CASE REPORT

Intraosseous Ganglion of the Scaphoid: a Case Report and Review of Published Reports

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Introduction

Intraosseous ganglions are rare, benign lesion of bone that most frequently occur in the metaphyses of the long bones. These lesion are unusual in the scaphoid, most published reports are of individual cases^{1,2}. We here report a case of intraosseous ganglion of the scaphoid that was treated in our department.

Case Report

A 39-year-old woman presented with a 1-month history of pain in the left wrist with no obvious history of trauma. Conservative treatment with anti-inflammatory medication had been ineffective. Clinical examination showed local tenderness in the snuff box of the left wrist, which ached when moved. There were no significant differences in the strength of her grasp and range of motion compared with the right side. Laboratory findings were normal. Radiographs revealed a cystic area of low density with sclerotic margins in the left scaphoid bone (Fig. 1a). Surgical management under brachial plexus anesthesia was planned. The scaphoid was exposed via a dorsal scaphoid fossa approach. A vertical incision was made on the dorsum of the hand and the hypodermis opened, taking care to protect the superficial branch of the radial nerve, cephalic vein, dorsal carpal branch of the radial artery and radial nerve. Windowing, predetermined by X-ray imaging, was performed in the area of the cyst. A transparent gel was found within a grayish-white capsule wall of fibrous tissue, which easily peeled off. After curettage, the capsule wall was cauterized with carbol, neutralized with alcohol, and fixed and washed repeatedly with isotonic sodium chloride. Cancellous bone was chiseled from the radial malleolus adjacent to the incision, the malleolus being embedded into the capsular space. Postoperative pathological examination revealed that the capsule wall consisted of fibrous connective tissue; areas of mucinous degeneration and vascular proliferation were also found; however, no lining cells were detected (Fig. 1c,d).

Postoperatively, the patient was free of symptoms, and there was no evidence of recurrence at the 8-month follow-up. Postoperative radiography showed resolution of the lesion (Fig. 1b).

Discussion

Intraosseous ganglion, areas of juxta-articular cystic degeneration, are also described as subchondral, juxta-articular or synovial cysts; their pathological features resemble those of ganglion cysts in soft tissue³. This disease is rare, and particularly rare in the scaphoid. Because ganglion cysts are connected to the articular cavity, Schajowicz *et al.* categorized intraosseous ganglions as primary with perforation⁴. The main symptoms include focal pain of varying severity and swelling and dysfunction in joint motion. Mild tenderness is sometimes present but often missed on examination. The course of disease varies from case to case; pathologic fractures can occur. X-ray, CT and MRI examinations play a role in the diagnosis of intraosseous ganglions⁵; however, the final diagnosis depends on intraoperative findings and postoperative pathological findings⁶.

Early diagnosis and appropriate treatment are critical to achieving a good outcome⁷. The most appropriate treatment option depends on the clinical symptoms and radiographic findings. Asymptomatic lesions require a thorough clinicoradiographic evaluation of their evolutionary potential (increase in size of the intraosseous ganglion and/or cortical erosion), which might require surgical treatment. In symptomatic lesions, conservative treatment with analgesic medications may reduce pain. Surgery is indicated if symptoms do not improve with conservative treatment. Local curettage is also commonly employed, in which case autograft, allograft or bone cement may be used to fill the resultant cavity to prevent any recurrence, as well as reduce the risk of a collapsing fracture of the involved bone⁸⁻¹⁹ (Table 1). Recently, a vascularized bone graft from the anterior transverse carpal artery was used

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Fig. 1 (A) Preoperative plain radiograph demonstrating cystic lesion of the left scaphoid. (B) Plain radiograph showing the lesion healed at 8-month postoperative follow-up. (C, D) Photomicrographs of resected specimen showing the microanatomy. The cyst wall includes dense fibrous connective tissue, but no lining cells. Hematoxylin and eosin stain; magnification: C, $\times 50$; D, $\times 100$.

as an alternative surgical technique; this technique was adapted from the treatment of bone cysts associated with fracture¹⁶.

The prognosis is quite good, and recurrence (which is not caused by inadequate surgical margins, but by mucinous degeneration in the operative defect or connective tissue

nearby) seldom occurs. In conclusion, intraosseous ganglions are benign tumors. They seldom involve the scaphoid bone and may be symptomatic. The differential diagnosis includes other benign tumors (osteoid osteoma, enchondroma), aseptic necrosis and degenerative lesions. Therefore, only anatomical

TABLE 1 Published data on intraosseous ganglions of the scaphoid

Authors	Year	Number of cases	Clinical manifestations	Treatment
Logan <i>et al.</i> ⁸	1992	1	Pain	Curettage + bone graft
Albalajo <i>et al.</i> ⁹	1993	1	Pain	Curettage + bone graft
Peterson ¹⁰	1993	1	Pain	Curettage + bone graft
Fealy and Lineaweaver ¹¹	1995	1	Pain and swelling	Curettage + bone graft
Chantelot <i>et al.</i> ¹²	1998	1	Fracture	Curettage + bone graft + pin fixation
Kligman and Roffman ¹³	1998	1	Pain	Curettage + bone graft
Uriburu and Levy ⁶	1999	6	Asymptomatic (4), pain (1), swelling (1)	Curettage + bone graft
Chen and Shapiro ¹⁴	1999	1	Pain	Curettage + bone graft
Castellanos <i>et al.</i> ¹⁵	2001	1	Fracture	Orthopaedic
Yakoubi <i>et al.</i> ¹⁶	2009	1	Fracture	Curettage + vascularized bone graft
Buldu <i>et al.</i> ¹⁷	2009	2	Pain	Curettage + bone graft
Mnif <i>et al.</i> ¹⁸	2010	1	Pain	Curettage + bone graft
Sakamoto <i>et al.</i> ¹⁹	2013	2	Fracture (1) and pain (1)	Curettage + bone graft

and pathologic findings can definitively establish the diagnosis. Curettage of a scaphoid lesion, followed by packing of the defect with bone graft, is indicated when conservative

treatment has been unsuccessful or in the presence of radiographic evidence of progression.

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