Two Surgeries Best in Bone-Anchored Hearing Aid

BY PATRICE WENDLING
Chicago Bureau

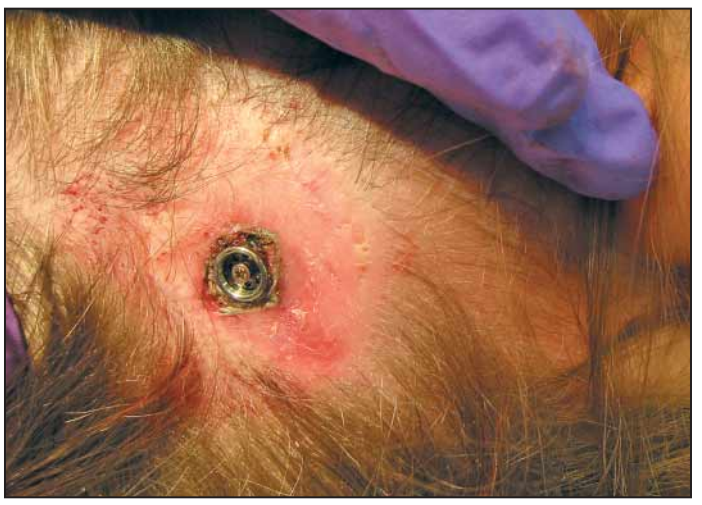
LOS ANGELES — Bone-anchored hearing aid implantation may be better performed in two stages in children to reduce postoperative complications, a retrospective study suggests.

Postoperative complications reported in the literature vary widely from 0% to 19% for extrusion of the titanium fixture and 8% to 61% for skin reactions—the two most common complications in both pediatric and adult populations.

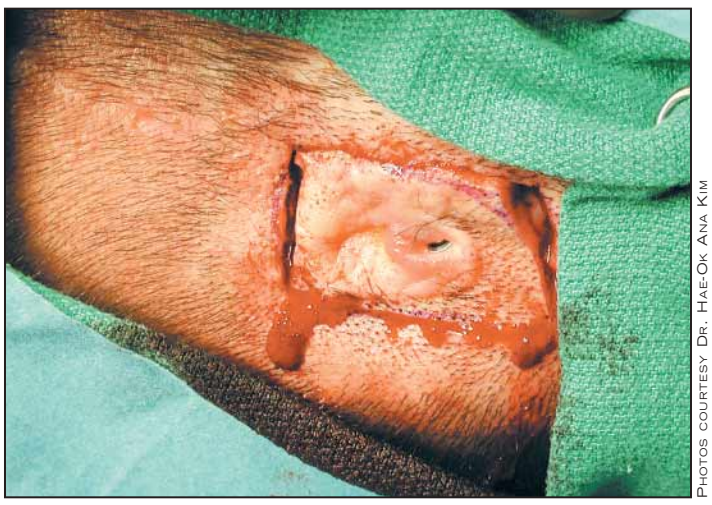
Surgery is considered so simple and straightforward, however, that reports are surfacing of implantation being performed in the office setting under local anesthesia.

Surgery may be better performed under general anesthesia using a two-stage technique for children so that proper osseointegration can occur between stages, Hae-Ok Ana Kim, M.D., said at the annual meeting of the American Academy of Otolaryngology–Head and Neck Surgery Foundation. General anesthesia is recommended to allow for meticulous surgical technique in creating the skin flap and establishing hemostasis, and for the comfort of both the patient and the surgeon.

In a single-stage technique, both the titanium fixture and skin flap procedures are performed at the same time. In a two-stage technique, the titanium fixture is installed in the skull and covered by the overlying soft tissue until it has osseointegrated with the surrounding bone. Approximately 3-5 months later, stage two is performed in which the soft tissue surrounding the titanium fixture is debulked and the skin flap created.



Early postoperative granulation tissue around the abutment is the most common complication and requires wound care.



Hypertrophic scar growth over the abutment requires wound revision and occurred in 5 of 47 implants in one series.

PHOTOS COURTESY DR. HAE-OK ANA KIM

The series included 37 patients with 47 implants who received bone-anchored implants at the University of Michigan in Ann Arbor between 1997 and 2004, according to the study performed by Dr. Kim, a neurotology/otology fellow, and senior author H. Alexander Arts, M.D., a neurotologist and professor of otorhinolaryngology and surgery at the university.

Patients ranged in age from 3 years to 80 years, with 26 adult and 11 pediatric patients.

The most common indications for implantation were hearing loss after acoustic neuroma surgery, otosclerosis, sudden idiopathic hearing loss in the single-sided deafness category, and congenital aural atresia in the conductive/mixed hearing loss category.

The most common early postoperative complication was granulation tissue around the abutment post requiring local wound care in 11 implants (23.4%), hypertrophic scarring in 5 implants (10.6%), and implant extrusion requiring wound revision in 3 (6.4%). Granulation tissue was more common in adults than children (9 vs. 2), and occurred anywhere from 1 week to 8 weeks postoperatively. The incidence did not vary by the type of skin flap used, but was more common with the single-stage technique.

All three cases of implant extrusion occurred with the 3-mm titanium fixture implanted in a single stage.

Both of the pediatric extrusions occurred in patients who had skull thickness less than 3 mm.

Patients with greater skull thickness were more likely to have skin graft complications. ■

Cochlear Implant Revision Feasible Even After 6 Years

BY PATRICE WENDLING
Chicago Bureau

LOS ANGELES — Revision surgery for cochlear implant is feasible and children continue to benefit with the new implant, according to a retrospective analysis of 27 cases.

The feasibility of postrevision cochlear implants was evaluated after a review of the literature revealed problems achieving the same depth of insertion with a revision surgery, Jose N. Fayad, M.D., said at the annual meeting of the American Academy of Otolaryngology–Head and Neck Surgery Foundation.

About 5% of children undergoing cochlear implant surgery subsequently require revision surgery, most commonly due to device failure.

"Once it has been confirmed that the implant has failed, it is important to replace it as soon as possible so the child can continue to develop communication skills and language," Dr. Fayad said in an interview.

The analysis included 496 children, aged 18 months to 16 years, treated at the House Clinic/House Ear Institute in Los Angeles between 1987 and 2005. The interval between surgeries was as short as 8 weeks and up to 6 years. Of the 27 patients who had revision surgery, 18 were reinsertions, and 9 were wound revisions without explantation.

Two patients had their primary surgery performed at another institution, resulting in a reimplantation rate of 3.3% for the institute.

The cause of revision surgery without explantation was mainly infection; device failure (14 patients), trauma (3 patients), and wound infection (1 patient) preceded the reinsertions. Device failure was not significantly related to device type, although more failures occurred among the older ceramic CLARION CI and CII models, which since have been recalled by Advanced Bionics Corp.

With the exception of one patient with a severe cochlear malformation, a new device was fully inserted without difficulty in all patients at the time of revision surgery.

Soundfield thresholds obtained at 250 Hz, 500 Hz, 1,000 Hz, 2,000 Hz, and 4,000 Hz were completely stable before and after the operation, indicating the audibility levels of the patients did not change between the pre–device failure and postrevision periods, he said.

There was no change in speech recognition, with most patients able to understand nouns and some sentences post revision surgery.

Statistical analysis using paired t-tests and the Wilcoxon signed ranks tests indicated that differences in clinical outcomes between pre–device failure and postrevision did not reach statistical significance.

Dr. Fayad, of the House Ear Clinic in Los Angeles, suggested leaving the electrode within the cochlea as a stent until the surgeon is ready to reinsert to avoid tissue collapsing into the cochlea. ■

Fertility Drug Clomiphene Linked To Spinal Neural Tube Defects

LOS ANGELES — Maternal exposure to clomiphene was independently associated with spinal neural tube defects in a case-control study nested within a live-birth cohort, Yvonne Wu, M.D., reported.

Although several studies have examined the possibility of a link between the ovulation-stimulating drug and neural tube defects, the results to date have been mixed, Dr. Wu said in a presentation at the annual meeting of the Child Neurology Society.

Dr. Wu stressed that her study is too limited in size and scope to make definitive statements about the association. "The data linking infertility treatment and neural tube defects has been inconsistent, and our results do not really shift the balance yet," she said. "Our study was an offshoot of an existing [investigation] of cerebral palsy and was not even designed to look at this question."

Given the study's limitations, the findings should not impact clinical decision-making. Instead, they should be the impetus for larger, better-defined studies, she said.

In the current study, Dr. Wu and colleagues from the University of California, San Francisco, electronically reviewed the medical charts of 110,624 mothers and their full-term singleton infants born at Kaiser Permanente Northern California between 1994 and 1997 to identify history of infertility exposure and cases of neural tube defects of the spine. For the purposes of the study, infertility exposure was defined as evaluation at an infertility clinic within Kaiser Permanente, physician diagnosis of infertility, or infertility medication prescribed within 60 days of conception. Information on infertility medication and diagnosis was obtained from electronic databases.

Of the full cohort, 18 infants were diagnosed with neural tube defects, including 12 with spina bifida cystica, 4 with tethered cord syndrome associated with sacral lipoma, and 2 with dermal sinus tracts.

Using multivariate logistic regression analysis, the investigators compared the 18 case mothers to 1,610 randomly selected controls from the same cohort. The mothers of babies born with neural tube defects were more likely to be Hispanic, have had a history of infertility, and have been prescribed clomiphene within 60 days of conception. After adjustment for maternal age, ethnicity, gestational age and birth weight, exposure to clomiphene was the only independent association with neural tube defects of the spine, according to Dr. Wu.

—Diana Mahoney