Chowdhury et al. reported schwannomas arising from C1, C2 and C3 spinal nerve roots were regarded as high cervical spinal schwannoma. All patients with high cervical spinal schwannomas that were consecutively operated microneurosurgically from 2006-2010 were included in the study. Postoperatively all patients were followed up regularly both clinically and neuro-radiologically (MRI of cervical spine).

Average follow up was 31.5 months. The mean age of the series was 35.8 years (range 10-61 years). There were 8 male and 7 female patients. The mean duration of symptoms at the time of presentation was 32 months (range 06 months-5 years). Two schwannomas were completely extradural, seven were intradural and rest six were interdural or hourglass type (both extra and intradural) as identified during surgery. The standard midline posterior approach was used in all patients. A C2 hemilaminectomyor C2 laminectomy with or without cutting of posterior arch of atlas was used for most intradural and large interdural C2 schwannomas. Tumor removal was complete in all cases. Preservation of the nerve root fibers was not possible in 9 cases and was possible only in 3 cases. In two patients CSF leak developed after operation. One patient who had severe myelopathic features with bed sore failed toimprove and expired 5 months after operation. Rest of the patients showed postoperative improvement in their preoperative symptoms and returned to their normal life by the end of sixth month. There was no tumor recurrence in any patient till last follow up.

Proper 3-D anatomical orientation & physiological knowledge, deep neuro-radiological observation,pathological appreciations and micro-neurosurgical skill and expertization can make the surgical management of these tumors (in a surgically complex site) simple with gratifying result (i.e.neurological outcome) without extensive bone removal or soft tissue manipulation through a standard midline posterior approach [1].

Thirty cases of cervical schwannomas treated by Yamane et al. were retrospectively reviewed;initial symptoms, tumor location, Eden classification, surgical method, functional outcome, and tumor recurrence were investigated. All permanent motor deficits were the result of resecting functionally relevant nerve roots (i.e., C5-8). The rate of permanent sensory deficit was 11% after C1-4 nerve root resection, and 67% after C5-8 nerve root resection. Permanent neurological deficits occurred in 14% of patients younger than 40 years and 38% of those older than 40. Dumbbell tumors were associated with the need for total or ventral nerve root transection, as well as with a high incidence of tumor recurrence. The incidence of permanent neurological deficit was significantly higher in patients undergoing C5-8 nerve root resection, and tended to be higher in those over 40 [2].

Forty-two patients with cervical dumbbell tumors were analyzed retrospectively using a new three-dimensional classification.

To establish optimal surgical strategies, we considered shapes and three-dimensional locations of cervical dumbbell tumors based on diagnostic images and intraoperative findings.

Forty-two cervical dumbbell tumors were characterized according to transverse-section images (Toyama classification; nine types) and craniocaudal extent of intervertebral and transverse foraminal involvement (IF and TF staging; three stages each).

Type IIIa tumors, involving dura plus an intervertebral foramen, accounted for 50% of cases. A posterior approach was used in 35 patients; 7 others underwent a combined anterior and posterior approach. A posterior approach was used for all type IIa and IIIa tumors, and for some type IIIb (upper

cervical), IV, and VI tumors; a combined posterior and anterior approach was used for type IIb and the remainder of type IV and VI. Reconstruction was performed using spinal instrumentation in 4 patients (9.5%). Resection was subtotal in 6 patients (14.3%) and total in 36 (85.7%).

Systematic, imaging-based three-dimensional characterization of shape and location of cervical dumbbell tumors is essential for planning optimal surgery. The classification used here fulfills this need [3].

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[1]

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