# Extraskeletal Osteoma of the Hand

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Osteoma is a common benign bone tumor, usually occurring inside the frontal sinuses and the mandible. The size of the lesion is usually small. It may induce sinusitis if it occurs inside the paranasal sinus. Extraskeletal osteoma is rare in soft tissue. A 67-year-old man presented with a lesion on the palm of his right hand; the lesion had been present for more than 10 years. Radiograph and magnetic resonance imaging of his hand provided adequate information for a differential diagnosis of extra-skeletal osteoma to be made before operation. The tumor was completely resected. Pathology confirmed extra-skeletal osteoma. To the best of our knowledge, this is the first case of extraskeletal osteoma of hand. ( Mid Taiwan J Med 2006;11:128-31 )

**Key words**

extraskeletal osteoma, hand

## INTRODUCTION

Osteoma usually occurs inside paranasal sinuses, especially frontal sinuses and the mandible. It may induce paranasal sinusitis. When osteoma occurs in soft tissue, it is called extraskeletal osteoma; it is extremely rare, especially in the hands. We present a case of extraskeletal osteoma located in soft tissue of a patient's right hand.

## CASE REPORT

A 67-year-old man presented with a lesion on the palm of his right hand. The lesion had been present for more than 10 years but the patient had not paid much attention to it until he noticed that it had been enlarging in recent months. He therefore visited our hospital. No history of trauma, no local tenderness and no painful sensation was noted. The lesion was about 2 centimeters in diameter. Physical examination revealed that it was nodular and hard in consistency. No local or radiating pain was detected. Radiographs of the hand were taken in antero-posterior and oblique projections (Figs. 1A, 1B). They showed that the lesion consisted of high radiopaque density, compatible with bone trabeculae, and was located on the palmar side of the hand. The margin of the lesion was well-defined and no evidence of direct contact with the adjacent metacarpal bones was noted.

T1 and T2 weighted magnetic resonance imaging (MRI) scans (Figs. 2A, 2B) revealed that the lesion was located entirely inside the soft tissue between the middle and ring fingers. No evidence of contact with the adjacent bones was noted. The lesion was about 2 centimeters in diameter and the margin was well defined. The signal intensity of the lesion was relatively homogenous; no evidence of necrosis or bleeding inside the lesion was noted. The lesion showed high signal intensity on both T1WI and T2WI scans, compatible with that of bone marrow.

Based on radiographic and MR imaging findings, a bone-forming tumor was suspected and an extra-skeletal osteoma was included in the differential diagnosis.

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Fig. 1. A: Radiograph of hand in AP projection shows a mass lesion of high density at the soft tissue between the third and fourth fingers. Bone trabeculae inside is evident. B: Radiograph of the right hand in oblique projection shows the lesion in the soft tissue.

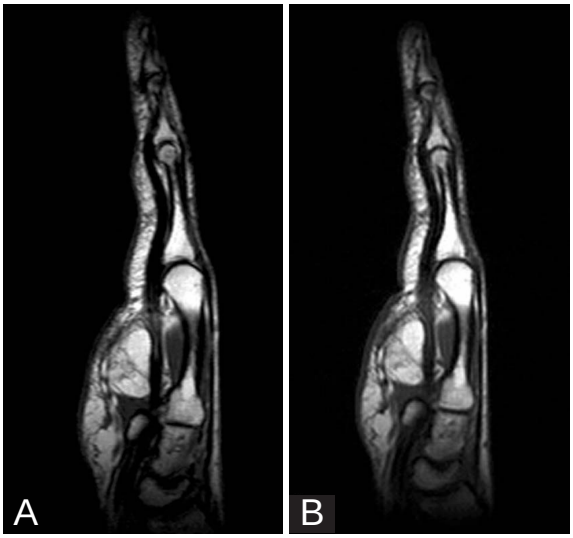


Fig. 2. A: T1WI of the right hand. B: T2WI of the right hand. They show high signal intensity of the lesion, similar to that of normal bone marrow.

The patient underwent a near-margin resection and the tumor was resected successfully. Pathology revealed that the tumor was about 2 centimeters in diameter and consisted of normal bone trabeculae and fatty marrow; an extra-skeletal osteoma was diagnosed (Fig. 3). Radiograph of the patient's hand at follow-up confirmed that the tumor had been completely resected.

He recovered well after the operation and had no complications at his most recent visit to our clinic.

## DISCUSSION

Osteoma is a benign, often asymptomatic neoplasm consisting of well-differentiated mature bone [1]. Osteomas of the paranasal sinuses are slow-growing benign tumors most frequently found in the frontal sinus in 47% to 80% of cases [2].

Osteomas are rare bone tumors and occur in the following sites: mastoid [3], the mandibular condyle [4], ulna [5], thyroid cartilage [6] and larynx [7].

An osteoma is a dense protrusion of normal bone. The lesions are confined to areas of the bone that are normally produced by the periosteal membrane [8]. Osteomas usually occur in the skull and facial bones; however, they may be present in the pelvis or tubular bones of extremities. Diagnosis is based on imaging studies. Extra-skeletal osteoma has the same internal components as that of osteoma of bone; they show the same pattern and features on radiographs. High radiopaque density of the lesion is present; bone trabecular pattern may be demonstrated. Osteoma of soft tissue should be considered when mature bone tissue is detected in soft tissue [8].

Osteomas of soft tissue are extremely uncommon. They generally occur in the head, usually in the posterior portion of the tongue, or in the thigh [9]. Our patient's osteoma occurred in the soft tissue of the right hand. Some atypical sites of osteomas of soft tissue include the base of the tongue [8,10] and the ovary [11].

Recognition of this benign bone tumor is especially important to avoid misdiagnosis of other, potentially more aggressive types of malignancies such as osteosarcoma or chondrosarcoma.

Dense calcification or bone marrow is characteristic of the tumor and may be relied upon to exclude alternative soft tissue lesions.

Ma'luf et al suggested that trauma might be a factor in the pathogenesis of osteoma [12]. Soft tissue osteoma is generally regarded as a benign bone tumor, however, Kasper et al proposed that it may be a reactive lesion [13].

Metaplastic ossification due to tumor or inflammation is one of the differential diagnoses;

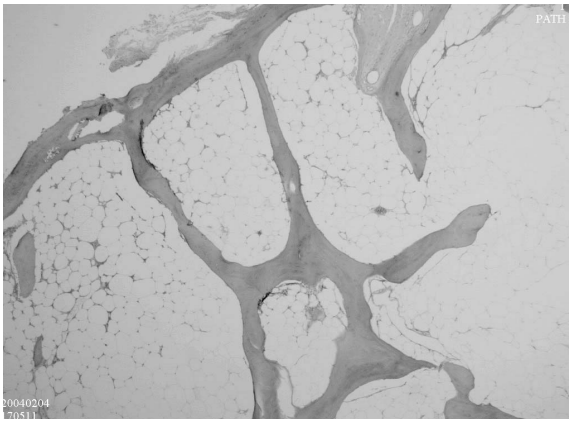

Fig. 3. The mass consisted of normal bone trabeculae and fatty tissue.

detailed history of the patient can aid in the inclusion or exclusion of metaplastic ossification. Myositis ossifican is another differential diagnosis; the correct diagnosis can be made if we carefully examine any trauma history, and the sequential change of ossification inside the lesion.

Once discovered, osteomas usually remain unchanged on series studies. Our patient had the lesion for more than 10 years. However, he felt that the mass had become larger recently. Surgical intervention was indicated to eliminate any possibility of malignancy since histopathologic confirmation of the tumor is the definitive method for diagnosis.

MRI scan provides valuable information about soft tissue. The contour and margin of the lesion can be demonstrated in three dimensional planes. The nature of the lesion may be predicted if the lesion consists mainly of fatty tissue or bone marrow. The lesion in our patient consisted of bone marrow; therefore, extra-skeletal osteoma was included in our differential diagnosis.

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# 骨骼外骨瘤

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骨瘤是一種很普遍的骨腫瘤，它通常發生於前額竇。這種病灶很小，但有些病灶可以引起副鼻竇炎。骨骼外骨瘤是一種相當罕見的骨瘤，在文獻上很少提及。在手部發生更是罕見。我們提出一例在手上發現之罕見報告，一位67 歲的病人，手上有一腫瘤，其間有超過10 年，最近有增大的現象，病人到本院求診。病人接受常規素片和磁振造影檢查。這些檢查提供出很有意義的資料。在手術前便考慮到包括骨骼外骨瘤之診斷。手術後經病理科證實是骨骼外骨瘤。骨骼外骨瘤是一種非常罕見的骨瘤，但是其在常規素片和磁振造影檢查的特徵。手術前之診斷是有可能的。（中台灣醫誌 2006;11:128-31）

**關鍵詞**

骨骼外骨瘤，手

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