

Penetrating Type Intraosseous Ganglion Cyst of the Lunate Bone

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ABSTRACT

Intraosseous ganglion cysts of the carpal bones located in the lunate are one of the rarely seen pathologic conditions. Here we present a case of the penetrating type of intraosseous ganglion cyst located in the lunate as an uncommon cause of wrist pain. The patient was successfully treated by surgical intervention. Intraosseous ganglion cyst should be considered in the differential diagnosis of chronic dull wrist pain.

Ganglión Intraóseo Penetrante del Semilunar

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RESUMEN

Los gangliones intraóseos de los huesos carpianos localizados en el semilunar, constituyen una de las condiciones patológicas más raras que puedan verse. Aquí presentamos un caso del tipo penetrante de ganglión intraóseo, localizado en el semilunar como causa poco común del dolor de muñeca. El paciente fue tratado exitosamente mediante una intervención quirúrgica. El quiste ganglionar intraóseo debe ser considerado en el diagnóstico diferencial de dolores de muñeca sordos que se han hecho sentir por mucho tiempo, y se han vuelto crónicos.

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INTRODUCTION

Carpal bone cysts are frequent, particularly if the subchondral cysts that are seen in osteoarthritic and rheumatoid wrists are included (1). However, true intraosseous ganglia (IOG) of the carpal bones are not common (2, 3). Hence, carpal cysts are consequently an uncommon cause of wrist pain. Isolated cases of IOG of the carpal bones have been reported most commonly in the lunate and scaphoid. The condition presents as chronic wrist pain with evident radiological lucency within the lunate (4). Radiolucent carpal lesions may be symptom-free and the differential diagnosis includes osteoarthritic cyst, post-traumatic cyst and simple bone cysts, whereas osteoid osteoma and osteoblastoma present with pain (1, 3, 5, 6). Here the authors report a case of penetrating type intraosseous ganglion cyst of the lunate bone.

CASE REPORT

A 34-year-old man presented with an insidious and dull aching pain in his left wrist for three years. He denied any prior episode of specific trauma. The painful wrist appeared normal on physical examination, with no swelling, redness or

deformity. X-ray (Fig. 1) revealed a cyst of the lunate with a cortical defect but no collapse of the lunate, loss of joint space or other degenerative changes were observed. Computed tomography (Fig. 2) confirmed a lucent area with a thin sclerotic margin within the lunate.



Fig. 1: Plain radiography revealed a cyst of the lunate with cortical defect, but no collapse of the lunate, loss of joint space or other degenerative changes.

At surgical treatment, the wrist joint was opened through a vertical dorsal incision centred over the lunate. In the wrist, the ganglion was immediately observed through a defect on the dorsal surface of the lunate. Typical gelatinous ganglion fluid was evacuated from the cavity. After manual curettage of the lining membrane and rinsing with saline, the

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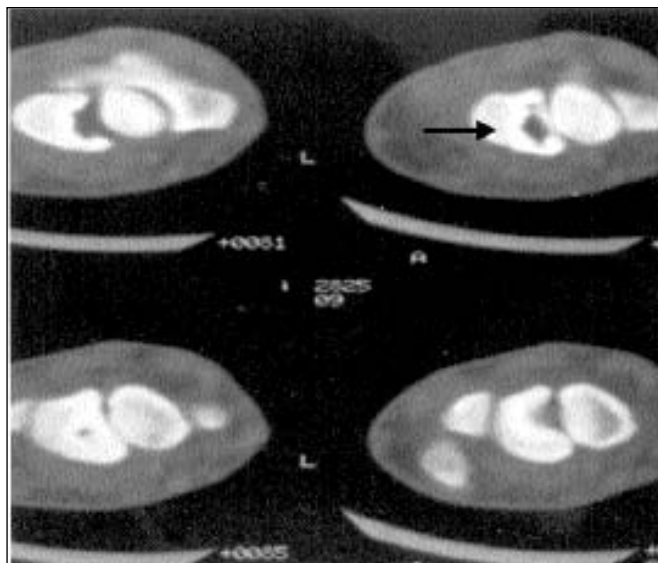


Fig. 2: Computed tomography confirmed a lucent area with a thin sclerotic margin within the lunate (arrow).

cavity was packed with cancellous bone taken from the distal radius. The joint capsule and wound were closed in layers. A removable extension splint was applied for six weeks.

The contents of the cyst were described pathologically as cystic formation with thin walls constituted by flattened, synovial-like, fibro-connective tissue cells with no true epithelial lining. The gross and histological findings were typical of an intraosseous ganglion (Fig. 3). The patient was followed-up for eight months. He was asymptomatic and had no restriction of motion in the left wrist. X-ray showed that the bone grafts in the lunate were well incorporated.

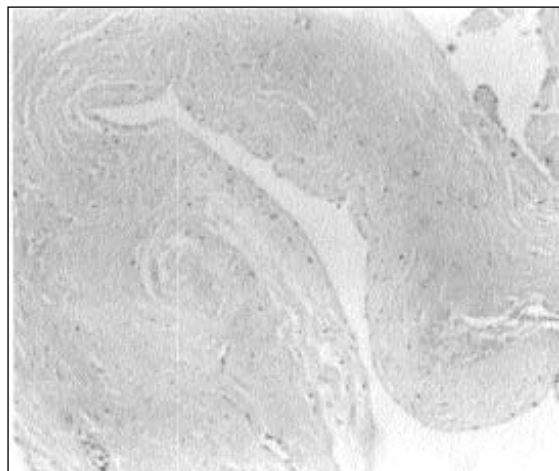


Fig. 3: Histopathological examination reveals ganglion showing an irregular thick-walled cystic space (haematoxylin and eosin, x 100).

DISCUSSION

Intraosseous ganglion has been reported to be located most commonly in the epiphyses of long bones around the hip, knee and ankle, with the femoral head and the medial

malleous being the two most common locations (3, 4). Kambolis *et al* (1973) reported three cases of intraosseous ganglia involving the carpus including the triquetrum, scaphoid and hamate (7).

Schajowicz *et al* described two types of intraosseous ganglion (3): the idiopathic or primary intraosseous lesion due to a degenerative bone process and the second or penetrating type caused by cortical penetration of previously existing soft tissue ganglion. According to Logan *et al*, most investigators believe that the primary type is more frequent (2). Therefore, the index case is interesting as it is the rare penetrating type. Eiken and Johnson (1980) proposed an intraosseous degenerative process from which the cyst developed by expansion, with increasing pain and radiographic sclerosis (8). Tham *et al* found that in two of their nine cases, the cyst connected with the contiguous joints through an obvious bone defect, in one, the scapho-lunate, and in the other, luno-triquetral joint (4). However, the pathogenesis of ganglion cyst remains obscure. Theories include synovial herniation, neoplasia, proliferation of synovial rest cells and traumatic mucoid degeneration of connective tissue (3, 4, 8). Intramedullary metaplasia of mesenchymal precursor cells was proposed by Feldman and Johnston who suggested that they gave rise to hyaluronic acid producing fibroblasts and histiocytes to form a ganglion (4). The trigger for this might be trauma, explaining the high incidence of ganglia in the scapho-lunate region, where the force and motion is concentrated. Pathologically, the intraosseous ganglion is identical to its soft tissue counterpart in all respects, with a smooth translucent wall composed of collagen fibres devoid of synovial lining. It contains viscous clear mucus consisting of glucosamine, albumin, globulin and a high concentration of hyaluronic acid (9). Psalia *et al* identified occasional fibroblasts and multifunctional mesenchymal cells within the ganglion wall under the electron microscope (10). These cells have the ability to secrete mucin-like substances in tissue culture. Computed tomography scan provides details of the spatial orientation of the cyst within the carpal bone and is helpful in localizing the cortical defect and in planning the surgical approach to the cyst. On the other hand, the cyst can be identified by plain radiography (4).

Differential diagnosis includes enchondroma, giant cell tumour, chondroblastoma, simple bone cyst, post-traumatic cyst, fibrous developmental defect, Kienböck's disease, aneurysmal bone cyst, chondromyxoid fibroma, osteoid osteoma, rheumatoid arthritis and the subchondral cyst commonly found in osteoarthritic wrists (1, 3, 5, 6).

Intraosseous ganglion cysts are usually painful and present with a mass in the dorsal or palmar aspect of the wrist (1). If the size of the cyst does not change, no cortical erosion is found and sequential radiographs suggest no danger of a collapsing fracture; the patient may be followed conservatively. However, surgery is indicated when periodical radiography shows progressive growth of the cyst, replacement of the cancellous substance of a carpal bone or erosion

in its cortex. In such a case, traumatic or pathologic fracture is possible, which is a severe complication (1). Several alternative surgical techniques for IOG cysts of the lunate are available. These include excision of the lunate, excision with prosthetic replacement, excision with dorsal flap arthroplasty, intercarpal or radiocarpal fusion and ulnar lengthening. Despite these options, curettage of the cyst followed by rinsing of the cavity with saline solution and packing it with cancellous bone graft is most commonly used (1–3, 5, 6). The authors preferred this most popular technique. The cortical defect was located in the lateral (scapho-lunate) articular surface of the bone. The surgeons dissected to the cyst through a small flap (3–4 mm) carefully cut in the scapho-lunate interosseous ligament, which is a good way of treating the cyst without creating a new defect in the articular cartilage of the lunate and avoids development of a scapho-lunate dissociation. Recurrences of IOG cyst are rare (1, 2, 6, 7). In this particular case, it was not observed during the one year follow-up period.

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