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CASE REPORT

Unravelling a Rare Conundrum: Enigmatic Cyst Over a Clubfoot

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Abstract

Acral skin has been found to have a different aetiology for epidermal cysts, also referred to as epidermal inclusion cysts, epidermoid cysts and infundibular cysts, then non-acral skin. They primarily affect hairy areas such as the face, scalp, neck and trunk. On the palms and soles, where there are no hair follicles, epidermal cysts sporadically develop. According to a number of publications, the development of epidermal cysts on acral skin differs from that on non-acral skin. Most of the epidermal cysts on the sole had parakeratosis and a localised absence of granular layer, at least on the upper part of the cyst wall, when examined under a microscope. Compact orthokeratotic material made up the majority of the cyst content of the sole's epidermal cysts. The pathophysiology of solitary epidermal cysts, specifically invagination of surface epidermis, may account for these pathological features. According to presented research, the lone epidermal cyst is regarded as a genuine traumatic epidermal inclusion cyst. On the palms and soles, epidermal cysts might be mistaken for calluses or warts. Inappropriate treatment may result from this misdiagnosis.

Key words: Epidermal cysts; Clubfoot; Congenital.

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Introduction

Usually observed on hair-bearing areas that include the scalp, face, neck and trunk, keratin-containing fluid-filled sacs known as keratin cysts are benign. While usually asymptomatic, they can become painful or infected, necessitating surgical removal.[1] The aetiology of keratinous cysts on the foot differs from that of cysts resulting from inflammation of the hair follicles and may be due to the traumatic implantation of epidermal cells into dermis.[2] Although these cysts typically measure about 5 cm, however, rare reports of cysts more than 5 cm are reported.[3] Diagnosing these cysts requires thorough clinical and pathological investigation due to differences in their behaviour, treatment and prognosis.

Neglected congenital *talipes equinovarus* (CTEV), or clubfoot, is a congenital deformity involving *cavus, adductus, varus* and *equinus* components, leading to significant functional impairment if left untreated. The presence of a keratinous cyst in a patient with neglected CTEV is rare and complicates both diagnosis and treatment, requiring careful surgical planning and management of both conditions simultaneously for effective treatment.

Case history

A 52-year-old female patient presented to the Outpatient Department with a swelling on the right foot that has been present for 4 years. The swelling had an insidious onset and gradually increased in size over time. Patient also complained of a dull, aching pain that progressively worsened, especially with movement, making her unable to perform routine activities. There was no history of significant trauma and no relevant past, personal, or family medical history. On general physical examination, pallor was present and her vitals were normal.

On local examination, there was a solitary, soft and fairly mobile mass over the lateral aspect of the dorsum of the right foot, measuring 10x8 cm. The mass had been gradually increasing in size over 4 years and was associated with a neglected CTEV deformity (Figure 1). The skin over the swelling was hypertrophied. Sonography of the foot revealed an oval, heterogeneous, hypoechoic mass located in the subcutaneous layer.

Intraoperatively, a curvilinear incision was made, the underlying deep fascia was dissected and the cyst was excised. Most of the lesion appeared as a white cystic structure containing thick, yellow exudate, which was removed and sent for histopathological examination (Figure 2).

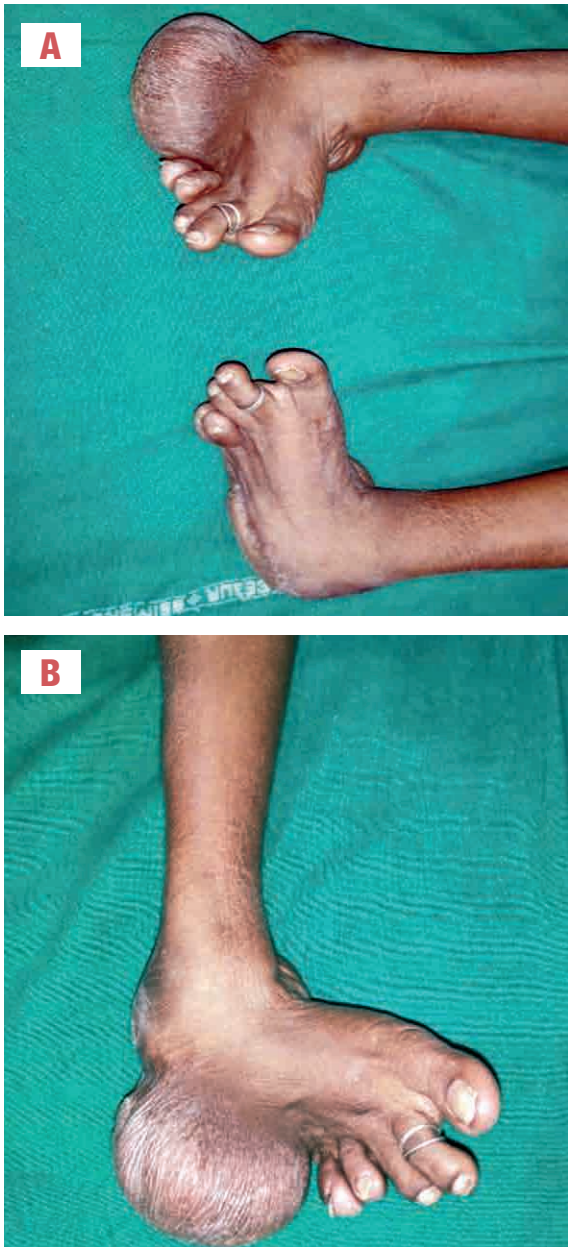

Figure 1: The mass was elevated, soft, round, movable, 10 x 8 cm in diameter and overlying the lateral aspect of right foot

Figure 2: Intraoperative findings

Macroscopically, the cyst was partially sectioned and measured 8.0 x 6.5 x 4.0 cm. It had a smooth, yellowish surface with a dome-shaped prominence at one pole. When cut open, the cyst revealed a smaller, yellowish cyst measuring 2.5 x 2 cm, lined by yellowish fatty and pearly-white areas. The remaining cyst wall appeared raw and ragged.

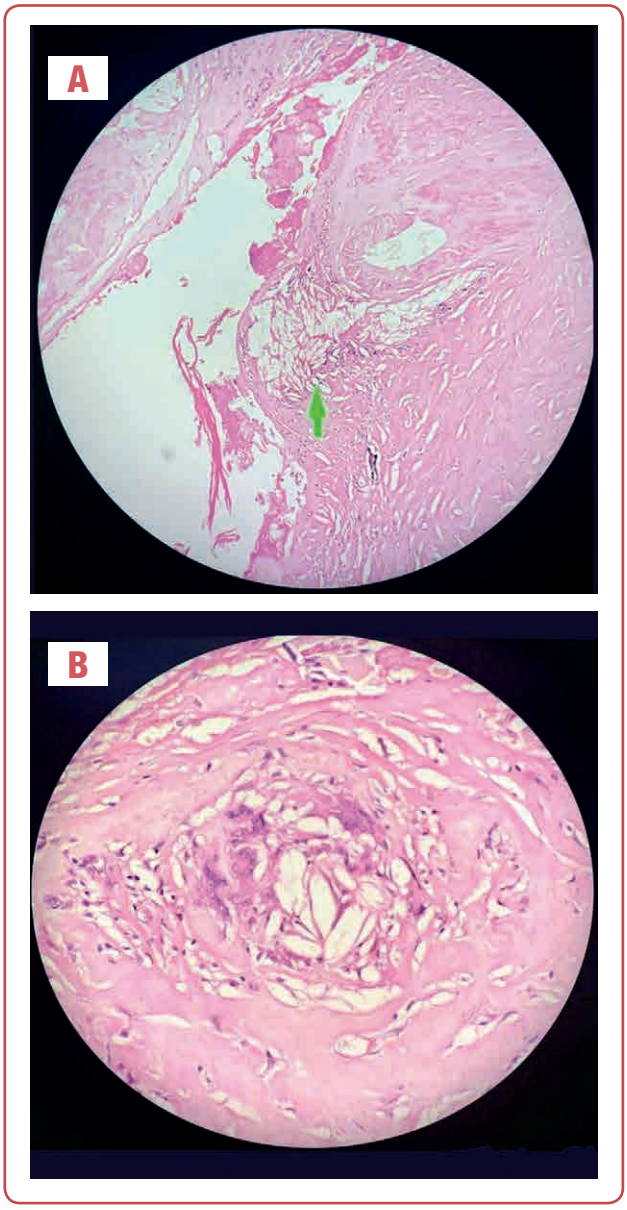

Figure 3: Cyst showing cholesterol clefts with reactive giant cells and degenerative changes

Histopathological examination of multiple sections from the swelling of the right foot showed a cyst focally lined by synovial epithelium. The wall was composed of fibro-collagenous and fibro-adipose tissue, exhibiting degenerative changes such as fibrinoid necrosis and hyalinisation, along with squamous metaplasia containing abundant keratin flakes. Areas of haemorrhage, calcification, cholesterol clefts and reactive giant cells forming cholesterol granulomas were also observed. Additionally, numerous dilated blood vessels with focal dense perivascular lymphoplasmacytic infiltrates were present. No evidence of atypia or infectious granulomas was identified. The histopathological features were consistent with bursitis (Figure 3).

The cyst was excised with careful attention to the foot's structure and postoperative recovery was closely monitored. Postoperative course was uneventful.

Discussion

This case is notable due to the rare coexistence of a keratinous cyst and CTEV. The traumatic implantation of epidermal cells into the dermis, often caused by continuous mechanical pressure from activities such as running, walking and standing, has been proposed as the origin of keratinous cysts, especially on the sole.[4] According to a study by Lemont that examined 120 keratinous foot cysts, most of these cysts were located on the lateral margins of the sole in patients aged between 20 and 35 years. This suggests that shearing pressures in young, active feet make varus-functioning feet more susceptible to developing these cysts.[1]

The pathophysiology of solitary epidermal cysts, particularly the invagination of surface epidermis, likely explains these pathological features. Such epidermal cysts are regarded as genuine traumatic epidermal inclusion cysts.[5] Differentiating these cysts from conditions like calluses, warts or tumours is crucial for proper management. This case presented unique challenges in management due to the altered foot anatomy from CTEV, necessitating a multidisciplinary approach. The cyst was excised with careful consideration of the foot's structure and postoperative recovery was closely monitored.

Conclusion

Most solitary epidermal cysts are classified as true traumatic epidermal inclusion cysts. On the palms and soles, these cysts can sometimes be mistaken for calluses or warts. This case highlights the importance of considering rare conditions in individuals with complex congenital abnormalities and underscores the need for future research to explore improved management options.

Ethics

Our institution does not require ethics approval for reporting individual cases or case series. A written informed consent for anonymised patient information to be published in this article was obtained from the patient.

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None.

Conflicts of interest

The authors declare that there is no conflict of interest.

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Data access

The data that support the findings of this study are available from the corresponding author upon reasonable individual request.

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