Case Reports and Series

“En bloc “resection technique for treatment of rare epidermoid cyst of the foot

Diogo Soares *, Francisco Bernardes, Pedro Ribeiro, Marta Cerqueira, Daniel Lopes, Diogo Robles

Centro Hospitalar do Tâmega e Sousa, Penafiel, Portugal

Introduction

Epidermoid cysts are benign subcutaneous lesions commonly seen in hairy-bearing surfaces of the body but rarely occur in glabrous skin such as the palms and soles. 1-3 Usually, these cysts result from progressive cystic ectasia of the infundibular portion of hair follicle however, in acral palm-plantar regions, the pathogenesis of this lesion in thought to be due to surgical or traumatic sequestration of epidermal fragments into the dermis that grow through keratinous debris and epithelial accumulation. 2

According to Young et al, the average size of an epidermoid cyst in the foot is 6 × 1.5 × 0.8 cm and the most common location is the 1st toe followed by the ankle, 2nd toe, 3rd toe, 4th toe and 5th toe. 4 Clinically they present as encapsulated and freely movable subcutaneous masses with a yellow and white content in its core. 2

Treatment of epidermoid cysts consists of surgical excision of the whole lesion, including the capsule of the cyst to avoid recurrence that, according to Young et al., can occur in 18.9% of the cases.

A search in Pubmed using the Mesh terms “epidermal cyst” and “foot diseases” revealed 5 case reports of epidermoid cyst since 2000.

Case report

The authors report a case of a 35-year-old female, with no medical past history, that presented to our department with complaints of a gradually increasing size swelling on her left foot plantar region and pain during weight-bearing and walking with 6 months of evolution. According to the patient there was no history of trauma. Clinical examination revealed a palpable mass with 4 × 2 × 1 cm dimension located under the head of 3rd metatarsal (Fig. 1). The lesion was well-circumscribed, adherent to the skin and had no surrounding inflammatory signs. Foot and ankle examination was unremarkable. Radiographs showed no bony lesions nor local foreign bodies. The foot ultrasonography showed an oval heterogeneous hypoechoic mass in the subcutaneous layer and MRI revealed a T2 hyperintense lesion adjacent to the 3rd metatarsophalangeal joint, without articular or neurovascular involvement (Fig. 2). Spinal anesthesia was performed by the anesthesiologist and the patient was placed on the table in a supine position with a leg tourniquet applied and inflated to 350 mmHg. “En bloc” resection technique was performed starting with a vertically oval skin incision over the lesion and blunt dissection of the subcutaneous layer until identification of the plantar component of the lesion and its pedicle that was adherent to the plantar 3rd metatarsal fat pad without involvement of capsulo-ligamentar, neurovascular or bony structures. Isolation of the pedicle and resection of the lesion “en bloc” preserving capsule was achieved (Fig. 3). Excised tissue was sent for histopathological examination. Intraoperative finding was an 4 × 2 × 1 cm sized well encapsulated cystic lesion with “milky” appearance on the inside (Fig. 4). The skin wound was closed with 3.0 nylon simple suture. The wound was dressed up with standard sterile forefoot bandage with longitudinally folded 10 × 10cm gauze compresses placed between the toes with reinforcement of the second and third web and completed with a loose elastic wrap. The patient was allowed to weigh-bear using a Barouk shoe. Immediate post-operative period was uneventful. One week after surgery the patient was seen in our hospital. Surgical site was examined and the bandage was renewed. The histopathological examination was reviewed and revealed a cystic tumour filled with lamellar keratin and lined by an epithelial layer, compatible with an epidermoid cyst (Fig. 5).

After two weeks the sutures were removed and the patient was allowed to weight-bear in comfortable sneakers. At 6 weeks follow-up the surgical wound was healed (Fig. 6). No recurrence was seen at 6 months follow-up and the patient had no complaints of pain at the incision site.

* Corresponding author.
E-mail address: 73246@chts.min-saude.pt (D. Soares).

https://doi.org/10.1016/j.fastrc.2023.100294
Received 28 March 2023; Revised 2 May 2023; Accepted 4 May 2023

2667-3967/© 2023 The Author(s). Published by Elsevier Inc. on behalf of American College of Foot & Ankle Surgeons. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).
Discussion

Epidermoid cysts result from progressive cystic ectasia of the infuldibular portion of hair follicle. It was initially thought that epidermoid cyst did not occur in the palm and sole since there are no sebaceous glands or hair follicles. There are different theories postulated in the literature about the pathogenesis of epidermoid cysts in palm-plantar regions. The most accepted theory is traumatic implantation of epidermal cells into dermal layers or foreign body reaction. In some reports, as in this case, patients can have no clear history of trauma or recent skin treatment and sometimes minor skin irritation episodes can be the precipitating factor.

Most recently, some authors suggested that epidermoid cysts can also develop secondary to Human Papilloma Virus (HPV) infection as the virus shows high affinity for eccrine duct epithelium. In the present case there were no histological findings suggestive of HPV infection such as vacuolated structures and intracytoplasmic eosinophilic inclusions.

The differential diagnosis of plantar epidermoid cysts should also include trichilemmal cysts, calluses, warts, lipomas, fibromas and neuromas. There are a few cases of malignant degeneration of epidermoid cysts into basal cell or squamous cell carcinoma.

The treatment of epidermoid cysts is surgical resection of the lesion in toto, including the capsule of the cyst, which is the key factor to avoid recurrences. The main complication of surgical treatment described in literature is infection of the surgical site.
Conclusion

Epidermoid cysts are benign lesions of rare occurrence on the non-hair bearing surfaces of the foot. Although these lesions can be asymptomatic, when they appear in high pressure areas of the foot, they may be the source of pain and discomfort during weight-bearing moments. It is important to perform a complete history and physical examination and to keep in mind that epidermoid cysts should be considered as a differential diagnosis of swelling of the foot. Imaging studies like X-ray, ultrasonography and MRI may be helpful as a part of aetiological investigation. Fine-needle aspiration cytology can also be a useful technique for the diagnosis if sufficient keratin or sebaceous material is obtained. Treatment consists in surgical excision and should be done within the appropriate margins.

Patient informed consent

Complete informed consent was obtained from the patient for the publication of this study and accompanying images.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References