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Implantable Bone Conduction Hearing Aids

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Since Anders Tjellström implanted and fitted the first patient with a bone-anchored hearing aid (Baha) in 1977, basic research and clinical work on implantable bone conduction hearing aids have advanced considerably. More adults and more children are implanted every year, up from only 3 in 1977 to a total of over 75,000 users today. An increasing number of centers all over the world offer implantable bone conduction hearing aids as one method of treatment. More knowledge is available than ever before. Better implants, more sophisticated signal processing and several designs from different manufacturers are available today.

Our aim was to bring together the most innovative, the most experienced, and the most renowned researchers and clinicians from all over the world to summarize current knowledge on implantable bone conduction hearing aids. Leading the center for implantable bone conduction hearing aids in Bern, which is the largest in Switzerland, we believe that this collection, which covers a wide range of relevant topics, will be useful for researchers and clinicians alike.

To meet this goal, this volume has been organized as follows. In Introduction and Basics, Anders Tjellström and Albert Mudry cover the history of bone conduction hearing devices, and Stefan Stenfelt gives an overview on acoustic and physiologic aspects of bone conduction hearing. The three following chapters describe three different systems which are available today. General surgical aspects are covered by a multicentered Swiss group of authors. Then, Ann-Louise McDermott from Birmingham and Jack J. Wazen from Sarasota, Fla., share their expertise on Baha in children and discuss complications of the procedure.

Different audiological aspects of implantable bone conduction hearing aids are covered in the next five chapters. Flurin Piffner reports on audiological results in different user groups in Bern, and the Nijmegen group summarizes current knowledge on binaural hearing with implantable bone conduction hearing aids. The group of John K. Niparko analyzes results of the growing number of patients who receive implantable bone conduction hearing aids because of their single-sided deafness, and our own group from Bern reports on the factors influencing the decision process in this group of patients and presents a new questionnaire. Mark Flynn from Cochlear, Inc., in Göteborg, Sweden, gives an update on digital signal processing for Baha.

A good knowledge of the alternatives to implantable bone conduction hearing aids is undoubtedly important, and therefore explored in the next two chapters. Andrzej Zarowski and colleagues from Antwerp explore headbands and softbands, and the Birmingham group compares different aspects of conventional hearing aids with implantable bone conduction hearing aids.

Make sure not to miss the very last chapter of this volume by Bo Håkansson on the future of
bone conduction hearing aids; we promise a stimulating reading!

In a complex field such as implantable bone conduction hearing aids, manufacturers, clinicians and researchers contribute to successful development and the increasing patient benefit. In this volume, two chapters were contributed by researchers who are currently working for a manufacturer. Patrick Westerkull from Oticon, Inc., describes the Ponto system, and Mark Flynn from Cochlear has contributed an article on sound processing for Baha. Ralf Siegert, who reports on the Otomag system, describes himself as being close to the manufacturer.

We are very grateful for the high-quality chapters which have been contributed by experts from all over the world. We believe that this volume will be useful as a reference book for surgeons, audiologists, therapists, and people considering involvement with implantable bone conduction hearing aids. We hope you enjoy it.

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