The Jeweller’s Thumb: An Occupational Neuroma

A Case Report

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ABSTRACT: Perineural fibrosis and scarring of superficial nerves can occur secondary to chronic frictional forces. This results in a tender lump in the nerve and hyperesthesia of the area of its distribution. Bowler’s thumb is a well known entity which involves the ulna side digital nerve of the thumb at the level of the MP joint. This article describes a perineural fibrosis of the digital branch of the thumb in a jeweller who presented with pain and swelling at the center interphalangeal joint. Surgical excision of the fibrous mass and neurolysis has relieved the symptoms.

Case History

A 25-year-old right handed female jewellery worker presented with pain and swelling of the interphalangeal joint of the right thumb. There was no history of trauma or fever and no similar swellings in other joints. There was no early morning stiffness. The patient had been treated by splints, Naprosyn and Tylenol for one year with no effect. Examination of the right thumb revealed a 1 cm² firm swelling over the interphalangeal joint in the middle of its palmar surface. The skin over the swelling was normal. The swelling was mobile at the transverse axis of the thumb and it was not compressible. The dorsal aspect of the joint was normal. The sensation was diminished at the tip of the finger volar side for two point discrimination. Thumb movements were full and painless. X-ray of the thumb was unremarkable.

The mass was explored by a horizontal volar crease line incision. A fibrotic tissue was found to be arising from the pulp branch of the digital nerve (Fig. 1). The course of this pulp branch was dissected proximally to its origin from the digital nerve. The normal anatomical location of the other two branches of the digital nerve was confirmed by extending the incision laterally. The fibrotic scar tissue was excised with the neurolysis of the branch. The flexor tendon and its sheath were found to be normal.

Histologically the specimen showed many nerve bundles and thick-walled arteries as well as many arterioles seen in the fibrous-fatty tissue (Fig. 2).

The epineurium was fibrotic and the perineurium was associated with zones of fibrillation. The endoneurial spaces were widened and revealed mucinous change. Focal areas of hyaline change and loss of Schwann’s cells indicated distortion and degeneration of the nerve. The entire histological picture is comparable to scar due to trauma and is also analogous to that seen in Morton’s neuroma. The patient was free of symptoms completely.

Discussion

Superficial nerves are subjected to chronic constant friction forces at occupation or other sports. This leads to the perineural fibrosis of the nerve resulting in a tender swelling and hyperesthesia. Bowler’s thumb results from the repetitious compression of the bowling ball on the ulna side digital nerve of the thumb at its metacarpophalangeal joint level. This neuroma involving the division of the digital nerve of the thumb in the jeweller is another example of occupational neuromas of the thumb.

The anatomical variations of the digital nerves of the
Fig. 1: The thickening of the pulp division of the digital nerve seen. Note the radial side digital nerve which is normal in size.

The third branch goes to the pulp and supplies the major parts of the volar surface of the finger tip.

The variations of cutaneous nerve supply of the hand was studied by Stopford after the first World War, when he reviewed cases of complete lesions of median, radial, and ulnar nerves and resultant area of anesthesia. Pan studied the distribution of median, ulnar and radial nerves by studying the necropsy specimens and anatomical dissection. The results of these investigations and variations are not well published. The common patterns of arrangements have been dealt with in current anatomical tests.

Fig. 2: Section of the specimen (+10) showing the fibrous tissue scarring. Arrow points a narrowing of the lumen due to endarteritis obliterans.

Few cases of Bowler's thumb have been reported in the literature. These are the traumatic neuromas of the ulnar digital nerve of the thumb in the web site caused by the bowling ball. A review of 17 cases of Bowler's thumb was reported by Dobyns et al in 1972.

In our particular case the traumatic neuroma involved the central division of the digital nerve of the thumb which was located in the pinching surface of the thumb. This branch is exposed to repeated trauma due to the patient's daily activities which involves holding fine instruments between thumb and index finger. The basic process is not a hyperplasia of neural elements but rather a proliferation of perineural fibrous elements that surround and separate the nerve fascicles. These nerve fascicles are eventually strangulated by fibrous tissues and result in hyperesthesia and late atrophy. The proliferation extends to adjacent fascial and subcutaneous structures which presented in the form of a nodular soft tissue swelling. The entire process is comparable pathologically to the Morton's
neuroma of the foot.

Early awareness of this possibility is needed in patients with similar occupations who present with hyperesthesia and swelling at the volar side of the interphalangeal joint of the thumb. Protection of the thumb in a splint, anti-inflammatory medication, and rest may help reduce the symptoms initially. Change in job may be needed to avoid the condition's becoming chronic. In cases which do not respond to conservative management excision of scar tissue around the digital nerve and neurolysis may be necessary.

References