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Images in Rheumatology

Giant Geode at the Humeral Head in the Rheumatoid Shoulder Treated With Allograft Bone Grafting and Shoulder Arthroplasty

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The authors declare no conflicts of interest associated with this manuscript. The patient was informed that data concerning the case would be submitted for publication and provided consent.

Geodes are subarticular cystic lesions caused by inflammatory changes in the synovial lining of the articular cavity and can destroy cartilage and bone. This lesion occurs with rheumatoid arthritis (RA), but a single giant geode is rare.[1]

A 65-year-old man complained of progressive pain and restriction of his right shoulder function for the past year. He had been diagnosed with RA 7 years ago and treated with 12 mg of methotrexate per week. Laboratory tests showed C-reactive protein level of 0.96 mg/dL (reference value < 0.14 mg/dL), matrix metalloproteinase-3 of 332 ng/mL (reference value 36.9–121.0 ng/mL), rheumatoid factor level of 13 IU/dL (reference value < 15 IU/dL), and anticyclic citrullinated peptide antibody positivity. The Disease Activity Score in 28 joints was assessed as moderate disease activity. Magnetic resonance imaging showed a large cystic lesion at the humeral head measuring 30 × 30 × 30 mm with homogenous signal intensity and destruction of the glenohumeral joint (Figures 1A,B).

A giant geode has been reported only in the elbow, hip, and knee joints,[2,3,4,5] and we have found no reports of a giant geode in the shoulder joint. Surgical treatment is necessary for giant geodes because of the risk of spontaneous fracture. In this case, allograft bone grafting and total shoulder arthroplasty were performed after the debridement inside the geode (Figure 2). Histopathological findings demonstrated fibrin deposition and osseous fragment within the synovium. The patient had no pain and his shoulder function had improved 24 months after surgery.

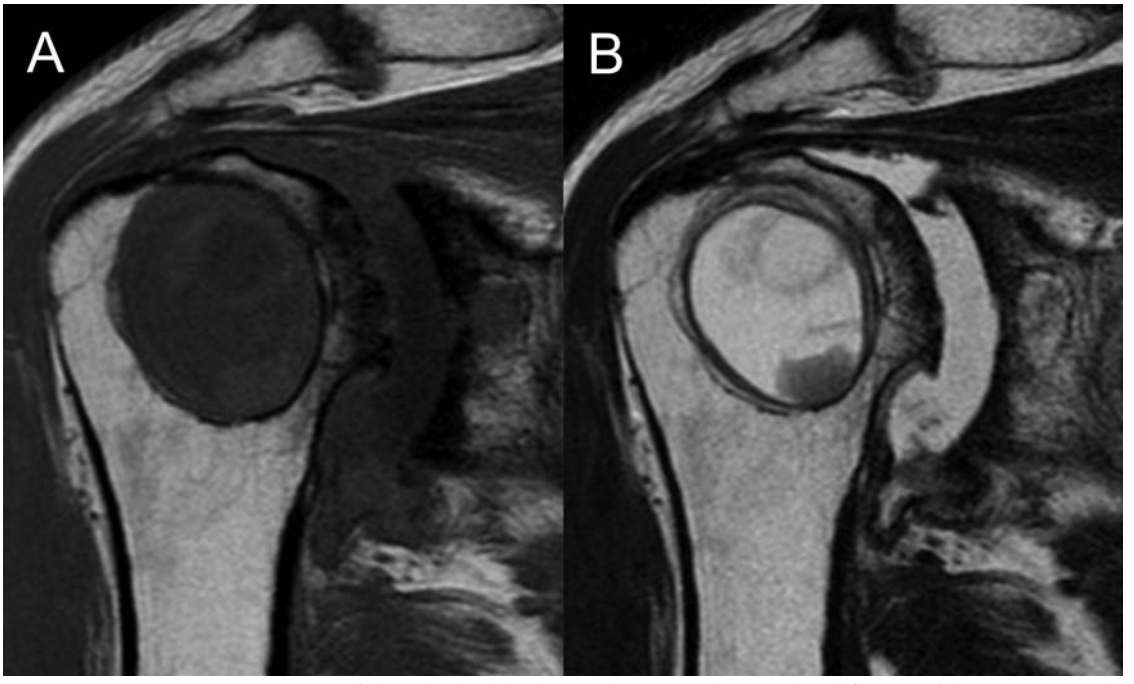

Figure 1. Magnetic resonance imaging of the right shoulder shows a large cystic lesion and proliferation of the synovium at the humeral head. (A) T1 coronal image, and (B) T2 coronal image.

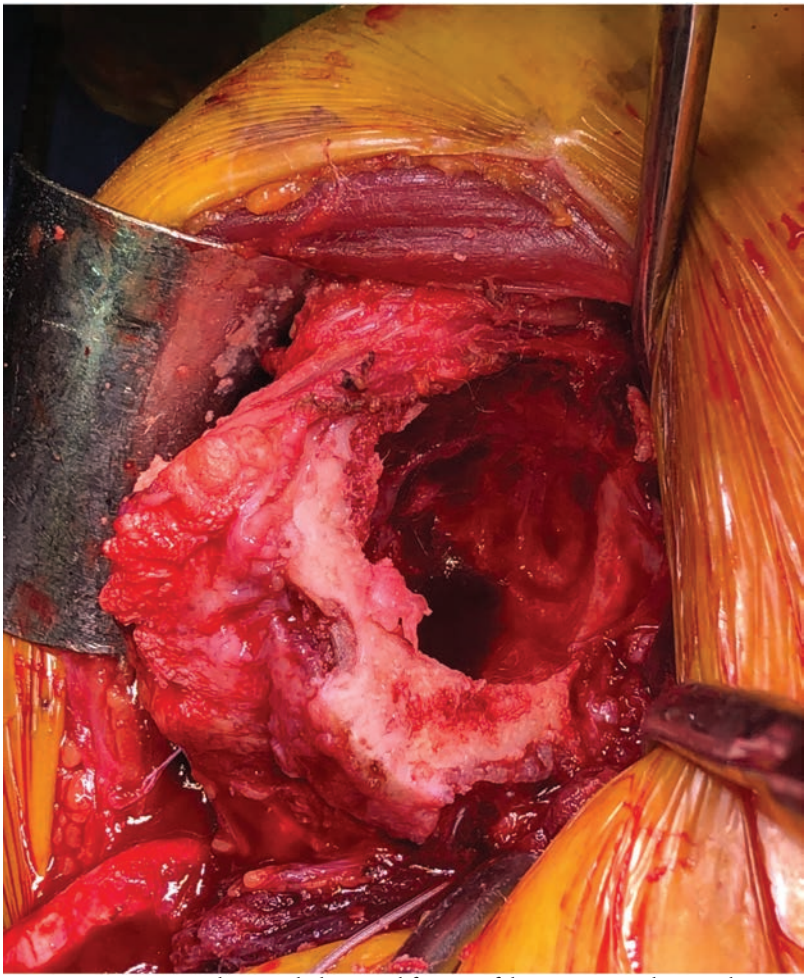

Figure 2. Intraoperative photograph shows proliferation of the synovium in the cystic lesion.

REFERENCES

1. Ginsberg MH, Genant HK, Yü TF, McCarty DJ. Rheumatoid nodulosis: an unusual variant of rheumatoid disease. Arthritis Rheum 1975;18:49-58.
2. Nakagawa N, Abe S, Saegusa Y, et al. Giant geode at the olecranon in the rheumatoid elbow--two case reports. Clin Rheumatol 2004;23:358-61.
3. Suzuki M, Kim T, Tamai H, Fujiyoshi T, Moriya H. Giant geode treated with calcium phosphate cement in a rheumatoid knee. J Rheumatol 2005;32:1846-8.
4. Maher LV. Geode of the tibia. J Clin Rheumatol 2016;22:41.
5. Izumiyama T, Mori Y, Itoi E. Tocilizumab was effective in repairing the large geode in a patient with rheumatoid arthritis. Case Rep Rheumatol 2020;2020:8899391.