

## OSTEOID OSTEOMA OF THE DISTAL PHALANX OF THE THUMB

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An osteoid osteoma of the distal phalanx of the thumb in a 14-year-old girl is described. Apart from the rare site of the lesion, other unusual features included early closure of the epiphyseal plate, enlargement of the involved segment of the thumb, and hypertrophy of the nailbed. The radiographic appearance was unusual in that it simulated a soft tissue mass eroding the bone from without.

*Key words:* epiphysis; osteoma osteoid; thumb

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Osteoid osteoma of the distal phalanx is a rare lesion. Rosborough (1966) described an osteoid osteoma of the distal phalanx of the fifth finger, and referred to five cases which had been reported in the literature. Although our case is somewhat similar to that reported by Rosborough, it appears to be the first reported case of an osteoid osteoma of the distal phalanx of the thumb causing epiphyseal growth arrest.

### CASE REPORT

A 14-year-old girl was admitted to the orthopaedic department of our hospital in January, 1978, complaining of a pain in the thumb of her left hand of 2 years duration. The pain was aggravated at night and during cold weather and was relieved by aspirin. There was no history of trauma. On examination the distal phalanx of the left thumb was enlarged, bulky, somewhat shortened, and tender on palpation (Figure 1). The nailbed was hypertrophied. There was no increase in local skin temperature or swelling and no limitation of movement at the interphalangeal joint. Routine blood count and blood biochemistry, including serum calcium and phosphorus, were within normal limits.

Radiograph of the left thumb (Figures 2 and 3) revealed a soft tissue swelling at the ventral and medial aspects of the distal phalanx and to a lesser degree both laterally and dorsally. An ovoid osteolytic lesion 1 × 0.15 cm was evident at the base and on the dorsal aspect of the distal phalanx extending across the entire width of the phalanx. The lesion had a smooth sclerotic anterior border and an ill-defined posterior border simulating a soft tissue mass eroding the bone from without. There was a 4 mm radiolucent nidus with a small fleck of calcium in its centre. There was evidence of premature closure of the epiphyseal plate at the base of the phalanx.

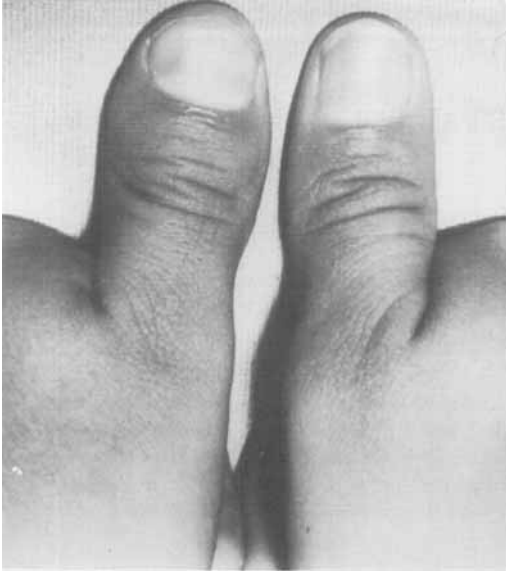
### *Operative findings*

The lesion was approached by a lateral incision. Beneath the apparently intact cortical bone, a semi-soft granular lesion was found and curetted. The postoperative course was uneventful, and the pain was permanently relieved.

### *Pathology*

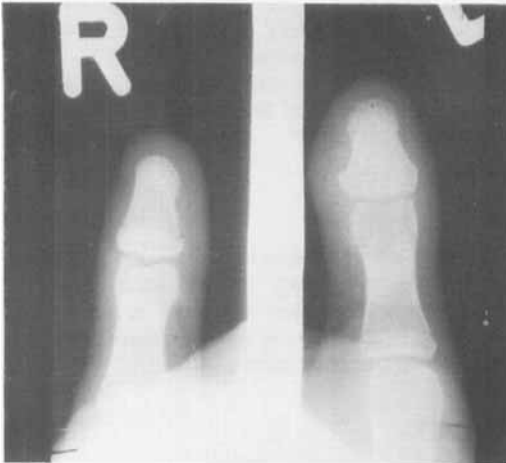
Several small particles of bone were obtained from the lesion. Histologically (Figure 4) the central portion of the lesion was characterized by a rich network of interlacing bony trabeculae.

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*Figure 1. Both thumbs. The distal phalanx of the left thumb is swollen and there is hypertrophy of the nailbed.*

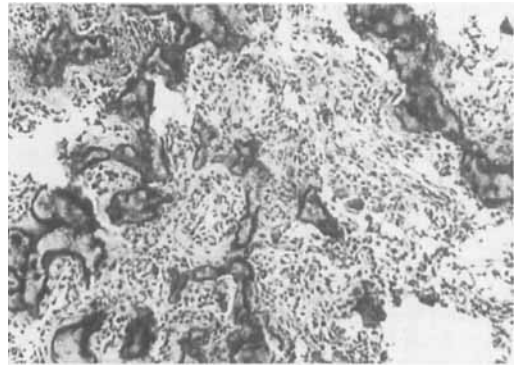
Centrally, the trabeculae were heavily calcified and the peripheral margins consisted of uncalcified osteoid trabeculae of variable thickness, partially bordered by plump oval and spindle-shaped osteoblasts. The spaces between the osteoid



*Figure 2. Antero-posterior radiographs of the thumbs. A small ovoid osteolytic lesion is seen at the base of the distal phalanx of the left thumb with a small fleck of calcium in its centre. Note the premature closure of the epiphyseal plate of this phalanx.*



*Figure 3. Lateral radiograph of left thumb. The soft tissue swelling on the ventral aspect of the thumb and the faint posterior border of the phalanx gives the appearance of a soft tissue mass eroding the bone from without.*



*Figure 4. Central nidus of the lesion. Note the cellular fibrous stroma between the calcified osteoid trabeculae. Multinucleated giant cells and prominent capillaries are seen. Haematoxylin and eosin  $\times 100$ .*

trabeculae were occupied by cellular and vascular fibrous tissue containing many osteoclasts.

The fragments of cortical bone consisted of thick calcified cortex covered by a cellular periosteum. In some areas there was a small amount of fibrocartilage on the surface which appeared to be metaplastic. Sections stained for reticulin revealed the usual lamellar pattern in the cortical bone, while the central nidus consisted of woven bone.

## DISCUSSION

Since Jaffe (1935) defined osteoid osteoma as an entity this benign tumour has been described in almost all parts of the skeleton. The hand and especially the thumb are rare sites (Carrol 1953, Sullivan 1971, Grundberg 1977).

The clinical and pathological features of the bony lesion in our patient are characteristic of osteoid osteoma, but the radiological picture was misleading in that the tumour appeared to arise from the soft tissues and caused pressure erosion of the bone. This was the original interpretation of the X-ray films. The radiolucency of the central nidus was recognized only in retrospect. Tomographic cuts would have been of value in revealing the nidus.

An additional finding was the closure of the epiphyseal plate. In the case described by Grundberg (1977) there was no significant

deformity of the finger and no early closure of the epiphyseal plate. As in our patient, the case described by Rosborough (1966) showed a hypertrophied enlarged finger and nailed and early closure of the epiphyseal plate. Bordelow et al. (1975) described an osteoid osteoma of the distal phalanx of the right toe which resulted in premature fusion of the epiphysis.

The hypertrophy of the nailed seen in our case and in similar cases reported in the literature (Grundberg 1977, Rosborough 1966) can be explained on the basis of the rich vascularity of osteoid osteomas.

## REFERENCES

- Bordelow, R. L., Cracco, A., Book, M. K. & Rouge, B. (1975) Osteoid osteoma producing premature fusion of the epiphysis of the distal phalanx of the big toe. *J. Bone Jt Surg.* **57-A**, 120.
- Carrol, R. E. (1953) Osteoid osteoma of the hand. *J. Bone Jt Surg.* **35-A**, 888.
- Grundberg, A. B. (1977) Osteoid osteoma of the thumb. Report of a case. *J. Hand Surg.* **2**, 266.
- Jaffe, H. (1935) Osteoid osteoma. *Arch. Surg.* **31**, 709.
- Rosborough, D. (1966) Osteoid osteoma. Report of a lesion in the terminal phalanx of a finger. *J. Bone Jt Surg.* **48-B**, 485.
- Sullivan, M. (1971) Osteoid osteoma of the fingers. *Hand* **3**, 175.

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