoms such as pain on the skin. However, she complained of recurrent breakouts despite the multiple courses of oral antibiotics and oral isotretinoin (which she took in her 20s).

Considering the severity of the comedones, we intended to perform comedone extraction with the help of radiofrequency and salicylic acid peel application for a keratolytic and anti-inflammatory benefit. Upon trying to extract the comedones with RF with

a minor opening on the skin surface, we realised that the comedones were very hard, rounded and appeared calcified (Fig. 2). She had multiple such lesions under her skin which were extracted with the help of RF. We sent the samples to the laboratory which was reported as calcified lesions. The histopathology report revealed the presence of multiple calcified nodules in the dermis. Blood Investigations revealed normal blood count, liver function and renal function test. Similarly, calcium and phosphate levels were within normal limits.

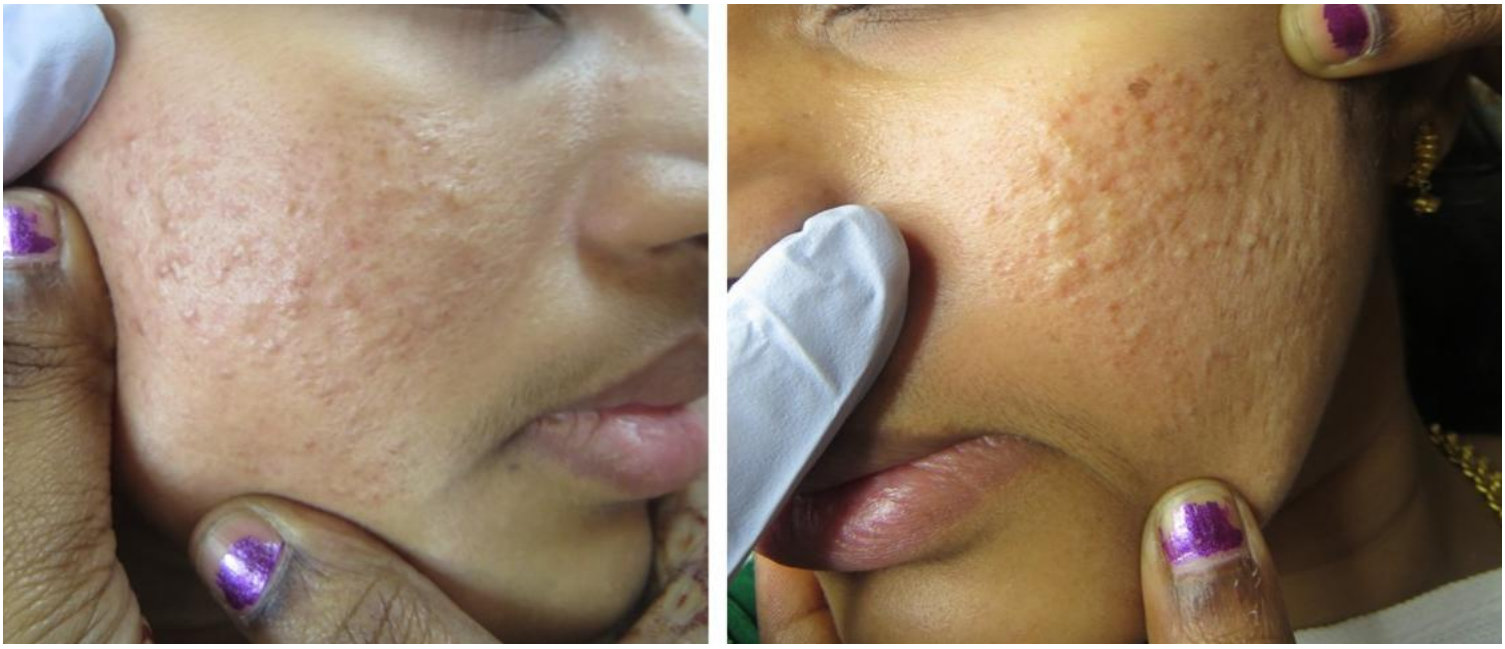

Figure 1: Comedones more visible on stretching of the facial skin.

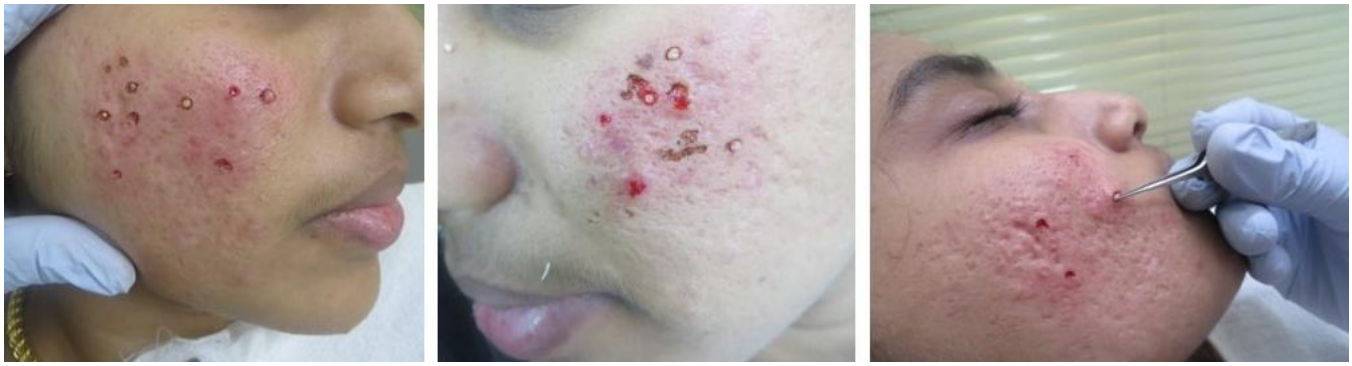

Figure 2: Presence of hard, calcified lesions under the skin.

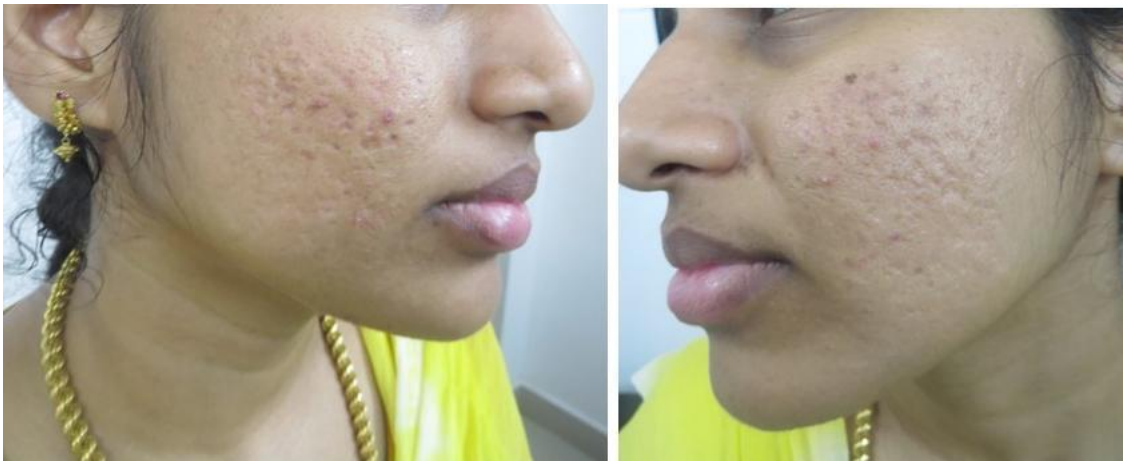

Figure 3: Healing of skin post-extraction of dystrophic calcinosis.

Discussion

Calcinosis cutis is a condition characterized by the abnormal deposition of calcium salts in the skin and subcutaneous tissues. It is not a disease itself but rather a manifestation associated with various underlying conditions [5,6]. The deposits are primarily composed of hydroxyapatite, a calcium phosphate mineral [5].

The five major types are: Dystrophic, Metastatic, Idiopathic, Iatrogenic and Calciphylaxis [5]. Dystrophic Calcinosis is considered the most common type, occurring in damaged or necrotic tissues without systemic calcium or phosphate abnormalities [5,7]. It is reported that DCC is associated with conditions of chronic inflammation, especially connective tissue diseases (e.g., scleroderma, dermatomyositis), trauma, infections, skin neoplasms and panniculitis [7]. Similarly, there is evidence of association with acne, acne scars, epidermoid cysts and pilomatrixoma [8]. This type presents as asymptomatic, chronic, firm papules or nodules occurring anywhere in the body. The common reported sites are extremities, scrotum and face [2,4].

The pathogenesis of dystrophic calcinosis cutis remains unclear due to rarity of the condition. However, it is suggested that with tissue damage and necrosis results in denaturation of proteins that binds to phosphate and calcification in the cutaneous tissue [8]. While the serum calcium and phosphorus levels are normal, the high mitochondrial calcium and phosphate levels further lead to crystal formation and cell necrosis [8]. The pro-inflammatory cytokines such as the Tumor Necrosis Factor (TNF), IL-6, IL-1B, also contribute to the formation of the calcium salts [9]. The calcium salts are composed of hydroxyapatite and amorphous calcium phosphate [9].

Our patient presented with multiple, small, firm papules on the face which possibly could have been triggered by chronic inflammation due to acne. It is interesting to note that while she was on isotretinoin during the treatment of acne, she did not repond well to it as the comedones were persistent. She had to discontinue the treatment as she felt no significant changes with the medications. This possibly indicates that dystrophic calcinosis do not respond to isotretinoin. Thus, chronic non-responsive comedones on the skin should raise suspicion of dystrophic calcification.

There are no guidelines for the management of dystrophic calcinosis. Excision of the lesion remains as the mainstay of the treatment. However, the feasibility and efficacy of excision for multiple lesions such as our patient remains debatable. We performed extraction of the lesions with small pin-point to minimal opening of the skin surface with the help of radiofrequency and lifting the lesion out of the skin. The procedure was performed in stages for better tolerability. The skin was then allowed for healing by secondary intention. We commenced her on topical antibacterial and keratolytic agents for keeping the pores unclogged and preventing further inflammation. Our patient was satisfised with the appearance of the skin at the end of the treatment (Fig. 3). On follow-up after 3 months, no recurrence was noted. However, we lost follow-up of the patient over 1 year as the patient shifted base.

Conclusion

In conclusion, dystrophic calcinosis is a rare but significant complication of long-standing acne, warranting consideration as a differential diagnosis in cases of persistent or treatment-resistant acne. This is particularly relevant for patients with comedones that fail to respond to conventional therapies such as isotretinoin. While no definitive treatment protocol exists, minimally invasive extraction of calcified lesions using radiofrequency techniques can offer symptomatic relief. However, this approach becomes challenging in cases with multiple calcified lesions, where individual extraction may prove cumbersome and less practical.

Conflict of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Funding Statement

This research did not receive any specific grant from funding agencies in the public, commercial or non-profit sectors.

Acknowledgement

None.

Data Availability Statement
Not applicable.

Ethical Statement
The project did not meet the definition of human subject research under the purview of the IRB according to federal regulations and therefore, was exempt.

Informed Consent Statement
Informed consent was taken for this study.

Authors' Contributions
All authors contributed equally to this paper.

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