British Journal of Plastic Surgery (2003), **56,** 161–163

doi:10.1016/S0007-1226(03)00093-6

BRITISH JOURNAL OF PLASTIC SURGERY

Phalangeal osteochondroma: a cause of childhood trigger finger

A. Al-Harthy and Ghazi M. Rayan*

*Khoula Hospital, Muscat, Oman; and *Hand Surgery Section, Orthopedic Surgery Department, and Integris Baptist Medical Center, Oklahoma City, OK, USA*

SUMMARY. Trigger finger is uncommon among children and often caused by various lesions. We report a 5-year old girl who presented with chronic painless triggering of the right ring finger and normal X-ray. She underwent exploration of the finger flexor tendons and release of the A1 pulley. Lack of obvious pathology dictated further wound exploration which revealed a hidden osteochondroma of the proximal phalanx. We believe that adequate surgical wound exposure is necessary if no obvious cause of triggering could be seen in order to rule out an atypical osteochondroma even in the presence of normal X-rays. © 2003 The British Association of Plastic Surgeons. Published by Elsevier Science Ltd. All rights reserved.

Trigger finger is uncommon among children and much less common than congenital trigger thumb. It is estimated that the incidence of congenital trigger digits is 2.2% of all upper limb anomalies.[1] Ger et al[2] reported an incidence of trigger thumb in children to be 1 in 2000. According to Cardon, Ezaki and Carter,[3] of all trigger digits in children congenital trigger fingers accounted for 14%, whereas trigger thumbs accounted for 86%. Congenital trigger thumb is believed to be caused by nodular thickening of the flexor tendon termed Notta's nodule.[4] Such a nodule is usually not encountered in congenital trigger finger. A more proximal decussation of the flexor digitorum superficialis tendon, and 'rosary bead-like' thickening of the flexor tendons have been described as some of the causes of trigger finger in children.[3] We report a case of childhood trigger finger caused by proximal phalangeal osteochondroma.

Case report

A 5-year old girl presented with a 9-month history of painless triggering and locking of the right ring finger (Fig. 1). The triggering increased in frequency and the patient had multiple episodes of recurrent locking of the finger in flexion at the metacarpophalangeal joint. The parents gave a possible remote history of trauma to the hand at the age of one year for which she had no treatment. Examination revealed a palpable ill-defined thickening of the flexor sheath and A3 pulley. The patient demonstrated triggering and finger locking in flexion. There was mild joint stiffness with normal neurovascular examination. X-rays of the hand showed no bony abnormality. Based on the history the patient was provisionally diagnosed with a possible closed flexor digitorum superficialis tendon slip rupture. She underwent exploration of the ring finger flexor tendons through a zigzag Brunner incision centered over the metacarpophalangeal joint. The A1 pulley was released. The flexor digitorum superficialis tendon was found to have edematous, mildly, thickened tenosynovium without tendon slip injury. Limited tenosynovectomy was done and the A3 pulley was also released. Lack of obvious pathology dictated further exploration of the wound which revealed a hidden cartilaginous mass close to A3 pulley measuring 1 × 1 cm and raised by 0.5 cm above the palmar surface of the proximal phalanx (Fig. 2). The cartilaginous lesion was excised along with a segment of the periosteoum and cortical bone (Fig. 3). Histopathological examination revealed mature lobulated cartilaginous tissue with overlaying fibrous cap and scant bony spicules within the mass which was consistent with osseous osteochondroma (Fig. 4). Two months after surgery the patient was asymptomatic and the wound healed uneventfully. She had full range of motion of the ring finger and no further episode of triggering or locking occurred.

Discussion

Osteochondroma is a congenital bony overgrowth with a hyaline cartilaginous cap that is commonly seen in the metaphyseal region of long bones.[5] Solitary osteochondromas in the hand are uncommon and when encountered, they are seen with hereditary multiple exostosis.[6] Osteochondroma in the hand affects most frequently the proximal phalanx.[7] Rockey [8] reported

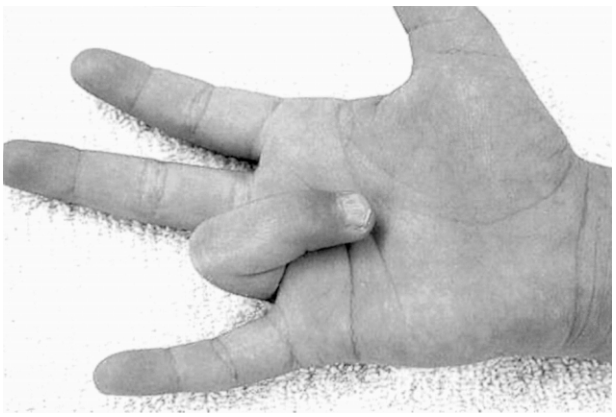

Figure 1—A 5-year old girl has triggering and locking of the right ring finger.

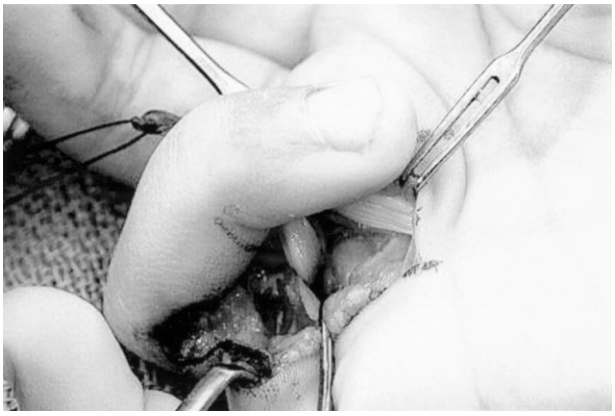

Figure 2—A cartilaginous mass close to A3 pulley was noticed to originate from the palmar surface of the proximal phalanx.

tenosynovial osteochondroma of the tendon sheath presenting as a non-traumatic acute case of locked trigger finger. X-ray showed increased radiodensity in the soft tissue adjacent to the proximal phalanx. Minsinger et al[9] reported tenosynovial osteochondroma of the extensor tendon that appeared on the initial X-rays as a soft tissue ectopic mineralization in the dorsum of the wrist joint. Our case did not affect the flexor tenosynovium but originated from the bone. Yomamoto et al[10] reported a case of solitary phalangeal osteochondroma presenting as a small mass of the ring finger that was diagnosed on X-ray. The lesion was eccentrically located in the metaphysis of the proximal phalanx. Turret exostosis of the metacarpal neck was masked by the metacarpal head and could not be detected on repeat X-ray[11] but bone scan showed increased uptake. In our patient plain X-rays did not show any bony abnormality despite the presence of the lesion in the proximal phalanx. The osteochondromatous lesion was atypical because it was invisible on X-ray. In contrast to the typical cortical lesions or tenosynovial osteochondromas which are easier to diagnose on X-rays. Bizarre parosteal osteochondromatous proliferations of bone known as Nora's lesion[12] should be considered in the differential diagnosis. This lesion is visible on X-ray and has typical radiological

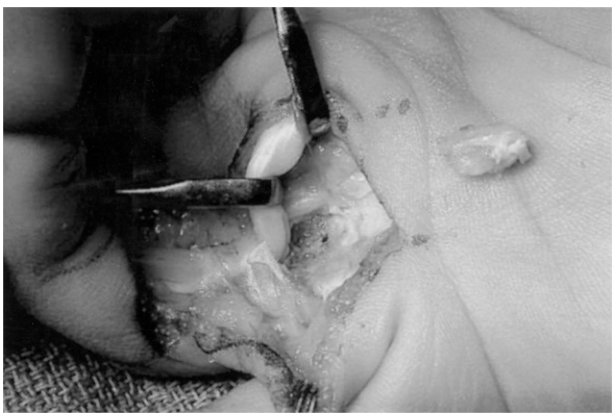

Figure 3—The excised cartilaginous lesion with periosteoum and cortical bone.

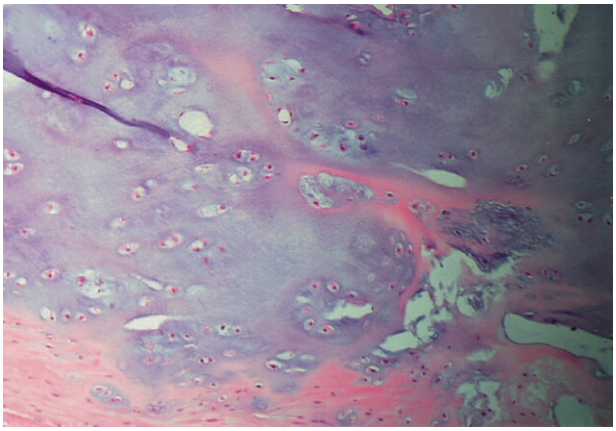

Figure 4—Mature benign cartilaginous tissue that was located within overlaying fibrous cap and has bony islands within the mass consistent with osseous osteochondroma.

features as a clearly pedunculated mass arising directly from cortical bone by a pedicle without medullary cavity involvement.[13] Histologically the lesion contains hypercellular cartilage with ossification and spindle cells.[12] In contrast to the typical osteochondromatous lesion which is mainly cartilaginous.

Trigger fingers in children can be caused by narrowing the chiasm of Campers of the flexor superficialis.[14] Notta's nodules are a common cause of congenital trigger thumb, and have been implicated less often in trigger fingers in children.[14] Partial rupture of the flexor digitorum superficialis slip can also cause triggering of the fingers.[15]

Other less common causes of triggering in general include impinging[16] or entrapped[17] sesamoid bone within the metacarpophalangeal joint, palmar plate injury,[17] partial collateral ligament injury, and joint capsular tears.[18]

Our case illustrates a novel cause of trigger finger in contrast to other causes of trigger finger in children and congenital trigger thumb. Adequate surgical exposure should be used if no obvious cause of triggering is seen in order to rule out the presence of an atypical osteochondroma especially in the presence of normal X-rays.

Acknowledgements

We thank Dr J. Schnabel, MD (Pathologist) for his help in preparing the slides.

References

1. Flatt AE. The Care of Congenital Hand Anomalies, 2nd edn. St Louis: Quality Medical Publishing; 1994. p. 90–2.
2. Ger E, Kupecha P, Ger D. The management of trigger thumb in children. J Hand Surg 1991;16A:944–7.
3. Cardon LJ, Ezaki M, Carter PR. Trigger finger in children. J Hand Surg 1999;24A:1156–61.
4. Notta A. Recherches sur affection particuliere des gaines tendineuses de la main, caracterisee par le developpement d'une nodosite sur le trajet des tendons flechisseurs des doigts et par l'empechement de leurs mouvements. Arch Gen Med 1850;24:142–61.
5. Huvos AG. Diagnosis, Treatment, and Prognosis, 2nd edn. Philadelphia: WB Saunders; 1991. p. 253–64.

6. Karr MA, Aulicino PL, DuPuy TE, Gwathmey FW. Osteochondroma of the hand in hereditary multiple exostosis: report of a case presenting as a blocked proximal interphalangeal joint. J Hand Surg 1984;9A:264–8.
7. Moore JR, Curtis RM, Wilgis EFS. Osteocartilaginous lesions of the digits in children: an experience with 10 cases. J Hand Surg 1983;8A:309–15.
8. Rockey HC. Trigger finger due to tenosynovial osteochondroma. J Bone Joint Surg 1984;45A:387–8.
9. Minsinger WE, Balogh K, Millender LH. Tenosynovial osteochondroma of the hand. Clin Orthop 1985;196:248–52.
10. Yamamoto T, Kurosaka M, Mizuno K. J Hand Surg 2001;26A: 556–8.
11. Rubin JA, Steinberg DR. Turret exostosis of the metacarpal. J Hand Surg 1996;21A:296–8.
12. Nora FE, Dahlin DC, Beabout JW. Bizarre parosteal osteochondromatous proliferations of the hands and feet. Am J Surg Pathol 1983;7:245–50.
13. Davies CWT. Bizarre parosteal osteochondromatous proliferation in the hand. J Bone Joint Surg 1985;67A:648–50.
14. Fahey JJ, Bollinger JA. Trigger-finger in adults and children. J Bone Joint Surg 1954;36A:1200–18.
15. Rayan GM, Elias L. Trigger finger secondary to partial rupture of the superficialis flexor tendon. Orthopaedics 1985;3:1090–1.
16. Flatt A. Recurrent locking of index finger. J Bone Joint Surg 1958; 40A:1128–30.
17. Sweterlitsch PR, Torg JS, Pollack H. Entrapment of a seasamoid in the index metacarpophalangeal joint. J Bone Joint Surg 1969; 51A:995–8.
18. Allred A. A locked index finger. J. Bone Joint Surg 1954;36B:102–3.

Correspondence to Ghazi M. Rayan, 3366 NW Expressway #700, Oklahoma City, OK 73112, USA

Paper received 19 September 2002.
Accepted 25 March 2003.