Intraneural Ganglion of Digital Nerve of Thumb: A Case Report and Review of Literature

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Introduction

Ganglions are the most common cause of focal masses in the hand and foot, but they can appear in nearly all anatomic locations [1]. Ganglions commonly arise either from the synovium of joints, tendon sheaths or epineurium of nerves and are filled with synovial fluid that may become jelly-like over time [2].

Intraneural ganglions are rare and most frequently arises from the epineurium of nerves around the knee (popliteal, common peroneal or tibial nerve) near the fibular head but can involve other sites also [3–6].

We present a rare case of a symptomatic intraneural ganglion of the ulnar digital nerve of thumb in a 30 years old female that was successfully treated with surgical excision with complete postoperative neurological recovery. On our search of literature we could only find few cases of digital nerve ganglion [7–9, 11, 12] thus establishing its rarity.

Case Report

A 30-year-old right-handed housewife presented at our department with a swelling in left thenar region of 1 year duration that was increasing in size with localised pain in thenar region and paresthesia in thumb since last 3 months. There was no history of sensory loss or motor deficit in the thumb. The patient had no previous history of hand or neck injuries or other medical problems (diabetes, peripheral neuropathy etc.). On examination the swelling was cystic, tender, with normal nonadherent overlying skin. Thenar muscle atrophy or cutaneous trophic change was not observed. The ranges of motion of various joints of thumb were normal and on sensory examination there was no sensory deficit with two point discrimination was 3 mm on affected thumb.

We have planned excisional biopsy, during surgery, we found a 2 × 1 cm diameter cystic lesion containing dark brown coloured fluid and compressing the ulnar digital nerve in thenar region (Fig. 1). The ulnar digital nerve appeared flattened. We have done excision of ganglion by interfascicular microdissection and microneurolysis without sacrificing the nerve. We also found that there was a connection of the ganglion to the metacarpophalangeal joint distally, that connecting branch was excised. The excised tissue was sent for histopathological examination.

On histopathological evaluation there was thick walled cystic lesion lined by fibromyxoid tissue and filled with mucoid material found and a diagnosis of intraneural ganglion cyst was made. Post-operative period was uneventful without any sensory or motor deficit.

The patient was re-evaluated clinically at 12 months postoperatively showing complete recovery without any recurrence.

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Fig. 1 Intra-operative photograph showing lesion

Discussion

Intraneural ganglion cysts are a rare condition. Most commonly, they affect the common peroneal nerve at the fibular head but can be seen elsewhere including involvement of the radial, ulnar, median, sciatic, tibial, posterior interosseous nerves [1–5]. Involvement of ulnar nerve at wrist and deep branch of ulnar nerve in palm has also been reported [6] but involvement of digital nerve is extremely rare with few case reports [7–9, 11, 12].

Three major theories have been proposed to explain intraneural ganglion cyst formation: (1) degenerative theory, (2) synovial (articular) theory, and (3) tumoral theory [10]. The degenerative theory speculates that mucoid degeneration of the epineurium or perineurium leads to de novo cyst formation within the nerve sheath. The synovial (articular) theory proposes that “pedicles” connect the synovial joint to the affected parent nerve by way of cystic fluid “infiltration” along the articular branch [10–12] and this should be ligated or resected [13]. The tumoral theory, least favored of the three, compares an intraneural ganglion to other cystic lesions or tumors and hypothesizes that even an organized hematoma can transform into an intraneural ganglion cyst. In our case probable etiology was synovial theory because of presence of intra-articular connection found intra-operatively.

We have done excision of the cyst combined with resection of the articular branch with interfascicular microdissection and

microneurolysis without sacrificing the digital nerve, this eliminated the cyst and preserved sensation of the thumb.

In conclusion, intraneural ganglion is extremely rare in the digital nerve. Intraneural ganglion cyst should be considered in the differential diagnosis of digital neuropathy. In all cases, early diagnosis and careful excision is associated with satisfactory outcome.

Limitation of our case report is absence of radiological imaging(MRI) of the patient.

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