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#### **CHONDROSARCOMA OF THE EXTREMITIES: A REVIEW OF 128 CASES BETWEEN 1990 AND 2014**

**Abstract:** Chondrosarcoma is the second most common primary bone tumor. The treatment of chondrosarcoma is challenging due to its insensitivity to chemotherapy and radiotherapy. Surgery is usually the only treatment option. The present study was designed to review the long-term oncologic outcomes of surgical management in a large series of patients with chondrosarcoma of extremities who were treated at a single institution.

**Methods:** The cases of 128 patients with localized chondrosarcoma of extremities that had been surgically treated between 1990 and 2014 were analyzed retrospectively. The study was limited to patients who had received no previous treatment for chondrosarcoma. There were 68 male and 60 female patients with mean age of 41.7 (range, 11 to 81 years). The patients were followed for a minimum of one year or until death. The mean duration of follow-up for the living patients was 90.6 (range, 14 to 264) months. At presentation, 73 (57%) patients were diagnosed as grade-I chondrosarcoma, 44 (34.4%) patients as grade-II and 11 (8.6%) patients as grade-III. The tumor size was less than 5 cm in 72 (56%) patients and greater than 5 cm in 56 (44%) patients. Six (4.7%) patients underwent to amputation to achieve local tumor control, whereas 122 (95.3%) patients underwent a limb-salvage procedure. Marginal status was wide in 79 (61.7%) patients, intralesional in 47 (38.3%) patients and marginal in 2 (1.6%) patients.

**Results:** At the time of final follow-up, 112 patients (87.5%) were alive, 16 (12.5%) had died. Overall survival rate was 96% and disease free survival rate was 91% at 5-years. Fourteen (11 %) patients had local recurrence, and ten (7.8 %) patients had distant metastases. In the univariate analysis, high-grade and advanced stage

correlated with worse survival rates. Patients with intralesional marginal status had the best oncological outcomes, which can be explained by the fact that intralesional resections were intentional and were performed for treatment of grade 1 chondrosarcoma. Tumor size greater than 5 cm correlated with high probability of local recurrence.

**Conclusion:** Tumor grade, stage and marginal status are important prognostic factors for oncological outcome of extremity chondrosarcomas. Grade I chondrosarcomas in the extremities can be successfully treated with intralesional interventions. High-grade extremity chondrosarcomas can be treated with limb salvage surgery with excellent local and systemic control given that margins are adequately wide.