The contributions in this volume, with the exception of those by R. Machemer and M. Spitznas, were translated by F. C. Blodi, Iowa City, la.

National Library of Medicine, Cataloging in Publication
Ophthalmic microsurgery: instrumentation, microscopes, technique
Includes index.
WW 168 0609
ISBN 3-8055-4028-0

Drug Dosage
The authors and the publisher have exerted every effort to ensure that drug selection and dosage set forth in this text are in accord with current recommendations and practice at the time of publication. However, in view of ongoing research, changes in government regulations, and the constant flow of information relating to drug therapy and drug reactions, the reader is urged to check the package insert for each drug for any change in indications and dosage and for added warnings and precautions. This is particularly important when the recommended agent is a new and/or infrequently employed drug

All rights reserved.
Contents

List of Contributors VIII

Foreword by F. C. Blodi . IX.
Preface . X
Dedication XI
J. Draeger
Introduction 1
References 3

H. Sauttert

1 The Development of Microsurgery . 5
Definition. . . 5
Specific Aspects of Ophthalmic Microsurgery 7
References and Suggested Reading . 11
J. Draeger, F. Klein
2 Technical Developments, Suspensions, Remote Control 12
Technical Developments . 12
Ceiling Suspension 22
Activation and Remote Control of Electrically and Pneumatically Driven Instruments from a Microsurgical Unit . 26
Integration of the Anesthesia Machine . 29
Integrated Inner Pole Magnet . . . . 32
J. Draeger, J. Reiner
3 Operating Microscopes for Microsurgery 34
References . . 60
J. Draeger, L. Klein
4 Microsurgical Instruments . 61
Definitions 61
Cutting Instruments . 62
Contents VII

C. D. Binkhorst, R. Burk, I. Draeger
9 Technical Aspects of Intraocular Lenses 151
Construction of a Lens Implant 151
Material . . . 161
Sterilization of the Intraocular Lens 163
Choice of an Intraocular Lens . 166
References . 167

H. Kaufman, R. Winter, I. Draeger
10 Eye Banking in Corneal Microsurgery. 170
Pre- and Postoperative Microscopic Evaluation of the Corneal Endothelium 176
Techniques of Preserving the Donor Cornea . .178
References . . 180
Subject Index . 181

List of Contributors

Binkhorst, C.D., Axelsestraat 54, NL-4537 Terneuzen (The Netherlands)
Burk, R., Universitiits-Krankenhaus Eppendorf, Augenklinik, Martinistrasse 52,
D-2000 Hamburg 20 (FRG)
Hiitz, W., Stiidtische Kliniken Dortmund, Augenklinik, Beurhausstrasse 40,
D-4600 Dortmund 1 (FRG)
Kaufman, H., LSU Eye Center, 136 South Roman Street, New Orleans, LA 70112 (USA)
Klein, F., Robert-Koch-Strasse 6, D-2000 WedelHolstein (FRG)
Klein, L., Blumenstrasse 5, D-6900 Heidelberg 1 (FRG)
Machemer, R., Department of Ophthalmology, Duke University Medical Center, Box 3802,
Durham, NC 27710 (USA)
Reiner, J., Bayenthalgiirtel 6-8, D-5000 K6ln (FRG)
Sautter, H. t, formerly Universitiits-Krankenhaus Eppendorf, Augenklinik,
Hamburg (FRG)
Spitznas, M., Universitiits-Augenklinik, Sigmund-Freud-Strasse 25, D-5300 Bonn 1 (FRG)
Ullerich, K., Stiidtische Kliniken Dortmund, Augenklinik, Beurhausstrasse 40,
D-4600 Dortmund 1 (FRG)
Winter, R., Universitiits-Krankenhaus Eppendorf, Augenklinik, Martinistrasse 52,
D-2000 Hamburg 20 (FRG)
Foreword

It is a pleasure to introduce this monograph on instrumentation, devices and techniques of ocular microsurgery. The editor, Prof. Dr. Draeger, has had more than two decades of experience in this field. He is one of the pioneers in the use of the operating microscope and has contributed significantly to the progress of instrumentation, especially the motorized, remote-controlled equipment. He was the first to introduce the concept of a complete ceiling-suspended microsurgical unit, which now incorporates the connections not only to control the table and the microscope, but also a multitude of accessory instruments and equipment, including an anesthesia machine, laser connection and a modern magnet. Especially ingenious is the arrangement whereby the surgeon controls many instruments by foot switches from his chair.

After an introductory chapter by the late Prof. Sautter follow three contributions by the editor and associates. They contain new information (especially concerning the argon and YAG lasers, the new magnet) which has not been published before. The chapter on instrumentation establishes for the first time the mechanical-physical principles of microsurgical devices. Similar chapters deal with suture material and the use of viscous material as an adjunct to microsurgical procedures.

The chapter on technical aspects of vitreous surgery is discussed by the originator of this approach, Dr. Machemer of Durham, North Carolina. Prof. Spitznas of Bonn describes his new innovative machine which could revolutionize the approach to a number of ophthalmic maneuvers. The technical aspects of implant surgery and of eye banking are cogently discussed by experts in the field.

This book is unique in its approach to ocular microsurgery. It is not a textbook on surgical procedures that tells you how to do it. This monograph presents the state of the art concerning technical, physical and logistical aspects of ocular microsurgery. It deserves wide dissemination.

Iowa City, Iowa

F. C. Blodi, MD

Preface

Twenty years ago the first thoughts on a book like this were aired. The aim was to evaluate the new methods, to test critically their usefulness and to develop responsible conclusions. Ophthalmic microsurgery developed
afterwards so quickly that it was impossible to get an overview of what is essential and what is trivial, and to present a relevant selection to a less informed reader. After 20 years of sometimes stormy development this aim seems now to be achievable, even though we are certainly not at the end of the technical possibilities of ocular microsurgery. Nevertheless, it seems useful to publish at the present time a balanced picture of what has been achieved.

I am indebted, first of all, to the cooperation of my two friends, Friedrich Klein, Wedel, and Leonhard Klein, Heidelberg, with whom I have worked for decades. Without their indefatigable interest our work could not have developed so far and this book could not have been written. They also contributed their technical expertise to the manuscripts. The same applies to the other coauthors who have so diligently worked on difficult topics. I would like to mention especially the support by my closest associate, R. Winter, who contributed so much to the final success of the book. We greatly appreciate the excellent work of the translator. Without Professor Blodi’s help this publication never would have been possible. I am also indebted to the diligent cooperation of my faithful secretaries who contributed by their typing, correcting, changing of the text to the success of our endeavor. I also wish to thank the publishers, S. Karger, for their patience in completing this complicated project and for the excellent production of the book.

1. Draeger

To my teachers, friends, students

J. Draeger