

**AN ANATOMIC AND RADIOLOGIC STUDY OF THE INNER
EAR WITH IMPLICATIONS FOR COCHLEAR
IMPLANTATION
ABSTRACT**

This PhD thesis is centered on the anatomic aspects of the inner ear and has a complex structure as it includes three main studies regarding the clinical significance of deafness and epidemiologic part, radiologic and surgical possibilities to access the cochlear nerve in order to provide rehabilitation. In this short abstract we offer a couple of hints on some of our work and brief conclusions.

Links between surgical landmarks of the temporal bone and cochlear implant approaches

Through our work we wanted to state the surgical importance of the distances between the landmarks of the temporal bone. This we have found important for quantifying the benefits and disadvantages of two different cochlear implant techniques.

We have gathered data from the Radiology Department in Emergency County Hospital in Tîrgu Mureş, namely computed tomography imagistic studies in order to perform the measurements. The time interval was 5 months and exclusion and inclusion criteria were used.

The comparison between the sets of data shows quite a match for the risk/benefit ratio for the two types of technique for cochlear implantation.

The middle cerebral fossa approach for the electrode insertion into the cochlea is a viable and needed surgical technique as the classic approach has reached its boundaries and new challenges appear. As any good surgeon puts a great accent on the radiology data, our work is meant

to give more power and confidence to the ones thinking about solving the borderline pathology, the extreme cases and helping improve the quality of life for every patient with cochlear implant indication.

Custom tailored 3D printed anatomic models for the training in temporal bone surgery

In a time of extraordinary technological advancements, one of the main challenges in the medical field for all doctors is to be in time with these improvements and have the capacity to use these technologies at their full potential. In order to achieve this goal, one of the most important aspects, especially for surgeons, is taking part in “hands-on” trainings.

If at first, these courses were performed mainly on cadavers, nowadays the tendency is to use anatomic models as similar as possible to the real structures, regarding both the aspect and the “feel” during training. The reasons are numerous, ranging from ethical problems to the limited number of available cadavers associated with the high demand. Regardless of the motivation, any advancement that will help us create a more accurate model of an anatomical structure with a good cost-efficiency ratio will translate into a better training for the medical staff and the possibility of performing faster elaborate interventions.

The aim of this study is to present a new alternative for the training of ENT surgeons in cochlear implantation, using a novel 3D printed anatomical model and an alternative surgical approach. We consider these to be an excellent option for surgeons who are at the beginning in the field of cochlear implantation, as it will allow them to perform the necessary training in a safe manner and specialize in a field that is still underdeveloped in our country.