

Soft-tissue osteoma of the thenar eminence



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ARTICLE INFO

Article history:

Received 24 December 2014

Received in revised form

2 February 2015

Accepted 28 March 2015

Available online 31 December 2016

Keywords:

Osteoma

Thenar

Hand

Soft tissue

Extraskelletal

ABSTRACT

The development of osteoma in soft tissues without a direct contact with the adjacent osseous and articular structures is a very rare event. The involvement of the hand is even rarer, with only two previous cases reported so far. A 25-year-old man presented with a painless solid mass in the thenar region of his right palm, which appeared almost 2 years ago and showed a progressive enlargement in the last months. Under regional anesthesia an excisional biopsy was performed and the histopathological evaluation of the lesion confirmed the diagnosis of soft tissue osteoma. The postoperative follow-up period was uneventful without any complication or recurrence. Following a brief period of hand physiotherapy the patient has returned to normal daily activities.

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Introduction

Osteoma is a rarely encountered benign tumor; it is usually diagnosed as a slowly-growing mass in the skeleton, also known as homoplastic osteoma. Heteroplastic or extra-skeletal soft-tissue osteoma is exceedingly rare. Being a soft-tissue tumor with an osseous component, a differential diagnosis should be made with similar conditions including osteosarcoma, osteochondroma, synovial osteochondromatosis, ossifying lipoma and myositis ossificans.¹ The majority of the soft-tissue osteoma cases in the literature have been diagnosed on the skin and the tongue.^{2–4} The extremities are rarely involved with only two previously reported cases involving the hand, both in adults older than 50 years of age.^{5,6} In this report a soft tissue osteoma of the thenar eminence in a young patient was presented.

Case report

A 25-year-old right handed male patient presented with a painless solid mass in the thenar region of his right palm. The lesion had first appeared almost 2 years ago without a sign of trauma and showed a progressive enlargement in the last months. The physical examination has revealed a subcutaneous nonmobile mass

approximately 3 × 2 cm in size with firm consistency in the thenar eminence. The examination of the motor and sensory functions of the hand was within normal limits; however the grasping activities were mildly restricted owing to the mass effect. The magnetic resonance imaging showed a high-signal, well-defined lesion in the thenar region between the first and second metacarpal shafts, confined to a potential space between the thenar muscles ventrally and the adductor pollicis muscle dorsally (Fig. 1). Under regional anesthesia and tourniquet application an excisional biopsy was performed via an incision made parallel and just ulnar to the thenar crease (Figs. 2 and 3). No connection to the adjacent metacarpal bones was noted. The motor branch of the median nerve to the thenar muscles was intact. On gross examination the lesion was grayish white, well encapsulated and solid, showing osseous consistency (Fig. 4). The histopathological evaluation of the lesion has confirmed the diagnosis of soft tissue osteoma. The postoperative 1 year follow-up period was uneventful without any motor deficit, sensory disturbance or recurrence.

Discussion

Osteomas are bosselated, round-to-oval sessile tumors that usually project from the subperiosteal or endosteal surfaces of the bone cortex and most often arise on or inside the skull and facial bones.⁷ Having no potential for transformation into osteosarcoma, osteomas are generally regarded as slow growing tumors of little clinical significance except when they obstruct a sinus cavity or extend to the brain or eye. The development of osteoma in soft

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Peer review under responsibility of Turkish Association of Orthopaedics and Traumatology.

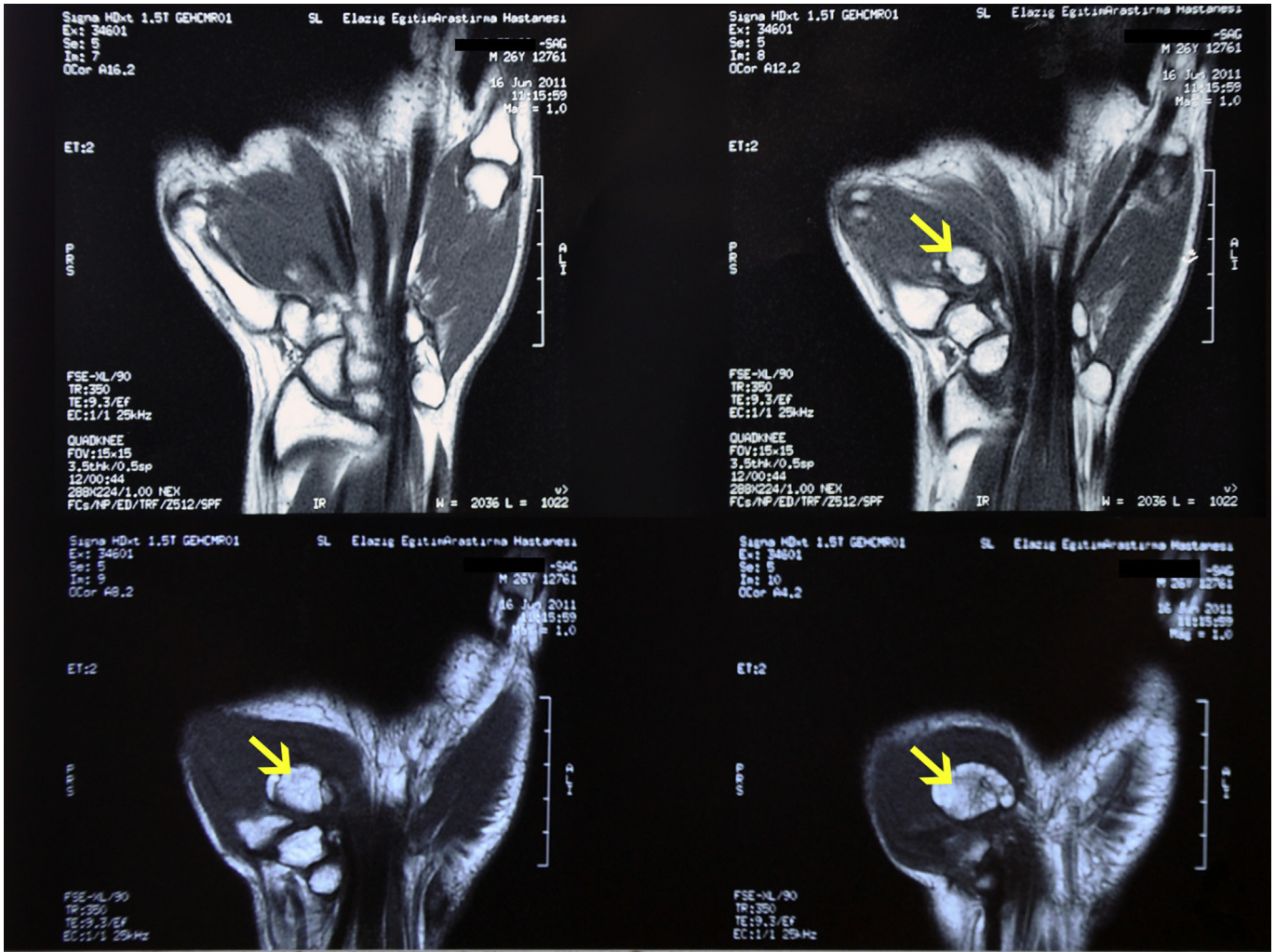


Fig. 1. Magnetic resonance imaging shows an ossified mass (arrow) of approximately 25 mm in diameter in the thenar eminence in between the first and the second metacarpal bones.

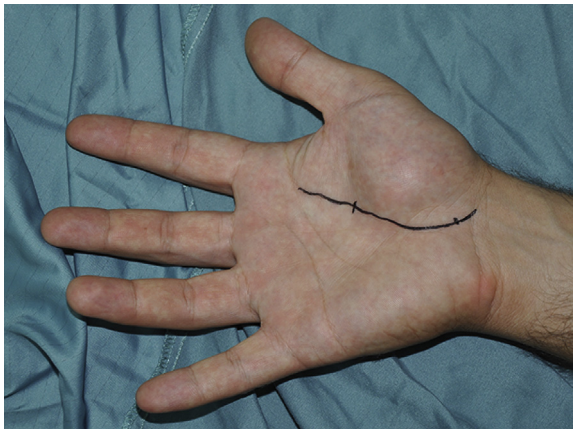


Fig. 2. An excisional biopsy was planned through an incision to be made parallel and just ulnar to the thenar crease.

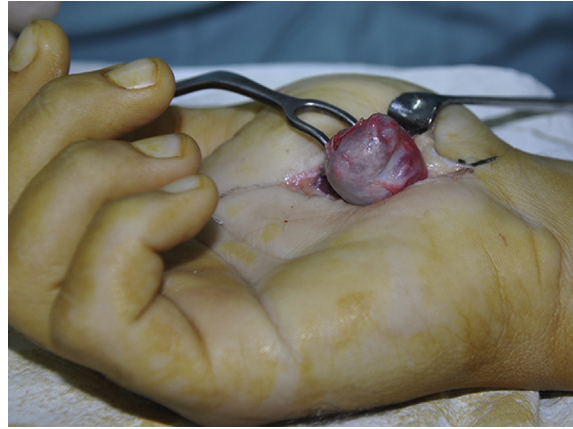


Fig. 3. The lesion was found to be not connected to any adjacent tendons, bony tissue or joints.

tissues without a direct contact with the adjacent osseous and articular structures is a very rare event. The involvement of the hand is even rarer, with only two previous cases reported so far.^{5,6} Both of these patients had been introduced as male farmers over 50

years of age and the tumors characteristically had been present for several years without a preceding history of trauma over the affected site. The patient in this report was much younger than his counterparts and working in a desk job. In that regard the reported



Fig. 4. Macroscopically the lesion was grayish white, well encapsulated and solid, exhibiting osseous consistency.

case resembles the typical presentation of the osteoid osteoma variant which mostly occur in the teens and twenties.

The role of trauma in the etiology of soft-tissue osteoma is controversial. There are studies claiming that soft-tissue osteoma belongs to a spectrum of posttraumatic ossifying musculoskeletal lesions.^{1,5,6,8–12} Other more recent reports have indicated that soft-tissue osteoma arises spontaneously without a traumatic or inflammatory process.¹⁰ The patient in this report represents another valid example disproving the proposed relationship between exposure to trauma and the development of soft-tissue osteoma.

Histologically soft tissue osteomas consist of mature lamellar bone with hyaline cartilage at its periphery.^{1,6,8–12} The radiological examination typically reveals a homogenous, well-demarcated and calcified mass without bone attachment. Magnetic resonance imaging is frequently utilized as a reliable tool for diagnosis which shows high-signal intensity on T1 and T2-weighted images corresponding to cortical bone; it is also capable of depicting the boundaries of the lesion inside the soft tissues. In the presented case similar findings were documented at the histopathological evaluation and the magnetic resonance imaging of the hand guided the surgical excision to be executed with minimal morbidity.

The differential diagnosis of the soft-tissue osteoma includes myositis ossificans, tumoral calcinosis, benign or malignant mesenchymoma, pilomatricoma, calcified gouty tophus, osteosarcoma, melnrheostosis, synovial chondromatosis, fibro-osseous

pseudotumor and soft tissue sarcoma.^{6,8,10} The lack of atypia and hypercellularity helps to rule out the malignant pathologies¹³ whereas the absence of certain histological features defined as the zone phenomenon^{1,14} serves to rule out myositis ossificans, a condition which is characterized by heterotopic ossification of muscle.

Of all soft tissue tumors found in the human body, 15% is localized in the hand.¹⁵ Although soft-tissue osteomas constitute a rather negligible part, it can be easily confused with skeletal pathologies owing to its radiological properties and clinical features; therefore soft-tissue osteomas should be kept in mind in the differential diagnosis of all hand tumors. Being a benign condition, simple surgical excision is the treatment of choice and as always, early diagnosis and prompt initiation of treatment are the keys to ensuring maximal preservation of hand function.

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