Supine Percutaneous Nephrolithotomy and ECIRS

The New Way of Interpreting PNL

Cesare Marco Scoffone
András Hoznek
Cecilia Maria Cracco
Editors

Springer

Cesare Marco Scoffone • András Hoznek
Cecilia Maria Cracco
Editors

Supine Percutaneous Nephrolithotomy and ECIRS

The New Way of Interpreting PNL

Springer

Editors
Cesare Marco Scoffone
Department of Urology
Cottolengo Hospital
Torino
Italy

Cecilia Maria Cracco
Department of Urology
Cottolengo Hospital
Torino
Italy

András Hoznek
Department of Urology
CHU Henri Mondor
Créteil Cedex
France

ISBN 978-2-8178-0359-3 ISBN 978-2-8178-0459-0 (eBook)
DOI 10.1007/978-2-8178-0459-0
Springer Heidelberg Dordrecht London New York

Library of Congress Control Number: 2013954549

© Springer-Verlag France 2014
This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed. Exempted from this legal reservation are brief excerpts in connection with reviews or scholarly analysis or material supplied specifically for the purpose of being entered and executed on a computer system, for exclusive use by the purchaser of the work. Duplication of this publication or parts thereof is permitted only under the provisions of the Copyright Law of the Publisher's location, in its current version, and permission for use must always be obtained from Springer. Permissions for use may be obtained through RightsLink at the Copyright Clearance Center. Violations are liable to prosecution under the respective Copyright Law.
The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.
While the advice and information in this book are believed to be true and accurate at the date of publication, neither the authors nor the editors nor the publisher can accept any legal responsibility for any errors or omissions that may be made. The publisher makes no warranty, express or implied, with respect to the material contained herein.

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

Preface

Supine percutaneous nephrolithotomy: *a new way of interpreting PNL* is the culmination of 10 years' intensive work in the field of renal stone surgery. Our strongest desire was to share our extensive experience with ECIRS (Endoscopic Combined Intra Renal Surgery) in the Galdakao-modified supine Valdivia position, a revolutionary approach to percutaneous stone surgery, which we undertook with passion and interest, trying to exploit its advantages and new aspects. In order to do this extensively, we involved renowned surgical urologists, anesthesiologists, radiologists, anatomists, and scrub nurses. Thanks to their essential contribution, the present book finally provides, for the first time as far as we know, a comprehensive and multidisciplinary overview of all the issues relative to percutaneous surgery performed in the emerging supine and supine-modified positions.

The crucial concepts in ECIRS and its synergy and versatility in order to provide the best possible treatment for individual patients affected by large and/or complex urolithiasis are reflected throughout the book. Both synergy and versatility are needed in the preoperative holistic evaluation of the patient. A tailored surgical therapy can be proposed and discussed only after a thorough study of the stone features, the anatomy of the collecting system, and the patient's history, characteristics, and comorbidities. Intraoperatively, synergy is needed both among staff (urologists, anesthesiologists, nurses, radiology technicians) and technical equipment (lithotripsy energies, instruments for antegrade and retrograde access, accessories, imaging assistance); further, all the actors should be as versatile as possible, adapting the procedure to the needs of the patient. Postoperatively, thorough prevention of complications, mainly infectious, and follow-up represent another form of multi-disciplinary synergy.

All the chapters have extensive photographs taken in the operating room, drawings, radiograms, and summarizing tables, with the specific aim to be maximally didactic and to share all our experience in the field, including practical tips and tricks. We hope that this book will be a valuable resource in the field of stone surgery for those currently in training as well as for those already expert in prone percutaneous surgery. It takes into account new ways of performing this technical approach, which has been undergoing continuous improvement since the 1970s and is still riding high.

Our whole-hearted gratitude goes first of all to Professor Roberto Mario Scarpa, who has been the enlightened Chief of the Orbassano University Hospital, allowing us to discover and appreciate this surgical approach and to develop all the subsequent pertinent work. In Créteil, the merit goes to Professor Abbou, one of the pioneers of PNL in France in the early 1980s, who from an early stage acted as a visionary regarding the future role of ECIRS. He prompted his team to follow the Spanish and Italian example and encouraged us to popularize supine PNL in France.

We are also particularly grateful to Dr. Valdivia and Dr. Ibarluzea, the "fathers" of the Galdakao-modified supine Valdivia position, who generously shared their experience with us and supported us in the development of the combined percutaneous approach. Finally, thanks to all the urologists, anesthesiologists, and nurses in the Departments of Urology at the San Luigi Hospital, Orbassano, the Cottolengo Hospital, Torino, and the Henri Mondor Hospital, Créteil, for their valuable cooperation and fundamental support in the development of all the different stages of ECIRS.



Torino, Italy Cesare Marco Scoffone



Créteil Cedex, France András Hoznek



Torino, Italy

Cecilia Maria Cracco

Contents

1 Introduction 1
José Gabriel Valdivia Uría

2 The Early History of Percutaneous Nephrolithotomy (PNL) 5
Peter Alken

3 The Evolution from Prone to Supine PNL and from Supine PNL to ECIRS: The Basque History of Endourology 15
J. Gaspar Ibarluzea, Mikel G. Gamarra, Asier Leibar, and José G. Pereira

4 PNL: Indications and Guidelines: Urolithiasis 25
Arvind P. Ganpule and Mahesh R. Desai

5 PNL: Indications and Guidelines: Stenosis and Tumours 33
Marianne Brehmer

6 Anatomy for PNL. 41
Cecilia Maria Cracco and Alessandro Eugenio Vercelli

7 Imaging in Percutaneous Nephrolithotomy. 57
Susanne Sloth Osther and Palle Jørn Sloth Osther

8 Anaesthesia for Supine and Modified Supine PNL. 79
Adebanji A.B. Adeyoju and Neil Sutcliffe

9 Prone PNL: Is It Still the Gold Standard? Review and Results 89
Thomas Knoll

10 Endoscopic Combined IntraRenal Surgery (ECIRS): Rationale . . . 99
Cesare Marco Scoffone, Cecilia Maria Cracco, and Roberto Mario Scarpa

11 ECIRS: Patient Positioning and Organization of the Operating Room 109
András Hoznek, Francisco Pedro Juan Daels, Michael N'Tege Kimuli, Cecilia Maria Cracco, and Cesare Marco Scoffone

12 Instruments and Accessories for ECIRS 127
Cesare Marco Scoffone, András Hoznek, and Julie Rode

13 ECIRS: Access Creation 161
Cesare Marco Scoffone, András Hoznek, and Cecilia Maria Cracco

14 Stone Fragmentation and Extraction 189
András Hoznek, Michael N'Tege Kimuli, and Cesare Marco Scoffone

15 Kidney Drainage and Percutaneous Tract Closure 199
Cesare Marco Scoffone, András Hoznek, and Cecilia Maria Cracco

16 Supine and Supine Modified PNL in Special Situations 209
Cecilia Maria Cracco, Cesare Marco Scoffone, Arvind P. Ganpule, Amit Doshi, and Mahesh R. Desai

17 PNL in Paediatric Patients 223
Antonio Frattini, Cesare Marco Scoffone, and Stefania Ferretti

18 Technical Aspects of Percutaneous Management of Ureteral Stenosis and Upper Urinary Tract Transitional Cell Carcinomas (UUT-TCC) 233
Marianne Brehmer

19 The Scrub Nurse's Point of View on ECIRS (Endoscopic Combined IntraRenal Surgery) 249
Cristian Demelas, Gianni De Masi, Debora Crepaldi, Elena Bertinaria, Michele Trimboli, Angela Palamuso, Tiziana Girodo, and Debora Coda Zabetta

20 Intraoperative Complications: How to Avoid Them? 265
Francisco Pedro Juan Daels and Mariano Sebastian Gonzalez

21 Antibiotic Prophylaxis and Infectious Complications in PNL 279
Oscar R. Negrete-Pulido and Jorge Gutiérrez-Aceves

22 Prone Versus Supine PNL: Results and Published Series 293
András Hoznek, Julie Rode, Cecilia Maria Cracco, and Cesare Marco Scoffone

23 Micro-ECIRS: A Revolutionary New Tool in the Current Endourologic Armamentarium 303
Cesare Marco Scoffone and Cecilia Maria Cracco

24 Conclusions and Future Perspectives of PNL 311
András Hoznek, Cecilia Maria Cracco, and Cesare Marco Scoffone

Contributors

Adebanji A.B. Adeyoju, MB, BS, FRCS (Urol) Consultant Urological Surgeon, Department of Urology, Stepping Hill NHS Foundation Trust, Stockport, UK

Peter Alken, MD Department of Urology, University Clinic Mannheim, Mannheim, Germany

Elena Bertinaria Cottolengo Hospital, Torino, Italy

Marianne Brehmer Department of Urology, Institution of Oncology and Pathology, Karolinska Institutet, Aarhus University Hospital, Denmark

Debora Coda Zabetta Cottolengo Hospital, Torino, Italy

Cecilia Maria Cracco, MD, PhD Department of Urology, Cottolengo Hospital, Torino, Italy

Debora Crepaldi Cottolengo Hospital, Torino, Italy

Francisco Pedro Juan Daels, MD Department of Urology, Instituto Universitario del Hospital Italiano de Buenos Aires, Buenos Aires, Argentina

Gianni De Masi Department of Urology, San Luigi Hospital, University of Torino, Orbassano, Torino, Italy

Cristian Demelas Department of Urology, San Luigi Hospital, University of Torino, Orbassano, Torino, Italy

Mahesh R. Desai Department of Urology, Muljibhai Patel Urological Hospital, Nadiad, Gujarat, India

Amit Doshi Department of Urology, Muljibhai Patel Urological Hospital, Nadiad, Gujarat, India

Stefania Ferretti, MD Department of Surgery, Urology Unit, University Hospital of Parma, Parma, Italy

Antonio Frattini, MD Department of Urology, Guastalla Hospital, Guastalla, RE, Italy

Mikel G. Gamarra, MD Department of Urology, Galdakao-Usansolo Hospital, Bizkaia, Basque Country, Spain

Uro-Oncology Section, Urologia Clínica Bilbao, IMQ Zorrotzaurre Clinic, Bilbao, Basque Country, Spain

Arvind P. Ganpule Department of Urology, Muljibhai Patel Urological Hospital, Nadiad, Gujarat, India

Tiziana Girodo Cottolengo Hospital, Torino, Italy

Mariano Sebastian Gonzalez, MD Department of Urology, Instituto Universitario del Hospital Italiano de Buenos Aires, Buenos Aires, Argentina

Jorge Gutiérrez-Aceves, MD Department of Urology, Wake Forest School of Medicine, Winston-Salem, NC, USA

András Hoznek, MD Department of Urology, CHU Henri Mondor, Créteil Cedex, France

J. Gaspar Ibarluzea, MD Endouroloy and ESWL Section, Urología Clínica Bilbao, IMQ Zorrotzaurre Clinic, Bilbao, Basque Country, Spain

Michael N'Tege Kimuli Pyrah Department of Urology, St James's University Hospital, Leeds, UK

Thomas Knoll Department of Urology, Klinikum Sindelfingen-Boeblingen, Sindelfingen, Germany

Asier Leibar, MD Urología Clínica Bilbao, IMQ Zorrotzaurre Clinic, Bilbao, Basque Country, Spain

Department of Urology, Galdakao-Usansolo Hospital, Bizkaia, Basque Country, Spain

Cossu Marco, MD Department of Urology, San Luigi Hospital, University of Torino, Orbassano Torino, Italy

Oscar R. Negrete-Pulido Department of Urology, Lithiasis and Endourology Clinic, Hospital Ángeles LEÓN, Hospital Regional de Alta Especialidad del Bajío, León, Guanajuato, Mexico

Palle Jørn Sloth Osther, MD, PhD Department of Urology, Fredericia Hospital – A part of Hospital Littlebelt, University of Southern Denmark, Fredericia, Denmark

Susanne Sloth Osther, MD Department of Urology, Fredericia Hospital – A part of Hospital Littlebelt, University of Southern Denmark, Fredericia, Denmark

Angela Palamuso Cottolengo Hospital, Torino, Italy

José G. Pereira, MD Robotic Surgery Section, Urología Clínica Bilbao, IMQ Zorrotzaurre Clinic, Bilbao, Basque Country, Spain

Department of Urology, Galdakao-Usansolo Hospital, Bizkaia, Basque Country, Spain

Massimiliano Poggio, MD Department of Urology, San Luigi Hospital, University of Torino, Orbassano, Torino, Italy

Julie Rode Department of Urology, CHU Henri Mondor, Créteil Cedex, France

Roberto Mario Scarpa Department of Urology, San Luigi Hospital, University of Torino, Orbassano, Torino, Italy

Cesare Marco Scoffone, MD Department of Urology, Cottolengo Hospital, Torino, Italy

Neil Sutcliffe, BSc, MBChB, FRCA, FFICM Consultant Urological Surgeon, Department of Urology, Stepping Hill NHS Foundation Trust, Stockport, UK

Michele Trimboli Cottolengo Hospital, Torino, Italy

José Gabriel Valdivia Uría Jefe de Servicio de Urología del Hospital Clínico Universitario "Lozano Blesa" Zaragoza, Cuarte de Huerva, Zaragoza, Spain

Alessandro Eugenio Vercelli, MD, PhD Neuroscience Institute of the Cavalieri Ottolenghi Foundation, Orbassano, Torino, Italy

Department of Neuroscience, University of Torino, Torino, Italy

PNL is the gold standard for the management of large and/or otherwise complex renal stones. Since its introduction in the seventies PNL has undergone considerable evolution, mainly driven by the improvement in access techniques, endoscopic instrument technology, lithotripsy devices and drainage management. The conventional prone position for PNL has been challenged in the last two decades by a variety of modifications, including the supine and Galdakao-modified supine Valdivia positions, which make simultaneous retrograde working access to the collecting system possible and have proven anesthesiological advantages. The Galdakao-modified supine Valdivia position allowed the development of ECIRS (Endoscopic Combined IntraRenal Surgery), a technique exploiting a combined antegrade and retrograde approach to the upper urinary tract, using both rigid and flexible endoscopes with the related accessories. The synergistic teamwork of ECIRS provides a safe and efficient, minimally-invasive procedure for the treatment of all kinds of urolithiasis.

The aim of this book is to share with the urologic community worldwide our experience, our standardization of all the steps, and tips and tricks for the procedure.

Scoffone
Hoznek
Cracco
Editors

Supine Percutaneous Nephrolithotomy and ECIRS

The New Way of Interpreting PNL

Urology

ISBN 978-2-8178-0359-3

9 782817 803593

▶ springer.com