

# Unicameral Bone Cyst in the Scaphoid Bone: A Case Report

## SCAPHOİD KEMİKTE BASİT KEMİK KİSTİ: OLGU SUNUMU

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### Summary

The unicameral bone cyst is an atrophic, degenerative, osteolytic process, which usually arises in the metaphysis of long bones, immediately beneath the growth plate. It is extremely rare in the wrist and hand. In this paper we present a patient who had a unicameral bone cyst in his scaphoid. This is the first patient in English literature with a unicameral bone cyst in scaphoid bone.

**Key Words:** Unicameral bone cyst, Scaphoid, Extremely rare

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### Özet

Basit kemik kisti; genellikle uzun kemiklerin metafizinden, hemen büyüme plağının yakınından kaynaklanan atrofik, dejeneratif, osteolitik lezyonlardır. El bileği ve elde görülmesi oldukça nadirdir. Bu bildiri ile biz; scaphoidde basit kemik kisti saptanarak tedavisi yapılmış olan bir hastayı sunuyoruz. Bu; literatürde bildirilmiş olan ilk scaphoiddeki basit kemik kisti olması nedeni ile dikkat çekicidir.

**Anahtar Kelimeler:** Basit kemik kisti, Scaphoid, Çok nadir

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The unicameral bone cyst is defined as an atrophic, degenerative, osteolytic process, consisting of a cavity filled with yellowish, clear fluid and lined by a membrane (1). It is frequently seen in childhood and is more likely to affect males than females (2:1), during the first two decades of life (2). It usually arises in the metaphyses of long bones immediately beneath the growth plate, and the most common location is the proximal humerus, followed by proximal femur, calcaneus and the other metaphyses of long bones. The unicameral bone cyst commonly is asymptomatic, but it usually becomes painful with a pathologic fracture, which occurs frequently. Occasionally, in these situations, the callus formation induces cystic healing as well as fracture consolidation (1).

Unicameral bone cyst is extremely rare in the wrist and hand. It occurs less than 1% in the wrist and a great percentage of them are in the distal portion of the radius and ulna (3). When the hand is involved, the reported locations have been the short tubular bones (4). Among a large series of solitary cysts there has been only one report, in the

English literature, of unicameral bone cysts in the carpal bones, located in the hamatum (5). Until now there has not been a reported case of scaphoid originated unicameral bone cyst.

### Case Report

A 44 year old man, who complained of pain in his right wrist for 12 months, was seen initially at our clinic in September 1988. Plain x-ray films demonstrated a purely osteolytic lesion with thinning and inflating the cortex of the scaphoid bone (Fig. 1). There wasn't any periosteal reaction. Bone scan demonstrated a non-specific increased uptake around the right wrist. The patient did not have any systemic disorders and rheumatologic work-up was negative. A curettage and iliac crest bone grafting in October 1988 was done. Microscopic sections were remarkable for new bone formation occurring through a cystic thin-walled structure. The findings were typical of a unicameral bone cyst (Fig. 2). By 4 months after operation the patient had radiographic consolidation of his scaphoid and wrist pain was significantly improved (Fig. 3). After a 40 months painless period, he presented with pain in the snuffbox by palpation and pain in dorsiflexion of the wrist. A CT scan was done and a cystic lesion, which had a 0.5 cm. diameter, was demonstrated in the lateral part of the scaphoid bone (Fig. 4). Because of the unusual presentation of this cyst, surgery

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**Figure 1.** Antero-posterior view of the patient in first visit. Cortical destruction and lytic lesion can be seen.



**Figure 2.** Microscopic section remarkable for new bone formation occurring through a cystic thin-walled structure.

was chosen over injection of steroids. Curettage and grafting was done in November 1992. Histopathology demonstrated fragments of cortical and trabecular bones with fibrinous and lipid deposits and the trabecular bone was lined by a connective membrane made by flattened epithelial cells. After the operation pain was relieved and by 6 months the patient had radiographic consolidation of his scaphoid. CT scan showed, 69 months after the second operation and 10 years after the first diagnosis, a locular cystic formation (Fig. 5). Reoperation was not suggested as the patient was asymptomatic and he could perform his daily activities without pain.

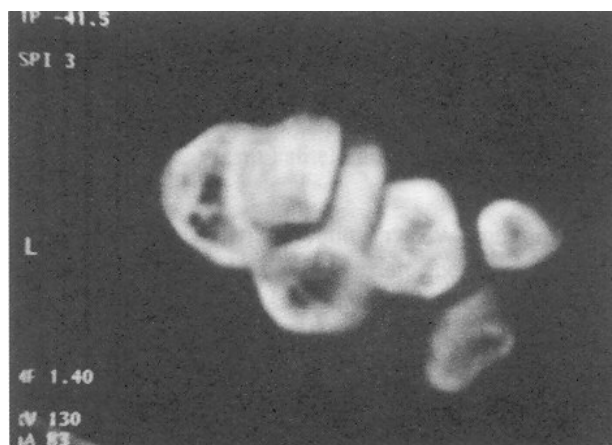
### Discussion

The cause of unicameral bone cysts is a matter of controversy. Described for the first time by Virchow in 1876 many pathogenetic theories have been postulated. Jaffe and Lichtenstein supported Mikulicz theory that mechanical trauma leading to a deficit in ossification is the most likely cause in 1942 (6). Cohen proposed venous obstruction due to developmental anomaly as the cysts occur because of a poorly controlled remodelling process in growing bone in 1960 (7). More recently Komiya, in 1993, reported on his biochemical studies on the cystic fluid, showing that bone resorptive factors (like prostoglandins) had a synergetic role in bone cyst formation (8).

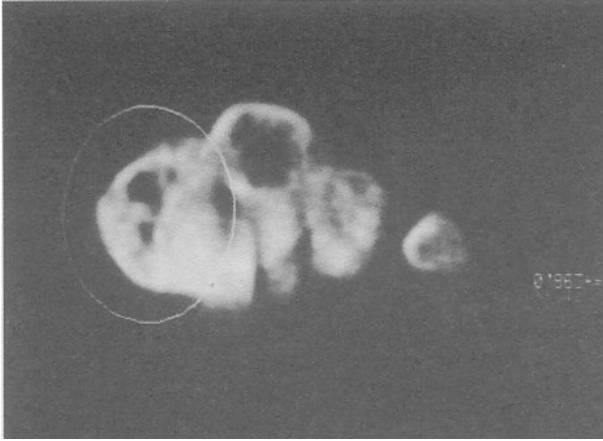
Many different methods of treatment have been recommended in unicameral bone cysts. The two most popular of them were open curettage of the lytic lesion and filling the space with corticocancellous autografts or allografts and percutaneous methyl prednisolone acetate (MPA) injections of the cyst. Campanacci reported comparable results with both techniques underlining the advantages of the non-invasive treatment with MPA injection (9). In spite of the encouraging results with non-invasive treatment several authors more recently reported on their experience with curet-



**Figure 3.** Four months later after the first operation. Radiographic consolidation can be seen. There is also Sudeck's atrophy depending on long lasting cast application.



**Figure 4.** 40 months later, a cystic lesion of 0.5 cm. diameter, was detected on computerized tomography examination.



**Figure 5.** CT section of the scaphoid 10 years after the diagnosis. Although there seems to be locular cystic formation the patient is painfree.

tage and packing with bone graft substitutes: Inoue described successful results with high-porosity hydroxyapatite cubes (10), Aldermatt with tricalcium phosphate acetate ceramic (11) and Whitemann with demineralized bone powder (12). In our patient, because of the unusual presentation of this cyst, we preferred surgery and the graft remodelled completely to have a normal appearance of scaphoid bone.

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