The necessity for a prospective, continuous and long term follow-up in otologic surgery

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Prior to any surgical intervention, the procedure has to be discussed with the patient and an informed consent form has to be signed by the physician and patient. The discussion needs to include a review of success and failure rates as well as possible complications. In many countries, regional health care systems do not encourage postoperative follow-ups, postoperative visits including audiograms are not reimbursed, and insufficient staff time is available to keep track of patients following their operations. Patients with a successful hearing result may not appreciate the necessity for a long-term follow-up, and dissatisfied patients may not return to their primary physician. The drop-out rate of patients following ear surgery is much higher than generally assumed.

Prior to ossiculoplasties or surgery for chronic ear disease it is essential that the surgeon can estimate his personal success rate. Quoting results from articles in peer-reviewed journals may be advantageous, but does not reflect the individual surgeon's own experience. In many institutions, enthusiastic residents are encouraged to collect audiological data retrospectively. However, patient's records are often incomplete, audiograms from "elsewhere" imperfect and patients are not willing to participate in an academic investigation. Once the resident has left the department, the (Excel-) files are lost or eliminated. Only a prospective database makes it possible to set a personal benchmark and to critically analyse the results and validity of some published case series.

What are fundamentals for an otology database?

M. Yung, a promoter of an international common otology database stated in his recent article: "Maintaining an up-to-date otology database demands hard work and dedication from the surgeon." [1]. R. Vincent, another proponent of an otology-neurotology database [2] concludes that only a computerized medical record allows for efficient data storage, easy retrieval, and all options for reviewing data in multiple formats. Most computerised hospital records permit efficient retrieval of patient files, but prohibit the comparison of audiograms, statistical data analysis or comparison between different treatment groups. Therefore an otology database as a scientific tool has to rely on current computerised medical

Figure 1: Data entry after surgery

records, must automatically retrieve the digitalized audiograms, include the option to import follow-up examinations from other colleagues manually, should support the instant analysis of small and large patient's data files with just a few mouse clicks, and be able to provide lists of patients scheduled for a follow-up. Above all, it must be fun to work with such a database.

A novel otology database

Although otology databases already exist on the market, we were not sufficiently satisfied with their user-friendliness, functionality and in particular with their adaptability. For this reason, we have decided to create our own database in cooperation with innoForce (a company specializing in ENT software). This has now become commercially[1] available as *ENTstatistics*. With this system, therapy data can be recorded speedily and in a clearly-structured and user-friendly manner. While the audiograms are automatically imported, the patient's data form is filled out manually immediately after surgery. The intraoperative digital photographs and the surgeon's operative drawing are scanned at the workstation in the OR. Additionally preoperative CT-scans and a PDF file containing OR notes can be inserted. Within 5–8 minutes the patient's records have been prospectively entered into the database. All information is available through the hospital network on all previously defined working stations. During postoperative visits, the patient's file is retrieved from the database and the follow-up information is easily entered.

Therapy data stored in the database can be interrogated according to multiple criteria, and audiograms can be compared before and after surgery. Important characteristic statistical values can be calculated instantaneously and presented in graphical form. In particular, the program directly calculates statistical significance between various samples. A further important function identifies possible drop-outs and alerts the surgeon to them.

Cooperation with an international database or multicenter studies is feasible, since the data can be extracted anonymously and sent to cooperating centres. The database is flexible and can be easily adapted to accommodate changing requirements or implement specific research interests.
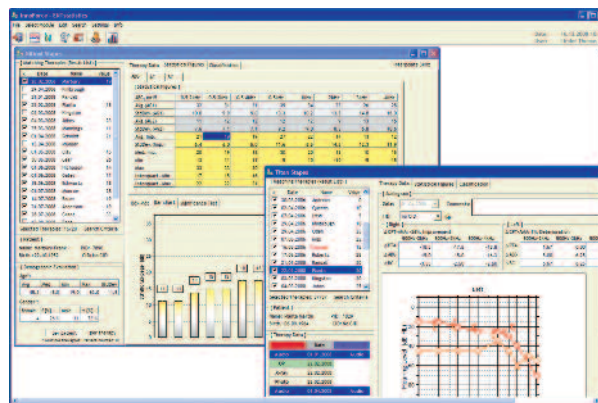

Figure 2: Evaluation of two groups of therapies in ENTstatistics

Summary

Surgeons performing ear surgery on a regular basis should have a great interest in evaluating their own results, comparing their outcome with published data in the literature (benchmark) and should have the indispensable dedication to support a prospective database. Learning from all the pitfalls of a patient's continuous follow-up enables the surgeon to learn from his personal "misfortunes" and opens an honest assessment even when reading peer-reviewed case series. *ENTstatistics* is a powerful system for surgeons to record relevant therapy data in an optimal fashion which allows them to undertake comprehensive evaluation of long term results of their work in otologic surgery.
For further information please visit: ***www.innoforce.com*** •

[1] Yung M, Heyning P: A Prospective Multicentre Otology Database. Arnold W, Häusler R (eds): Otosclerosis and Stapes Surgery. Adv Otorhinolaryngol. Basel, Karger, 2007, vol 65, p335-p339
[2] Vincent R, Sperling N, Oates J, Jindal M: Surgical Findings and Long-Term Hearing Results in 3,050 Stapedotomies for Primary Otosclerosis: A Prospective Study with the Otology-Neurotology Database: Otol Neurotol 2006 27 (Suppl): p25-p47

[1] Prof. Linder has no financial interests in this product