**Update management of intralabyrinthine schwannomas including subtotal cochleoectomy and hearing rehabilitation with cochlear implants**

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**Background:**

Intralabyrinthine schwannomas (ILS) are a rare differential diagnosis of sudden hearing loss and vertigo. The common management of these tumors is often a "wait-and-test-and-scan (W&T&S)" strategy. We here describe the audiological outcome of cochlear implantation (CI) after surgical removal of these tumors through subtotal or partial cochleoectomy and/or labyrinthectomy.

**Methods:**

In an own case series of 41 patients, 22 tumors showed an intracochlear, 5 an intravestibular, 4 an intravestibulo-cochlear, 6 a transmodiolar (including 2 with cerebello-pontine angle (CPA) extension, 1 a translabyrinthine, 1 a transotic with CPA and 2 a multilocular location. Thirty-six patients received surgery for tumor removal, with 31 patients receiving a cochlear implant in the same session.

**Results**:

In all but one case, hearing rehabilitation with CI was successful, with a good word recognition for monosyllables in quiet already at first fitting and above average when compared to a matched control group of “standard” CI patients. In cases of total removal of transmodiolar tumors reaching the CPA (x2), the cochlear could not be preserved. It those patients, where semicircular canal function was normal before surgery, this function could be mostly preserved despite partial or subtotal cochleoectomy.

**Conclusions:**

Surgical removal of ILS is recommended before tumor growth leads to a complete filling of the cochlea or before a transmodiolar or transmacular growth complicates surgical removal and prevents cochlear implantation. Radiotherapy of ILS may lead to damage of the spiral ganglion cells hindering hearing rehabilitation with CI. If done early enough, cochlear implantation after surgical removal of ILS appears as a valuable option for auditory rehabilitation and a good alternative to a "W&T&S" strategy.