


Organ and Tissue Transplantation
Series editor: Cataldo Doria

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Cataldo Doria *Editor*

Contemporary Liver Transplantation

The Successful Liver Transplant Program

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Program

With 150 Figures and 93 Tables



Springer

Editor

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Series Editor

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Transplantation is the most regulated field in medicine and requires a detailed knowledge of the clinical as well as the nonclinical issues of a program to succeed in such a highly competitive field. *Organ and Tissue Transplantation* is a series that will go over the science, administrative, and regulatory issues that make a contemporary transplant program successful.

This series provides comprehensive reviews of the most crucial and provocative aspects of solid organ transplantation. It will be a unique source of information and guidance for the current generation of transplant surgeons that evolved from being pure clinicians into savvy administrators, knowledgeable in every regulatory aspect governing transplantation. As a single transplant necessitates the effort of a large group of health care providers of different disciplines, the books in the series address the need and questions of everyone involved, including surgeons, hepatologists, anesthesiologists, palliative care specialists, immunologists, infectious disease specialists, physiatrists, radiologists, scientists, transplant coordinators, financial specialists, epidemiologists, administrators, and attorneys.

Volumes in the series contain chapters covering every single aspect of the surgical operation in the donors (live and cadaver: whole and split), as well as the recipients of transplants. The preoperative work-up, as well as the postoperative immunosuppression management, and the treatment of recurrent diseases are addressed in detail. Whole chapters are dedicated to controversial issues. The series goes beyond the analysis of the formal medical and surgical aspects of transplantation and introduces deep knowledge on key aspects of contemporary transplant programs, such as physical rehabilitation, palliative care, pregnancy, the multiple requirements of regulatory agencies ruling transplantation, quality measurements for transplant programs, finance, liability, and the administration of an effective transplant program.

The series analyzes and reviews medical as well as surgical issues related to transplantation in all its forms. Each book dedicates sections to every subspecialty, collaborating in the success of transplantation. Differently from previously published books in this field, the series dissects organizational issues that are vital to the successful performance of transplant programs.

More information about this series at <http://www.springer.com/series/13177>

To my patients and their families

Foreword

The first liver transplant performed in a human was done in 1963. In half a century, liver transplantation has evolved dramatically. In the USA, we went from 1 to over 150 liver transplant centers that offer this highly specialized treatment for patients needing transplantation. We have become the most scrutinized field in medicine: transplantation is the only specialty with multiple regulatory agencies overseeing the outcomes of the different centers on a yearly basis. Our results in terms of patient and graft survival are publicly available in the SRTR web page; this is not true for any other subspecialty in medicine. When a transplant center does not perform as expected, a mechanism is in place to enroll that transplant center in a remedy program, which can theoretically lead to termination of such a center by federal programs charged of securing very high standard of quality across the country. There is no other field in medicine where clinical management, discoveries, and organizational issues have changed this fast in such a short period of time. In the past 5–10 years, hospitals have tried to organize their services in service lines rather than silos. However, transplantation has been the quintessence of multidisciplinary since the very beginning. We have been working in a service line model since inception; therefore, transplantation can be used as a model for other disciplines to emulate while they are modernizing their structural organization. This book is a comprehensive review of the most crucial and provocative aspects of liver transplantation. It is a unique source of information and guidance for the current generation of transplant professionals that evolved from being pure clinicians into savvy administrators, knowledgeable in every regulatory aspect governing transplantation.

Cataldo Doria

Preface

The purpose of this book is to prepare transplant professionals to be successful in an era when being good clinicians and surgeons is no longer enough to achieve excellence. A single liver transplant necessitates the effort of a large group of health care providers of different disciplines. This book addresses the need and the questions of everyone involved: surgeons, hepatologists, anesthesiologists, palliative care specialists, immunologists, infectious disease specialists, physiatrists, radiologists, scientists, transplant coordinators, financial specialists, administrators, and attorneys. It also provides access to information generally not available in other books written on the same topic, such as palliative care, integrated medicine, and quality indicators of a successful liver transplant program, just to name a few. The book contains chapters covering every single aspect of the surgical operation in the donors (live and cadaver: whole and split), as well as the recipients of liver transplant. The preoperative work-up, as well as the postoperative immunosuppression management, and the treatment of recurrent diseases are addressed in every single detail. Whole chapters are dedicated to controversial issues like transplantation in patients diagnosed with NASH and transplantation for patients diagnosed with HCC beyond Milan criteria. Dedicated chapters on HCV, HCC, FHF, and NASH will make this book a unique resource for any health care provider part of a multidisciplinary liver transplant team. The book goes beyond the analysis of the formal medical and surgical aspects of liver transplantation and introduces deep knowledge on key aspects of contemporary transplant programs, such as palliative care, pregnancy, liver transplantation as a medical home, the multiple requirements of regulatory agencies ruling transplantation, quality measurements for transplant programs, finance, liability, and the administration of an effective transplant program. The book is organized in 9 sections focusing on each key aspect of liver transplantation. The progression through the different sections is logical and offers the opportunity to analyze clinical as well as basic science and organizational issues that pertain specifically to liver transplantation. This book analyzes and reviews medical as well as surgical issues related to liver transplantation in all its forms. Differently from previously published books in this field, we dissect the organizational issues that are vital for the good performance of transplant programs. We introduce concepts like integrated medicine, stem cell transplantation, and diet that are complementary to and supportive of liver transplantation. This book is the first of its kind in terms of the 360-degree analysis of liver transplantation. It is a unique

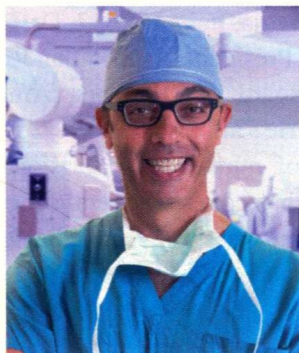
resource for trainees as well as leaders in transplantation because it addresses, in detail, all of the most crucial aspects of liver transplantation. This book allows the reader to become a better clinician: purposely not all liver diseases will be discussed in this book. Only the ones that are more difficult to treat or are more controversial in approaching will be dealt with. By discussing topics like palliative care and integrated medicine, it will open new avenues for clinicians to improve the outcome of their programs. By introducing important topics like the ones in the special topics section, it will offer the reader the knowledge needed to become more competitive in an era when liver transplant programs are flourishing without a parallel increase in organ donation. For the first time, a book on liver transplantation will address the most crucial organizational issues that when cared for properly lead to excellence.

Cataldo Doria

Acknowledgments

I would like to acknowledge all my colleagues who worked tirelessly to make this book a reality.

About the Editor



Cataldo Doria graduated magna cum laude from the University of Perugia–Italy in 1990, where he was also resident in surgery from 1990 to 1995. He completed a research fellowship in small bowel transplantation at the University of Pittsburgh Transplantation Institute and a clinical fellowship in multiorgan transplantation at the Thomas E. Starzl Transplantation Institute of the University of Pittsburgh. Dr. Doria is a Ph.D. in Surgery Biotechnology and Transplant Immunology, and an M.B.A.

Cataldo Doria, M.D., Ph.D., M.B.A., is Professor of Surgery at Sidney Kimmel Medical College at Thomas Jefferson University in Philadelphia, PA. Dr. Doria is the inaugural Nicoletti Family Professor of Transplant Surgery at Sidney Kimmel Medical College, Thomas Jefferson University Hospital. He is also the Director of the Jefferson Transplant Institute, the Director of the Division of Transplantation, and the Surgical-Director of the Jefferson Kimmel Cancer Center – Liver Tumor Center at the same institution. Dr. Doria is the Chairman of the Quality Assurance Performance Improvement Committee of the Jefferson Transplant Institute at Thomas Jefferson University Hospital. He is a multiorgan transplant surgeon who has extensive expertise in cadaveric and living related liver and kidney transplant, pancreas transplant, small-bowel transplant, as well as hepatobiliary and robotic surgery.

Prior to Jefferson, Dr. Doria was at the Mediterranean Institute for Transplantation and Advanced Specialized Therapies (IsMeTT-UPMC Italy) – a partnership between the University of Pittsburgh Medical Center and the Italian National Government – where he served as Chief of Abdominal Organ Transplant. He also served as Assistant Professor of Surgery at the

University of Pittsburgh School of Medicine and at the Thomas E. Starzl Transplantation Institute, Children's Hospital of Pittsburgh, and the US Department of Veterans Affairs Medical Center of Pittsburgh, PA.

His research interest focuses primarily on solid organ transplantation. Dr. Doria's biography has been listed in *Who's Who in Medicine and Healthcare*, *Who's Who in Finance and Industry*, *Who's Who in Science and Engineering*, and *Who's Who in America*. Dr. Doria, in year 2005, has been named Honorary President of the Italian Association for Organ Donation of the Province of Taranto – Italy. In 2008 Dr. Doria was named “surgeon of the year” by the Mid-Atlantic Division of the American Liver Foundation. In 2009, Dr. Doria was the recipient of the Career Achievement Award by the International Association “Pugliesi nel Mondo.” In 2010, he was awarded with the seal of the University of Foggia, Italy. In 2012, Dr. Doria was named Knight of the Italian Republic by the President of the Italian Republic. In 2016, Dr. Doria was named Chairman, Board of Directors, American Liver Foundation, Mid-Atlantic Division. He authored over 269 scientific publications. Dr. Doria is a member of numerous professional and scientific societies where across the years he has covered several official positions. Most importantly, he has been, for the past 10 years, the leader of one of the most successful transplant institute in North America.

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