Hemodialysis Access

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Editors

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Fundamentals and Advanced Management

with contributions from Shahram Aarabi

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To our patients who inspire us every day with their strength, resilience, and compassion.

Preface

This book is a labor of love for our patients who live with end-stage renal disease on a daily basis. The concept was simple and born 2 years ago when I realized that surgeons in the early years of practice need a comprehensive text to help them navigate the subtleties of care for this patient population. Maintenance hemodialysis became a reality in 1960, and over two million people worldwide currently receive treatment with dialysis to stay alive. Although the role of the surgeon is not especially glamorous, creating a successful hemodialysis access offers a lifeline for a patient with end-stage renal disease.

The book is designed to be a reference for the surgeons, interventionalists, nephrologists, and other providers who care for patients with end-stage renal disease. We wanted to create a multidisciplinary clinical perspective between the various specialties that care for the same patient. By providing a holistic approach to the issues that impact the patients and their providers, it is our hope that this will improve patient care and outcomes.

With this in mind, we divided the book into sections. The first section places the issue of maintenance dialysis in perspective by starting with the history of hemodialysis access highlighting the successes and failures that brought us to today. The current state of dialysis in the United States is then addressed, and we asked our colleagues from Japan and Taiwan to give us another point of view by sharing their own experiences. The section concludes with a discussion of the ethical issues surrounding dialysis, as the inception of formal medical ethics began with the evolution of chronic hemodialysis. The second section addresses hemodialysis access planning with a focus on timing, decision-making, perioperative evaluation, and anesthetic considerations. The third section focuses on the technical aspects, the "how to," for creating hemodialysis access. The fourth section addresses the advanced skill sets required to address hemodialysis access dysfunction. The final section covers alternatives to hemodialysis such as peritoneal dialysis and the criteria for renal transplantation. It also discusses home hemodialysis, wearable hemodialysis devices, and the outpatient approach to hemodialysis access.

We dedicate this book to those who have taken upon themselves the mission of caring for end-stage renal disease patients. It is our sincere hope that you will find the contributions in this book valuable to your practice.

Seattle, WA, USA — Sherene Shalhub, MD, MPH

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Abbreviations

ACR	American College of Radiology
ACS-NSQIP	American College of Surgeons National Surgical Quality Improvement Program
AIUM	American Institute for Ultrasound in Medicine
AVF	Arteriovenous fistula
AVG	Arteriovenous graft
BFR	Blood flow rate
CAPD	Continuous ambulatory peritoneal dialysis
CDUS	Color Doppler ultrasonography
CKD	Chronic renal disease
CMS	Centers for Medicare and Medicaid Services
CPT	Current Procedural Terminology
CQI	Continuous quality improvement
CRBSI	Catheter-related blood stream infections
CVC	Central venous catheter
DAC	Outpatient dialysis access center
DCD	Donation after circulatory death
DOQI	Dialysis Outcomes Quality Initiative
EDV	End diastolic velocity
FFCL	Fistula First Catheter Last
FFI	Fistula First Initiative
JSDT	Japanese Society for Dialysis Therapy
KDOQI	Kidney Disease Outcomes Quality Initiative
KDPI	Kidney Donor Profile Index
MAC	Monitored anesthesia care and sedation
MIPPA	Medicare Improvements for Patients and Providers Act
NAPRTCS	North American Pediatric Renal Trials and Collaborative Studies
NKF	National Kidney Foundation
NVASRS	National VA Surgical Risk Study
PD	Peritoneal dialysis
POC	Point of care
PSV	Peak systolic velocity
QIP	Medicare Quality Incentive Program
RVU	Relative value unit
SRU	Society of Radiologists in Ultrasound
TDC	Tunneled dialysis catheter
USRDS	United States Renal Data System
VQI	Vascular Quality Initiative

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