CONTACT DETAILS

3.18 Department of Oto-Rhino-Laryngology, Plastic, Aesthetic and Reconstructive Head and Neck Surgery

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Mission and Structure

The clinic of Otorhinolaryngology, plastic and aesthetic surgery (28 physicians, 5 scientists, 8 research fellows) has 113 regular beds including 4 intensive care units. Besides the complete basic care in the field of ORL there exist the following clinical specialties: device based and surgical supply of all kind of hearing disabilities by special diagnostics, conventional middle ear surgery, new active middle ear implants, implantable hearing aids as well as cochlear implantation (international reference centre), interdisciplinary skull base surgery (tumours, traumas), diagnostics and therapy of head and neck tumours with main focus on organ and function preserving and microsurgical techniques and plastic-reconstructive surgery, national reference centre for surgical treatment of pediatric sarcomas, pathobiology (including phonomurgery), pediaudiology, allergology, sleep medicine (devices based and surgical treatment), neurootology, plastic and aesthetic interventions of the head and neck. Support of foreign ORL clinics in all continents by visiting professorships and practical education of foreign ENT doctors. National and international surgical courses with 3D-Video-Live-Transmission of surgical interventions.

Major Research Interests

Middle ear biology
(R. Mlynski, M. Schmidt, R. Hagen)

Histological morphometry and surface characteristics of middle ear implants; immunology and immunohistology of cholesteatoma for research of origin and maintenance of chronic otitis media, expression of bone morphogenetic protein-2, MMP-9 and cytokines in cells of cholesteatoma.

Biophysics of middle ear
(J. Müller, S. Brill, F. Kraus, R. Hagen)

Investigations of middle ear structures as a dynamic-mechanical system in sound transmission processes using LASER vibrometry; EDP supported documentation and evaluation of surgical and audiological outcome in patients with tympanoplasty and implantation of electronic hearing devices.

Inner ear biology
(R. Mlynski, M. Bürklein in cooperation with the institute of neurobiology, M. Sendtner, the institute of clinical biochemistry and pathobiocchemistry, U. Walter, and the Univ. ORL-Department Bochum, St. Dazer)

Effects of reversible and irreversible ototoxic substances on the active cochlear amplifier system to further investigate pathophysiological processes in inner ear diseases; in vitro and in vivo investigations of neurotrophic substances (FGFs, NT-3, CNTF, LIF) on survival and growth patterns of hair cells and spiral ganglion neurite extension in the mammalian cochlea; effects of recombinant adenoviruses on cochlear cells to transduce cochlear tissues for future gene therapy, inner ear and hearing development in CNTF and LIF knockout mice, creation of transgenetic mice with a cell specific gene-knock-out in cochlear and spiral ganglion cells; investigations of function of vasodilator stimulated phosphoproteins (VASP) in terminal hair cell innervation.

Pedaudiological tests and newborn hearing screening
(W. Shehata-Dieler, C. Völter, R. Keim)

Testing of hearing in all newborns by means of complete screening, application and comparison of different objective audiological testing methods, development of new testing devices, specification of auditory neuropathy in children by special studies.

Cochlear- and brain stem implants
(J. Müller, W. Shehata-Dieler, A. Radeloff, S. Brill, S. Kaulitz in cooperation with the department for neurosurgery and the University of Innsbruck, Austria)

Investigations to improve speech intelligibility following cochlear implantation, development of new surgical techniques and innovative implant models, physiology and pathophysiology of the auditory pathway following uni- and bilateral electro stimulation considering functional anatomical correlations while stimulating different parts of the auditory pathway.

Experimental audiology
(M. Cebulla, R. Keim)

Further development of diagnostic tools for objective frequency specific measurement of the absolute threshold of hearing, standardisation of different methods of acoumetry, investigations in the fine structure of responses to click-stimuli in comparison to transient time corrected stimulation.
Hearing research
(M. Vollmer, T. Bremer in cooperation with the University of California, Prof. Beitel, and the Ludwig-Maximilians University Munich, Prof. Grothe)

Animal experiments in gerbils for investigation of central neuronal interactions in electric acoustical stimulation of the cochlea, central neuronal processing of interaural time differences (ITDs) in acoustical and electrical stimulation of the cochlea, effects of long term deafening to temporal and spatial discrimination of intracochlear electrical stimulation in the colliculus inferior and the primary auditory cortex, psychophysical and neuronal models for temporal integration of electrical stimuli, neurotrophic effects of GM1 gangliosides and electrical stimulation on spiral ganglion cells following neonatal deafening

Tumour biology and functional rehabilitation following tumour surgery
(R. Hagen, M. Schmidt, M. Scheich)

Molecular biological investigations in head and neck carcinomas (HNC), induced expression of a deletional mutant of Pseudomonas exotoxin A in cell lines of HNC, development of a new control plasmid by subcloning (pGeneA-EGFP), investigations in chemotaxis and angiogenesis of tumour cells, effects of herbal anti-tumoural extracts on paclitaxel sensitive and - resistant HNC cell lines, development of new surgical reconstructive techniques of larynx and trachea.

Functional magnetic resonance imaging
(C. Knaus, M. Unkelbach, M. Bendzus, L. Solymosi, A. Bartsch)

Development of new techniques for testing the auditory pathway in cooperation with the institute of neuroradiology

Ecological toxicology of the upper aero-digestive tract (UADT)
(N. Kleinsasser, C. Köhler, C. Ginzkey, G. Friehs)

Investigations on the toxicological effects of ecological toxins in tumour initiation testing human tissue cultures of the UADT, characterisation of genotoxic effects of tobacco smoke and environmental toxins (nitrogen dioxide) on mini organ cultures of UADT.

Tissue engineering in laryngology
(N. Kleinsasser, K. Frölich, K. Kampfinger, A. Technau)

Establishment of stable cartilaginous structures with different scaffold materials.

Teaching

Coworkers with postdoctoral lecture qualification take part in the medical main lecture and in the clinical courses for medical students. Initiation and coaching of experimental and clinical medical dissertations. Annual german and english speaking surgical courses for microsurgery of the ear, skull base surgery, phonosurgery, reconstructive laryngeal surgery, endonasal surgery with live-3D-transmission and practical exercises for consultants. The foreign twin clinics are served by course instructors (DAAD) in all the participating countries, 4 training fellowships for practical education (actually doctors from China, Mongolia, Kazakhstan, Peru). Full-time hospitations for consultants.

SELECTED PUBLICATIONS


