Giant cell tumors of bone are aggressive benign tumors. Wide resection is reserved for a small subset of patients with biologically more aggressive, recurrent, and extensive tumors. For patients affected with giant cell tumors who are young or middle-aged adults with normal life expectancies and high levels of activity, arthrodesis is an attractive option for reconstruction after resection. We retrospectively studied 40 patients (mean age, 33.1 years) with Campanacci grade III giant cell tumors around the knee (12 distal femoral and 28 proximal tibial) that were treated with wide resection and allograft arthrodesis using compression plating between January 1998 and January 2008. At an average follow-up of 4.3 years (range, 2-10 years), no patient had local recurrence, malignant transformation, or pulmonary or distant metastases. The grafts united proximally and distally in 35 (87.5%) patients. Average limb-length shortening was 2 cm (range, 1.5-5 cm). No patient needed a lengthening procedure. Functional outcomes according to the Musculoskeletal Tumor Society measure were successful, with an average score of 26.3 points (range, 22-30 points).

Wide resection with allograft arthrodesis of the knee is a treatment option in young, active patients with Campanacci grade III giant cell tumors around the knee. Wide resection and reconstruction with knee allograft arthrodesis for giant cell tumors can achieve excellent control of disease, high fusion rates, acceptable functional results, and low complication rates.