Giant Cell Tumor of Bone - A single institution’s 17 years’ experience in its surgical treatment

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Introduction: Giant cell tumor (GCT) of bone is a common benign skeletal tumor, composed of mononuclear stromal cells and characteristic multinucleated giant cells that exhibit osteoclastic activity. It usually develops in long bones but can occur in unusual locations, and commonly extends near the articular surface. Though mostly benign, it is locally aggressive; as such, the mainstay of treatment has been surgery, with either local curettage (associated with adjuvant techniques) or wider resection of the lesion. However, curettage presents with a high recurrence rate, and resection of the tumor, due to its proximity to articular surfaces, leads to considerable morbidity, necessitating tumoral endoprosthesis for joint reconstruction.

Material and Methods: We retrospectively reviewed all patients with a radiological and histological diagnosis of GCT that were surgically treated in our institution, from 1996 to 2013. Clinical and demographical data, as well as recurrence rate and outcomes, were analyzed.

Results: A total of 68 patients were identified (44 females); Median age at diagnosis was 37.5 years (15-74). Pain was the primary symptom in the majority of patients, with 13% presenting with a pathological fracture; median duration of symptoms before consultation was 24 weeks. Most frequent tumor locations were femur and tibia (21 and 26 patients, respectively), followed by radius and humerus; less common locations included pelvis, hand, feet, fibula and patella. 19% of cases were recurrences referenced to our institution. The majority of patients had either en bloc (36%) or intramarginal (54%) resections; adjuvant therapy with phenol was used in 17% of cases. Recurrence rate in primary tumors was 7% (four cases); all had performed intramarginal resection, and three had atypical tumor locations (acetabulum, greater trochanter and toe phalanx); recurrence presented 335 days (mean) after surgery. The most common complications at 2-years follow-up were pain (29%, ranging from residual to significant), functional limitation (17%) and infection (10%); 28% of patients had no complications or symptoms at 2-years follow-up. All cases of infection occurred in patients who had en bloc resection with endoprosthesis reconstruction.

Discussion and Conclusions: Surgery remains the first line of treatment in GCT of bone. However, we must consider the potential for significant morbidity when choosing the optimal procedure for each case. Intramarginal resections have good results, particularly when associated with adjuvant therapies (such as phenol and cement); however, they are associated with a higher recurrence rate. On the other hand, en bloc resections have low recurrence rates, but higher risk for potentially catastrophic complications, such as infection. Though pain and functional limitations are common complications for both procedures, they are usually mild and well tolerated. A timely diagnosis and prompt intervention are fundamental in allowing the choice of less morbid procedures, reserving wider resections and prosthesis reconstruction or arthrodesis for cases of extreme bone loss and local soft tissue extension.

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