Dumbbell Ganglion Of The Foot: Case Report

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Abstract

Ganglions are common tumors of the dorsum of the foot. The authors report a case of dumbbell ganglion of the foot in a 32-year-old lady, whose main concern was the cosmetic disfigurement due to the displacement of the second toe. The mass was excised through a dorsal approach. The patient remained asymptomatic at 14 month follow up.

Introduction

Ganglions are benign cystic swelling that arises in relation to the tendons and joints. They are most commonly seen around the wrist and feet[1,2,3]. They are thought to be due to mucinous transformation of the periarticular connective tissue[3]. Occurrence of ganglions over the plantar surface of foot is very rare[1,2,4] and to the authors knowledge there are only two reports[1,2].

Case Report(s)

32- year- old lady presented with swelling of the right foot of 4 years duration. She didn’t have any antecedent trauma to her foot. The swelling was progressive over a period of four years. Over a period of one year she noticed lateral deviation of her right second toe due to pressure effect of the swelling and she consulted us for cosmetic reasons.

There was a soft well localized swelling over the dorsal aspect of the first inter digital space measuring 2 cm X 3 cm size (Figure 1). The margins were well defined. There was deviation of the 2nd toe laterally due to the swelling. No mass could be felt on the plantar aspect.

Radiographs of the right foot showed soft tissue mass in the interdigital space, with lateral deviation of the second toe. There was no bony erosion. (Figure 2)

Ultra sound scan showed a well defined heterogenous mass in the interdigital area, which consisted of solid areas with hypoechoic areas suggestive of fluid. Ultra sound scan failed to show any extension of the cyst into the foot.

Patient was taken up for surgery under ankle block anesthesia. The mass was explored through a longitudinal incision over the dorsum of foot, protecting the digital neuro vascular bundle. During surgery part of the mass was found arising from the plantar aspect of the inter digital space. The excised mass was measuring 6 cm X 2 cm and showing a dumbbell appearance. The capsule was found very thick over the plantar aspect of the cyst and the lumen contained serosanguinous fluid.(Figure 3 & 4)

Histopathology confirmed ganglion cyst. Section showed a cyst without any definite lining. The cyst wall was made of fibrocollagenous tissue with areas of myxomatous degeneration surrounding the cystic area and vascular proliferation. These features are consistent with ganglion. (Figure 5)

At 14 months follow up, she had normal appearing foot and the radiographs showed normal alignment of the metacarpals. (Figure 6 and 7)

Discussion

Ganglions are common tumors of the hand and dorsum of the foot[4,5].

Plantar ganglions are very rare. Out of the 39 foot ganglions reported by Macdonald et al none were from the plantar surface of the foot. However there are few reports of plantar ganglions in the literature[1,2].

Ganglions may cause pressure effects, and present as painful plantar swellings. Other cases may present with deviation of the toes, making wearing of the shoes difficult in a shod community[1]. Though initial presentations due to cosmetic reasons are rare[4] our patient’s main concern was displacement of the second toe. This also prevented her from wearing a proper shoe in the community where most of the women are shod.

Extension of the swelling into the dorsum of foot has been reported before[1,2]. In the only report of an “hourglass” ganglion the authors used a combined plantar and dorsal approach[2]. This approach was pre operatively planned after demonstrating the plantar extension of the mass with an MRI scan. One hypothesis put forward is the pressure effect of walking on the plantar ganglion causing the cyst to move laterally and dorsally resulting in the “dumbbell"
In our case a plantar extension of the cyst was not expected pre-operatively, as the ultra sound scan report was misleading. However we could excise the full mass through the dorsal original surgical incision, as in the case of Kumar and Ahmed[1].

Ganglions are known to recur if not properly excised. Recurrence rate is reported to be less than 10%, after complete excision of the cyst and the daughter cysts[3]. Our patient had no recurrence at 14 months follow up and could wear a shoe comfortably.

This case is unusual due to the peculiar appearance of the mass and the aesthetic result at the time of follow up.

Conclusion

A rare presentation of ganglion in the foot is presented.

Authors contribution(s)

SSS and HZ- Managed the case, prepared the manuscript.
JJ- Reviewed the histopathology slides, and prepared the histopathology write up.

References

Illustrations

Illustration 1

photograph showing the mass[black arrow head] with lateral deviation of the 2nd toe.

Illustration 2

X-ray of the foot, the deviation of the 2nd toe, and the soft tissue shadow[white arrow heads]
Illustration 3

Per operative picture showing the cyst arising from the plantar aspect of the inter digital space.

Illustration 4

The excised cyst showing the dumbbell appearance.
Illustration 5

Histopathology picture

Illustration 6

Clinical photograph at 14 months follow up showing the normal appearing foot.
Illustration 7

Antero posterior radiograph of the foot, showing normal alignment of the toes
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