Section: General Surgery

Original Research Article

PAINLESS SCROTAL NODULE- A CASE OF IDIOPATHIC SCROTAL CALCINOSIS

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Received *: 07/05/2026*
Received in revised form *: 17/06/2026*
Accepted *: 01/07/2026*

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DOI: 10.70034/ijmedph.2026.3.655

Source of Support: Nil,
Conflict of Interest: None declared

Int J Med Pub Health
2026; 16 (3); 4200-4202

ABSTRACT

Background: Idiopathic scrotal calcinosis is an uncommon and benign condition manifesting as multiple, firm, non-tender nodules on scrotal skin. It is marked by the accumulation of insoluble calcium salts in the skin and subcutaneous tissue without any systemic irregularities.

Case Presentation: A 41-year-old male presented with a one-year history of multiple painless swellings involving the scrotum. The nodules were firm, mobile, non-tender and distributed over the entire scrotal surface. Scrotal ultrasonography revealed multiple cystic lesions confined to the scrotal skin, with underlying testes appearing normal. Lesions were surgically removed using a minimal excision approach. Histopathology of the removed specimens confirmed calcinosis cutis. The patient was discharged in stable condition. A follow-up review at 6 weeks post-surgery revealed complete healing, with no recurrence or new lesions.

Conclusion: Idiopathic scrotal calcinosis is an uncommon benign condition that must be considered in the differential diagnosis of painless scrotal nodules. Histopathology is crucial to confirm the diagnosis and exclude underlying causes. Surgical excision offers excellent cosmetic and functional outcomes with low recurrence risk.

Keywords: Calcinosis cutis, scrotum, idiopathic, scrotal swellings.

INTRODUCTION

Calcinosis cutis is marked by aberrant accumulation of insoluble calcium salts in the skin and subcutaneous tissue.[1] Clinically, it commonly manifests as multiple, firm, non-tender nodules distributed across various anatomical sites.[2] Although frequently asymptomatic, some individuals report mild pruritus or chalky white discharge.[1] Based on the underlying aetiology, the condition is classified into four distinct subtypes: Subepidermal nodular calcification, Dystrophic calcification, Metastatic calcification and Idiopathic.[3,4] The subepidermal nodules, dystrophic and idiopathic variants are associated with normal serum calcium levels, whereas metastatic calcification is associated with hypercalcemia.[4] Dystrophic calcinosis is the most prevalent form and is frequently secondary to inflammatory processes, infections, or connective tissue diseases.[4]

A rare and benign subset of this disorder, Idiopathic scrotal calcinosis, is confined to the scrotal skin and occurs in the absence of any identifiable systemic derangements in calcium or phosphate metabolism.[2,5] Owing to its indolent course and involvement of a private anatomical region, the affected individuals often delay seeking medical care. In this report, we describe the case of a 41-year old male diagnosed with scrotal calcinosis cutis, detailing the clinical presentation, management, and subsequent outcome.

CASE PRESENTATION

A 41-year-old healthy-looking male presented with a one-year history of asymptomatic swellings over the scrotum [Figure 1]. The lesions had progressively increased in both size and number. There was no associated pain, discharge or bleeding. There was no history of trauma, urethral instrumentation, or significant medical or family history.

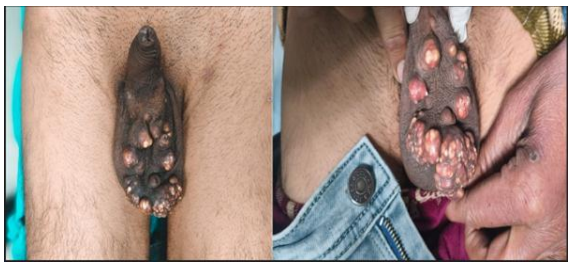

Figure 1: Clinical photograph showing multiple nodular lesions distributed over scrotal skin

On examination, the patient was haemodynamically stable. Inspection and palpation of the area revealed numerous firm, mobile nodules distributed over the whole scrotal surface. No signs of inflammation, discharge, or necrosis were noted. Both testes were palpable and normal. The penis and perineum were unremarkable.

Routine laboratory investigations were within normal limits. Scrotal ultrasonography demonstrated multiple cystic lesions confined to the scrotal skin, with normal underlying testes. A biopsy of one lesion suggested benign pathology.

The patient was counselled regarding the benign nature of the condition and the risks of cosmetic deformity and secondary infection. After obtaining written informed consent, surgical removal of the cysts was performed under local anaesthesia. Using a minimal excision approach, Elliptical incisions were made around the cysts [Figure 2], and multiple lesions were excised in toto. The flaps were approximated to reconstruct the scrotal wall, and haemostasis was achieved. Histopathology of the removed specimens confirmed calcinosis cutis.

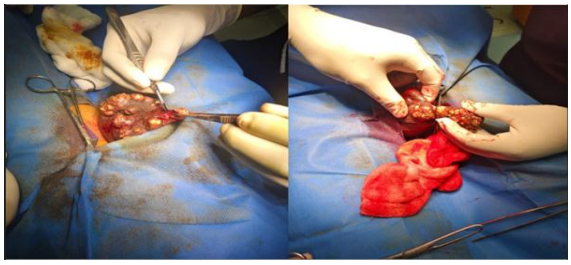

Figure 2: Intraoperative view demonstrating multiple nodular lesions

Postoperative recovery was uneventful, and the patient was discharged in stable condition. At two-week outpatient follow-up, the surgical wounds demonstrated satisfactory healing with no signs of infection. A subsequent review at 6 weeks post-surgery revealed complete healing with no recurrence or new lesions.

DISCUSSION

Scrotal calcinosis, particularly when no underlying cause can be identified, represents a curious and infrequent clinical entity. Our patient's presentation-asymptomatic nodules fits neatly within the classic framework of this condition. First described by Lewinski in 1883, patients typically present to the clinic in their third and fourth decade.[1] The patients seek advice only when the nodules grow, multiply, or become a cosmetic concern.[1]

Clinically, scrotal calcinosis can mimic other entities. The differential diagnoses encompass steatocystoma multiplex, epidermal cyst, lymphangioma circumscriptum, lipomata, angiokeratoma, and fibromata.[1,4] Calcified epidermal cyst, in particular, can be very difficult to distinguish without a biopsy.[1] Therefore, while the clinical picture provides the first clue, histopathology remains essential for a definitive diagnosis.

The exact cause of scrotal calcinosis is still debated. The core question is whether the calcification is truly idiopathic or secondary to another process. Case series reported by Noel et al, Shah et al and Song et al argue it is dystrophic calcification of pre-existing epidermal cysts.[6-8] Wright et al. challenged this by failing to find keratin deposits near the calcium aggregates, supporting the idiopathic theory.[9] However, Karabulut demonstrated the presence of keratin fibres and calcium granules in the adjacent dermis, thus reiterating the dystrophic theory.[10] Other theories suggest dystrophic calcification of dartos muscle and eccrine glands.[11,12] Minor trauma has also been proposed as a potential trigger.[13]

The histopathology of our case showed multiple cystic spaces filled with amorphous calcification and chronic inflammatory infiltrate. An epithelial lining was not clearly identified. This makes it difficult to definitively prove a precursor cyst. To support an idiopathic classification, systemic aetiologies must be ruled out. A comprehensive analysis of biochemical markers is essential for identifying the underlying aetiology.

Not one particular diagnostic modality is helpful. Fine-needle aspiration cytology is a reliable method to diagnose the condition.[14,15]

Treatment is typically reserved for cases involving symptoms or cosmetic reasons.[1,16] Surgical removal of the lesion followed by scrotal reconstruction is the established approach. To minimise recurrence, even the smallest detectable nodule must be removed.[2,16] For giant nodules, Noel et al described a one-step technique. A median raphe incision followed by elliptical resection and a thorough dissection of the scrotal dermis allows for detection of even the smallest nodules.[6,17] This approach yields excellent cosmetic results. For patients presenting with limited and smaller lesions, Rout et al described a pinch-punch method.[2] The procedure involves stretching the skin over the nodule by pinching it, then using a disposable skin punch to remove the superficial skin. The underlying calcified nodule is subsequently delivered intact by squeezing it from the sides and base using artery forceps.[2]

The prognosis is excellent. Recurrence is uncommon and typically linked to incomplete initial excision.[16,17] Importantly, there are no recorded instances of malignant transformation.[18] This benign nature is reassuring for the patients.

CONCLUSION

Idiopathic scrotal calcinosis is an uncommon benign condition that must be considered in the differential diagnosis of painless scrotal nodules. Histopathology is crucial to confirm the diagnosis and exclude underlying causes. Surgical excision offers excellent cosmetic and functional outcomes with low recurrence risk.

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