Kurt Benirschke
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Pathology of the Human Placenta

FIFTH EDITION

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With 745 Illustrations, 170 in Full Color

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Preface

Most obstetricians and pediatricians would agree that the examination of the placenta often helps to explain an abnormal neonatal outcome. As early as in 1892, Ballantyne wrote,

> *A diseased foetus without its placenta is an imperfect specimen, and a description of a foetal malady, unless accompanied by a notice of the placental condition, is incomplete. Deductions drawn from such a case cannot be considered as conclusive, for in the missing placenta or cord may have existed the cause of the disease and death. During intrauterine life the foetus, the membranes, the cord and the placenta form an organic whole, and disease of any part must react upon and affect the others.*

Similar thoughts were succinctly detailed in Price's (1950) discussion of his concept of the prenatal biases as they affected twins. His contribution also admonishes us that placental study is a *sine qua non* for a more perfect understanding of fetal development. Despite all this understanding of the past and appreciation for placental disease, great resistance still exists to perform the task of placental examination routinely. For many pathologists, therefore, the placenta has remained a mysterious organ.

This book had its beginning in 1967 when Shirley G. Driscoll and Kurt Benirschke wrote the volume on placental pathology for the *German Handbook of Pathology*, the "Henke-Lubarsch." Because there seemed to be a need for wider dissemination of the text, this book was reprinted by Springer-Verlag New York but soon became unavailable. Since then, a number of books on placental pathology have been written, in French, English, and German (Philippe, Baldwin, Fox, Lewis and Perrin, Lavery, Gall, Kraus et al., Naeye, Becker and Röckelein, Vogel, Kaplan, and Joshi), and much more interest has been accorded this so readily available but poorly studied organ. The journal *Placenta* has become a significant outlet for results from sophisticated placental studies. Regular trophoblast conferences are being held in Rochester, New York, and European and international meetings were organized. Much other new information has been obtained, and the continuing enigma of placental nonrejection has been tackled by numerous investigators. In addition, the availability of the placenta for biochemical study has stimulated many cell biologists and molecular biologists to use this organ as a convenient source of human tissue. Genetic information now adds to our understanding of the complexity of placental function and other issues. Also, because much interest is developing in comparative placentation, a new Web site may be found at http://medicine.ucsd.edu/cpa.

This fifth edition is being written because so many new findings have come from systematic study in the last few years that updating seemed necessary. Moreover,

there is a great need to have documentation for legal purposes as the placenta has become an important aspect of medicolegal adjudication of circumstances around the time of birth. The organization of the previous edition also left some topics uncovered that are now being corrected. Many changes have been made throughout the book. Not only was the text updated, but also a more complete index was created, the order of chapters is presented more logically, and tables are presented more usefully. The text was written with MSWord. A complete set of diskettes with the references can be made available from the authors, if the reader desires.

I (K.B.) am indebted to many people, foremost to my wife for her understanding and patience with me and with this task; the publishers and many of its staff members have been gracious and patient; my colleagues at the university, and other persons who have all helped gather data, are gratefully acknowledged. Many students and colleagues have graciously read most chapters and they have made many helpful suggestions and corrections, for which I am appreciative. There are some colleagues, however, whose inspiration have helped more than others: Marjorie Grafe; the dysmorphologists Kenneth L. Jones, his wife Marilyn, and their numerous fellows as well as neonatologist Frank Mannino; and ultrasonographer Dolores Pretorius, who continues to challenge me and requires that I provide explanations for perinatal deaths and abnormalities. Having examined all placentas of all deliveries in the institutions with which I was affiliated over the past five decades, I have gathered a large amount of material to digest. Most of all, however, I am grateful to Dr. Geoffrey Altshuler, Oklahoma City, for many stimulating discussions and endless patience with me and his friendship.

P.K. gratefully acknowledges the scientific cooperation of many former and present coworkers: Mario Castellucci, Ayse Demir, Hans-Georg Frank, Hitoshi Funayama, Gabriele Gaus, Berthold Huppertz, Mahmed Kadirov, Sonja Kertschanska, Gaby Kohnen, Georg Kosanke, Azizbek Nanaev, Frank Reister, and the late Gertfried Schweikhart. Many of my data are based on their material, their findings, and their ideas. Also, many colleagues and friends from other laboratories have contributed by discussion and by offering technical help. In this respect I am particularly grateful to Ramazan Demir, Gernot Desoye, Jean-Michel Foidart, John Kingdom, Hubert Korr, Rudolf Leiser, Peter Ruck, Hobe Schröder, Tullia Todros, and the late Elizabeth Ramsey. In many cases it is virtually impossible to differentiate between their and my ideas.

These chapters do not only require scientific inspiration but also much artistic, technical, and secretarial work. The artistic help of Wolfgang Graulich and the photographic assistance of Gaby Bock as well as of Helga Kriegel are gratefully acknowledged. The histologic and electron-microscopic pictures are based on material processed by Marianne von Bentheim, Barbara Ihnow, Michaela Nicolau, Lian Shen, and Uta Zahn. Perfect secretarial assistance was provided by Jutta Ruppert.

The collaboration of all these coworkers and friends was the basis for my contribution. Last but not least, I am very much indebted to my wife for her support and understanding.

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