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1: [Neurosurgery](#). 2009 Feb;64(2 Suppl):A44-53.



## **Treatment of chordomas with CyberKnife: georgetown university experience and treatment recommendations.**

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**OBJECTIVE:** To determine the efficacy and safety of chordoma treatment with CyberKnife (Accuray, Inc., Sunnyvale, CA) stereotactic radiosurgery (CK/SRS). **METHODS:** Eighteen patients with chordoma were treated with CK/SRS as a primary adjuvant (17 patients) or the only treatment (1 patient). The series included 24 lesions (28 treatments). The median age of the patients was 60 years (range, 24-85 years). Forty-four percent of the tumors were located in the mobile spine, 39% inside the cranium, and 17% in the sacral region. The male-to-female ratio was 1:1. The mean tumor volume was 128.0 mL (range, 12.0-457.3 mL), and the median dose of 35 Gy (range, 24.0-40.0 Gy) was delivered in 5 sessions. The median follow-up period was 46 months (range, 7-65 months). **RESULTS:** There were 3 significant complications in patients with previous irradiation, including infection in the surgical/radiation site (2 patients) and decreased vision (1 patient). Improvement in pain and quality of life did not reach statistical significance ( $\alpha = 0.05$ ). Seven patients experienced recurrence at a median of 10 months (range, 5-38 months), and 4 patients with disseminated disease died 7 to 48 months after therapy. Two patients had a partial response, whereas 9 others had stable disease. The local control rate at 65 months was 59.1%, with an overall survival of 74.3% and disease-specific survival of 88.9%. We estimated an alpha/beta ratio of 2.45 for chordomas, which supports hypofractionation. **CONCLUSION:** The CK/SRS safety and efficacy profile compares favorably with those of other treatment delivery systems. CK/SRS appears to reduce tumor volume, given an adequate dose. The authors recommend treatment with 40 Gy in 5 sessions to the clinical treatment volume, which includes the gross tumor volume and at least a 1-cm margin.

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