Case Report: Acquired collagenoma on the dorsum of the foot

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A 34 year old male was referred to the Plastic Surgery department by his general practitioner for a large painless growth on the dorsum of his right foot. This had been present for approximately 10 years and never caused any significant or concerning symptoms to the patient. He denied any pain, tenderness, or neurological or functional deficit of the foot. He reported 2 smaller lesions of similar appearance on the dorsum of his left foot, with no history of trauma to the feet or friction from ill-fitting footwear and no relevant occupational exposure.

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Examination noted a well defined 4 cm x 4 cm, dome shaped growth on the dorsomedial aspect of his right foot (Fig. 1) with a similar 1 cm x 1xm lesion on his dorsolateral left foot. Both were smooth, firm, rubbery but not fluctuant, did not transilluminate, and did not appear fixed or related to underlying structures. The colour of these lesions was the same as the patients acral skin but distinct from the surrounding skin. Routine blood tests, including glucose, and serum lipids were normal (Fig. 2).

As diagnosis was unclear at this point decision was made to proceed to tissue biopsy. An incisional biopsy was performed under local anaesthesia, with no complications. Histological examination revealed the lesion to have reactive epidermal hyperplasia overlying thickened and sclerotic bands of collagen without associated fibroblastic proliferation, with preservation of adnexal structures (Figs. 3
Fig. 3. Lesion histology.

An EVG stain on this specimen showed scattered intralesional elastic fibres. The lesion was hence diagnosed as a collagenoma. Satisfied that the lesion was benign the patient declined further treatment as excision likely would necessitate skin grafting for closure.

Discussion

Collagenomas (also known as sclerotic fibromas) belong to a group of hamartomas referred to as connective tissue naevi, with other examples including elastomas and naevi mucinosis.¹ They may be described as congenital or acquired, with congenital collagenomas often associated with Autosomal Dominant conditions such as Multiple Endocrine Neoplasia Type 1, Tuberous Sclerosis (when it is classically referred to as Shagreen patch), or Cowden Syndrome, or sporadic conditions such as Proteus Syndrome.² Acquired collagenomas are those that occur in patients without an associated syndrome and may be divided into eruptive (where patients present with multiple nodules) or isolated (a single nodule).³ Their aetiology is not entirely understood but studies of these lesions have found evidence of increased fibroblast proliferation with decreased collagenase production relative to normal skin.¹ ⁴ There are also thoughts that it may be related to underlying trauma as they more commonly appear in areas subjected to friction.¹ ⁵

Collagenomas present as skin nodules, plaques, or papules that are classically described as discrete, firm, elevated from the skin, and skin coloured.¹ Familial forms of collagenoma classically affect the trunk and proximal upper limb, while eruptive collagenoma has reported to involve the peripheries and trunk.² Acquired collagenoma as seen in this case are reported to occur on the face and extremities, as well as the palms of the hands and soles of the feet.¹ Rare case reports have seen collagenomas...
affecting the GI tract. Differential diagnoses include similar well circumscribed skin lesions such as dermatofibroma, fibrolipoma, and benign fibrous histiocytoma.

Eruptive collagenomas generally appear in the early years of life with familial forms presenting in the second and third decades and isolated collagenomas presenting in middle age, although variations to this pattern have been reported. There are some theories that it represents an involutional stage of other skin lesions (such as dermatofibroma, neurofibromas, sclerotic lipoma and others) due to reports of focal areas with collagenoma like changes in these lesions. Histological examination generally finds dense, coarse collagen fibres in variable arrangements, usually with reduced or absent elastic fibres. Morphoea shows a more amorphous appearance to the collagen, is often associated with perivascular lymphoplasmacytic inflammation and does not present as nodular lesions. Storiform Collagenoma is a subtype particularly associated with Cowden syndrome (a genetic syndrome characterised by the development of numerous hamartomas in different anatomical structures most commonly the skin and GI tract) and shows collagen bundles in a whorled arrangement.

Collagenomas have also been described as athlete’s nodules occurring on areas of chronic minor trauma and friction such as the dorsum of feet in runners or surfers, or on the knuckles of boxers. In these patients, cessation of the causative activity or avoidance of friction may often lead to resolution of these lesions without requiring surgery.

Collagenomas are in themselves benign lesions but as a presentation they should warrant further investigation (particularly in children) due to their association with the aforementioned syndromes as well as pseudohypoparathyroidism and hypogonadism. Any concern or uncertainty about such a lesion warrants expert dermatological and histopathological review. Treatment is not required unless the lesions themselves cause discomfort or distress. Treatment options include surgical excision (although recurrence has been reported between 2.5–7 years post excision) and

![Fig. 4. Lesion histology.](image-url)
intralesional steroid injection. In many cases however (including this case) patients will opt for no treatment once they have been reassured that these lesions are benign.

Conclusion

Acquired collagenoma is a rare hamartoma classically reported as occurring on the palms and soles of the feet. Here we report on an unusual presentation involving the dorsum of the foot that did not require further treatment after histological confirmation.

Ethical approval

Not required.

Funding

None.

Conflict of Interest

None.

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