Ophthalmic Microsurgery

Ophthalmic Microsurgery
Instrumentation, Microscopes, Technique

Editor

J. Draeger, Hamburg

131 figures and 6 tables, 1987

KARGER

Basel · Munich · Paris · London · New York · New Delhi · Singapore · Tokyo · Sydney

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.
Instruments to Grasp the Tissue. 74
Instruments to Open the Lids. 79
Thermal Instruments. 81
Cleaning of the Instruments. 85

Contents VI

Corrosion and Types of Corrosion of the Surgical Instruments 86
Planning the Use of Instruments 87
References. 91
R. Machemer

5 Experimental and Technical Developments in Vitreous Surgery 93
Pathology of Proliferative Vitreoretinopathy. 93
Therapy of Proliferative Vitreoretinopathy. 94
Conclusion
References
R. Winter

6 Viscosurgery. 101
Effect of Sodium Hyaluronate on the Intraocular Pressure 103
Elimination of the Sodium Hyaluronate from the Vitreous and the Anterior
Chamber. 103
Tolerance of Human Corneal Endothelium to Hyaluronic Acid. 104
Protection of Cells. 104
Preserving Tissue Clefts 105
Clinical Experiences 106
Conclusions. 111
References 112
M. Spitznas

7 Motorized Teleguided Stereotactic Micromanipulator for
Vitreous Microsurgery. 114
The Device 115
Surgical Application 117
Comment . . . 124
Acknowledgement 134
References. 134
W. Hiltz, K. Ullerich

8 Microsurgical Suture Material. 135
Requirements for Microsurgical Suture Material 135
Survey of Presently Used Material. 136
Stress on Suture Material. 141
Various Phases of Deformation. 143
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