Surgical management of chordomas of the cervical spine

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Object. Chordomas of the cervical spine are rare tumors. Although en bloc resection has proven to be the ideal procedure in other areas, there is controversy regarding this approach in the cervical spine. The goal in this study was to determine whether piecemeal tumor resection was efficient in the management of chordomas that arise in this location.

Methods. The authors retrospectively reviewed all 74 cases of chordoma treated by their group. Seven patients with isolated cervical chordomas who were treated between October 1992 and January 2006 were identified. There were four male and three female patients, whose ages ranged from 6 to 61 years (mean 34.4 years). Follow-up duration ranged from 7 to 169 months (median 23 months). All cases were managed using a retrocarotid approach with mobilization of the vertebral artery. When the tumor could not be completely resected via the initial anterior approach, a subsequent posterior resection was performed. Tumor resection was intralesional in all cases, and gross-total tumor resection was achieved in six cases. One patient required a second resection 4 months later. In all cases, a posterior stabilization procedure was performed. Five patients underwent anterior fusion (three with fibular allograft and two with iliac crest), whereas two underwent occipitocervical fusion. In two patients with dedifferentiated chordoma metastasis developed, and one of them died 7 months later. The other patient with metastasis died suddenly at home 26 months postsurgery, presumably from aspiration. At the time of this submission, there were no signs of recurrence in five patients.

Conclusions. The authors believe that, in most cases, en bloc resection of cervical chordoma is not feasible. This is due to the tendency of chordomas to involve multiple compartments at the time of diagnosis. In the authors’ experience, intralesional radical resection remains an effective surgical approach to this disease entity.

KEY WORDS • chordoma • vertebral artery • cervical spine • surgical approach

Chordomas are low-grade primary malignant tumors arising from notochordal remnants. They account for 1 to 4% of all malignant bone tumors and are found predominantly in the clivus and sacral spine. Only rarely is this tumor seen in the cervical spine, accounting for only 6% of all chordomas.24 Cervical spine chordomas present significant surgical challenges because of the important anatomical structures present in this area. At the time of initial presentation, in most patients with cervical chordomas, tumor extension into the paravertebral and epidural compartments as well as the involvement of one or both VAs and the dura mater may already have occurred. Because of this, many authors believe that en bloc resection is rarely practicable,10,11 unlike treatment of chordomas of the thoracic, lumbar, and sacral spine, for which en bloc resection should be the goal.3,5,9,18

We present our experience in the management of this disease in seven patients with isolated cervical spine chordomas. On initial presentation, all patients in our series had evidence of tumor extension into paravertebral locations. All patients had undergone a gross-total intralesional resection; none of them had en bloc resection. Although radical tumor resection is the ideal treatment that we have attempted to perform in all the patients, a piecemeal resection to achieve the same goal was our surgical philosophy, as is the case in the treatment of skull base chordomas. In this paper, we discuss the rationale for our surgical approach to these lesions when they are found in the cervical spine, and address the challenge of cervical stabilization after tumor resection.

Clinical Material and Methods

Of the 74 patients in our Center for Cranial Base Surgery database at St. Luke’s–Roosevelt Hospital Center in whom a diagnosis of chordoma had been made, we identified seven who had chordomas in the cervical spine without