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More than 10 years ago, a first experience was published by Prof. Dr. Christian Von Ilberg in preserving the low-frequency acoustic hearing while performing in the same ear a partial insertion of a multielectrode array in order to electrically stimulate mid and high frequencies. This approach was called electric acoustic stimulation (EAS).

Even with remaining good hearing at low frequencies, acoustic hearing aids are unable to adequately rehabilitate the patient at a certain stage of hearing loss and the possibility for cochlear implantation (CI) provides a solution to get better communicative abilities. Until recently patients were faced with the choice between hearing aid rehabilitation of the low-frequency hearing and CI with the loss of the remaining hearing.

The development of EAS helps to solve the traditional trade-off between being conservative and preserving the low-frequency hearing or to perform a CI and losing the remaining hearing.

The initial observation by Von Ilberg boosted basic and translational research and prompted high-technological electrode development in order to understand the fundamentals of this phenomenon and to shift this first observation to a reliable and robust procedure. Huge progress has been made to preserve, exploit, and understand low-frequency hearing and the physiology to combine and process acoustic and electric stimuli in the same cochlea.

This edition gives a state of the art from basic science to clinical application of EAS and related topics by the world leading researchers and the most clinically experienced surgical teams.

The audiological aspects related to selecting, preparing and rehabilitating EAS patients such as dead zone assessment, psychophysics of low-frequency hearing, electric-acoustic interaction, speech algorithms, music perception, fitting and acceptance by the patient are addressed in depth. Surgical minimal invasive techniques and clinical EAS results in adults and children are described in great detail.

An introductory chapter on cochlear neural reserves with exceptional images in color of spiral ganglion analysis enhances the basic understanding of the failing organ of Corti. Molecular biology with drug interference and high-technological electrode development focus further on the basic scientific EAS research.

With the development of EAS, CI has definitely put an important step ahead due to the possibility to enter the cochlea and stimulate the inner ear without destroying the cochlea and its residual hearing.

It is the primary intent of this volume to enhance the knowledge of all aspects of Cochlear implantation.
tion and hearing preservation. We also hope that the insights and experiences of the authors of this volume contribute to the understanding of the failing organ of Corti, to the benefit of classical CI and of any surgery on the inner ear.

This edition is of prime importance to every scientist, audiologist, speech therapist, and ENT specialist involved in CI and inner ear pathology.

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