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## **CyberKnife radiosurgery for vestibular schwannoma.**

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**OBJECTIVE:** The CyberKnife is newly developed equipment for radiosurgery and fractionated radiosurgery. The authors report on their experience using the CyberKnife in 38 patients with vestibular schwannoma who were treated between 1998 to 2002.

**METHODS:** During this period, 38 patients with vestibular schwannoma were treated using CyberKnife fractionated radiosurgery. Before undergoing fractionated radiosurgery, 14 patients had Gardner Robertson classes I or II hearing (the serviceable hearing group), and 24 patients had classes III to V hearing (the non-serviceable hearing group). The treatment volumes of these two groups were 0.5 to 24.0 cm (3) (mean 4.7 cm (3)), and 0.5 to 41.6 cm (3) (mean 8.2 cm (3)). Target irradiation was administered in 1 - 3 fractions (mean 2.5 fractions). The total marginal radiation doses were 15.0 to 20.5 Gy (mean 17.0 Gy), and 11.9 to 20.1 Gy (mean 16.9 Gy), respectively.

**RESULTS:** After a mean follow-up period of 31.9 months (range 12 to 59 months, median 27 months), 94 % of the tumors were controlled. Only one patient in the group with non-serviceable hearing underwent additional surgical resection for a presumed increase in tumor size. The hearing preservation rate was 93 %. Facial weakness did not develop in any of the patients in the serviceable hearing group. New trigeminal symptoms did not develop in any patients in either group.

**CONCLUSION:** Although a longer and more extensive follow-up is needed, CyberKnife fractionated radiosurgery is considered to be safe and effective, even in patients with large tumors.

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