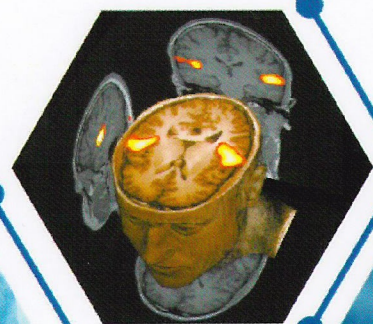
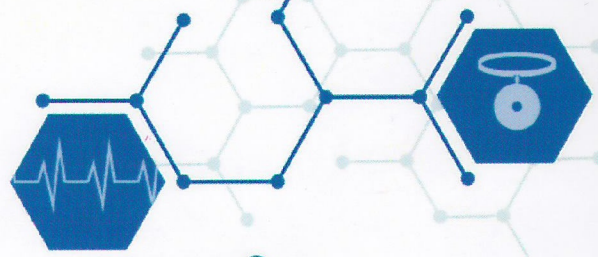
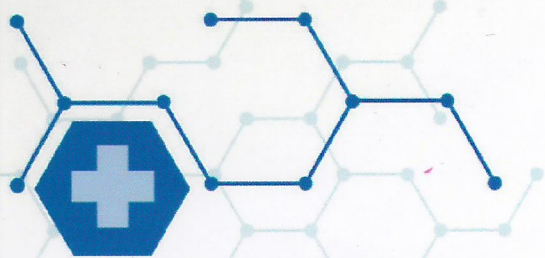


Methods of Partial Deafness Treatment



EDITED BY

Henryk Skarżyński
and Piotr H. Skarżyński

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Preface

The newest developments in audiology, otology, and otosurgery, combined with the latest medical technologies, allow physicians to provide an effective treatment for practically all deaf and hard-of-hearing patients. The monograph *Methods of Partial Deafness Treatment* presents the overview of rationale and possibilities of preserving the ear's structures and functions in different hearing impairments from various perspectives: medical, surgical, audiological, educational, developmental, or diagnostic. The partial deafness treatment (PDT) method has been developed and perfected since 1997, when I had presented its first results at the 5th International Cochlear Implant Conference in New York, NY, USA. Since that time, the eponymous program that I have initiated and conducted in the World Hearing Center of the Institute of Physiology and Pathology of Hearing in Warsaw has encompassed more than seven thousand patients. It is the largest group of patients with partial deafness worldwide.

This monograph draws on the authors' experience amassed in the long-term follow-up of that enormous study material to present the reader with exhaustive information about the operative techniques and the current state of knowledge about the PDT method. The surgical method's essence is to preserve preoperative hearing regardless of its level and supplement it with electric stimulation through a cochlear implant. This innovation has the potential to improve the lives of millions of patients worldwide whose hearing in the low frequencies is normal but needs amplification in the medium- and high-frequency range. Before the PDT method, these patients were beyond the scope of feasible help.

The greatest challenge of the method is preserving the intact ear structures and function. Teaching the surgical technique perfected for achieving the optimal cochlear implantation results in partial deafness treatment is an integral part of the method. Over 13 years, in the World Hearing Center, our team in cooperation with hearing implant producers Med-El, Cochlear®, Advanced Bionics, and Oticon has been organizing specialized Window Approach Workshops (WAW) for otosurgeons from all continents looking to enrich their knowledge and raise qualifications in the use of implants for the treatment of total and partial deafness. So far, over 4.5 thousand people from around the world have participated in 57 workshops. In that time, I performed more than 1.2 thousand demonstration surgeries.

This monograph presents in greater detail topics taught during the workshops and adds several chapters presenting novel approaches to the partial deafness treatment. The issues discussed in the monograph include the following:

- Treatment of patients with various types of total and partial deafness and the results of multiple therapies applied in different groups of patients;
- Principles of diagnostics and patients' selection for different types of auditory implants (middle ear, cochlear, and bone conduction implants), including indications and contraindications;
- Strategies of hearing and structure preservation and minimally invasive surgical techniques, including original surgical procedure and appropriately selected implantable devices;
- Results of early and long-term observation of hearing preservation after cochlear implantation;
- Pharmacological treatment in patients undergoing cochlear implantation;
- Otoneurological aspects of cochlear implantation;
- Possible genetic markers predisposing children with prelingual congenital deafness to better respond to cochlear implantation;
- Electrophysiological and acoustic objective methods of hearing evaluation;
- Application of functional magnetic resonance and presentation of tonotopic organization of auditory cortex in patients with partial deafness;
- Auditory development, speech perception, and rehabilitation;
- Different psychological perspectives of partial deafness: subjective, auditory perception and communication, and social;
- Research on the plasticity of the auditory cortex and brain.

The clinical material presented in the monograph comprises almost 100 cases in which all available models of the cochlear, middle ear, and bone conduction implants were used in practice.

In the *Methods of Partial Deafness Treatment*, we present the clinical and scientific approach to partial deafness treatment supported by unique clinical cases. The reader will have the opportunity to learn firsthand from the pioneers of the method about the diagnostics, treatment, rehabilitation process, and related scientific implications of partial deafness treatment.

Prof. Henryk Skarżyński, M.D., Ph.D., dr. h.c. multi

Editors

Prof. Henryk Skarżyński, M.D., Ph.D., dr. h.c. multi, is a world-known otosurgeon, and an expert in otorhinolaryngology, audiology, and phoniatrics. He has been a National Specialist for Audiology and a National Consultant for Audiology and Phoniatrics, since 1994, and a National Consultant in Otorhinolaryngology since 2011. He was the first surgeon in Poland performing cochlear implantations (1992), and middle ear implantations (2003). Professor Skarżyński performed over 200 thousand hearing-improving surgeries. Within two decades of his activity, Poland has become one of the leading countries implementing and conducting hearing screening in children of various ages. He is an author and co-author of over 3,200 scientific publications. He runs an extensive educational activity for students, doctors, and specialists from Poland and abroad.

He was awarded the titles of Honorary Professor of Brigham Young University Provo, USA (1998), and the National Medical University “Nicolae Testemitanu” in Chisinau, Moldova (2013), and the Institute of Mother and Child in Bishkek, Kyrgyzstan (2016); he was honored with the title doctor honoris causa of Maria Grzegorzewska University (2011), Warsaw University (2012), and Maria Curie-Skłodowska University, Lublin (2014).

During the Polish Presidency of the European Union Council, Professor Henryk Skarżyński has initiated and coordinated several activities within the project of “Equal opportunities for children with communication disorders in European countries”. The final achievement of the Polish Presidency was the preparation of the “EU Council Conclusions on early detection and treatment of communication disorders in children, including the use of e-Health tools and innovative solutions” and its endorsement by the Member States on December 2, 2011.

Professor Skarżyński is the organizer of domestic, international, and continental scientific meetings and conferences. He was the President of the high-level meetings, including 9th European Symposium on Paediatric Cochlear Implantation (ESPCI-2009), 10th European Federation of Audiology Societies Congress (EFAS-2011), XXV International Evoked Response Audiometry Study Group Biennial Symposium (2016), 1st World Tinnitus Congress (2018), 4th International Symposium on Otosclerosis and Stapes Surgery (2018), and 35th Politzer Society Meeting (2019).

In 2022, he will preside over the 35th World Congress of Audiology in Warsaw, Poland.

Professor Henryk Skarżyński is also the author of the libretto for the *Broken Silence* musical, which was premiered in September 2019 in the Warsaw Chamber Opera in Poland.

Prof. Piotr H. Skarżyński, M.D., Ph.D., M.Sc; his scientific career is tied to the World Hearing Center of the Institute of Physiology and Pathology of Hearing and the Institute of Sensory Organs. He is a member of numerous scientific societies. He participated in the third Stakeholders Consultation meeting during which the World Hearing Forum of the WHO was announced. He is a member of the Consultant Committee of International Experts of the CPAM-VBMS (for special invitation), an Honorary Member of the ORL Danube Society, and a member of the Roster of Experts on Digital Health of the WHO. He is also a Vice Chairman of the Junior ERS (2010–2014), Member of Board (2014–2016), Member of Congress and Meeting Department of the EAONO, Representative Board Member (till 2019) and Vice President and Institutional Representative (since 2019) of the IfSTeH, Regional Representative of Europe in the ISA, and Board Secretary of the Society of Otorhinolaryngologists, Phoniatrists, and Audiologists. He is also a Vice President of the Herring Group, a Member of the Hearing Committee of the AAO-HNS, and an Auditor of the EFAS. He is an active participant of many conferences – over 1,838 presentations (116 as an Invited Speaker, 126 round tables, 128 courses as an Instructor) and 934 publications (IF – 192,225, IC – 47702,90, scientific points of the Ministry of Science and Higher Education – 10449). He also serves as a reviewer for 38 national and international scientific journals.