

Rapid and Practical Interpretation of Urodynamics

Eric S. Rovner • Michelle E. Koski
Editors

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 Springer

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I would like to dedicate this book to my loving family. It is my beautiful, brilliant wife Michelle, and my two wonderful children, Alex and Brooke, who constantly challenge, motivate, and inspire me at home and at work. Without their steadfast support and understanding this work would never have been completed. I can only hope that the final result is worth the nights and weekends that I spent working on it, instead of spending precious time with them.

Eric S. Rovner

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Michelle E. Koski

Foreword

The foreword is a strange literary custom. It doesn't contribute any additional information about the book's subject matter, but serves essentially to introduce the author and content. In the case of Dr. Rovner and his new book, it is a pleasure and honor for me to do both.

I have had a long and close relationship with Dr. Rovner since he completed our Fellowship program in Pelvic Medicine and Reconstruction at UCLA. I have rarely encountered a person with the academic vision, personal integrity, commitment to education, dedication to his patients, and surgical skills that Dr. Rovner possesses.

His book, accordingly, is outstanding. Until now there was no comprehensive resource to learn in a systematic and practical way the quick evaluation and analysis of urodynamics. Dr. Rovner has brought together the best specialists in the field to write *Urodynamics: rapid and practical interpretation*. This book sheds a very timely and needed light on the occasionally shadowy field of urodynamic studies.

The book is cleverly organized to help the reader learn procedures and interpretation in stages. The first part of the book is a guide to the performance of urodynamic studies, with sections for equipment, technique, indications, artifacts, and even coding for the studies. The second part is about interpretation, with sections for bladder capacity, sensations, involuntary contractions, changes in compliance, obstruction, and stress incontinence. The third and most innovative section is dedicated to the examination of sample cases by which the reader can test his or her knowledge.

The organization of the book provides the reader with a methodology for reading and interpreting the UDS tracing in a structured, reproducible, and accurate way. Unlike virtually all previously published UDS books, which are organized around disease states and applicable urodynamic findings, this book breaks down the urodynamic tracings into their component parts and salient features and then applies these findings to various disease states. For the first time, we are offered an objective diagnostic approach that accurately represents how EKG tracings are actually interpreted.

While the book is not primarily meant to teach urodynamic techniques, there are chapters on a number of related areas including: purchasing a urodynamics machine,

billing for the studies, recognizing artifacts, and optimizing the diagnostic value of the UDS study. The selected urodynamic cases are challenging and interesting, most of them are straightforward examples of specific pathology. These cases were carefully selected to illustrate most clearly the salient points under consideration in each section.

In this book, Dr. Rovner has continued in his quest to explore new theories and ideas with clear and practical answers that everyone can comprehend. While it is directed to general urologists, gynecologists, and residents, it will be of great value to trainees in Pelvic Medicine and Reconstructive Surgery and specialists in the field as well. The casual reader will be impressed by the book's readability and comprehensiveness, while practitioners will be astonished by its depth of detail. This remarkable book is a must in the library of any physician performing urodynamic studies.

Los Angeles, CA, USA

Shlomo Raz, MD

Preface

Urodynamic studies have been widely utilized in both Urology and Gynecology for decades. Such tests provide critical information about the function, physiology, and, in some instances, the anatomy of the lower urinary tract including the urinary bladder, urethra, and surrounding soft tissues including pelvic floor muscle, nerves, and connective tissue. Although urodynamics have been performed for decades, there is not a well-established or standard method of interpretation of these studies. Several seminal documents from the ICS, IUGA, SUFU, and AUA over the past two decades have guided performance of the study and standardized terminology, but none provide specific organization or direction in the reading and interpretation of these complex studies [1–4].

Urodynamic studies are expensive and invasive and yet few practitioners may consider themselves truly expert in their performance or especially their interpretation. Beyond the basic interpretation of studies, subtle nuances in the tracings can impart important meaning in the reading of the test. A well done and properly read urodynamic study yields meaningful clinical information which has significant impact on the individual's healthcare. However, a poorly performed study, or a misinterpreted or incompletely read study, is not only uncomfortable and morbid for the patient, but can also result in misdiagnosis and inappropriate interventions.

Rapid and Practical Interpretation of Urodynamics brings a simple, quick, and very practical approach to the understanding and analysis of urodynamic studies. There have been several urodynamics texts published over the past few decades. Without exception, these encyclopedic textbooks are written and categorized by disease or condition. This structure is not consistent with the paradigm in which urodynamics are most often performed and interpreted in practice. The urodynamics study is commonly done in patients who have symptoms but do not yet carry a diagnosis, or who have not appropriately responded to initial therapy. The study is therefore used as a means to define their condition, prognosis, or direct management. Furthermore, in patients with lower urinary tract symptoms presumably due to a defined clinical condition, such as Parkinson's disease, the urodynamic studies are performed to confirm the expected findings as well as exclude confounding conditions.

However, ultimately the management is directed by the urodynamics and thus the complete and accurate interpretation of the study is critical.

Instead of the disease specific approach to the interpretation of urodynamics, *Rapid and Practical Interpretation of Urodynamics* is structured around specific types of patterns seen on urodynamic tracings. The majority of the textbook consists of actual urodynamic tracings annotated and fully interpreted by the authors. Multiple examples of each type of finding are provided with attached expert commentary. The expert commentary expands on the potential clinical significance of the tracing and, where appropriate, discusses its importance diagnostically, prognostically and the implications for clinical management. The emphasis in this book is on the interpretation of actual patterns seen on such tracings and their meaning, as well as the identification of potentially misleading artifacts or “look-alikes.” This is a distinctly innovative method to learning urodynamics. The tracings will be interpreted and then associated with the disease/condition (“ground-up approach”) as opposed to the disease/condition being associated with the tracing (“top-down approach”).

The approach utilized in this book is novel to learning urodynamics but is not unique in medical education. As compared to the pressure-flow urodynamic tracing, an analogous graph/tracing type of diagnostic study is the electrocardiogram (ECG). The classical textbook on ECG from which many medical students first learn interpretation of these studies is Dale Dubin’s “Rapid Interpretation of EKGs,” now in its sixth edition from Cover Inc [5]. This textbook teaches the interpretation of EKGs from the perspective of the tracing and then relates such findings to potential disease states. This format is readily adaptable to urodynamics.

Rapid and Practical Interpretation of Urodynamics consists of three parts. Part I, Urodynamic Basics, is an overview of urodynamic studies along with practical information on the performance and selection of these tests. Part II, Interpretation of Tracings, forms the majority of the textbook. This portion of the book is organized into sections: (1) the normal study, (2) abnormalities of bladder filling and urinary storage, and (3) abnormalities of bladder emptying. Overall the emphasis in this section is on the interpretation of multi-channel pressure-flow urodynamics tracings. Fluoroscopic images are also included. This section consists of actual urodynamics tracings, annotated, highlighted, and interpreted by the chapter author. Using a combination of the functional classification of voiding dysfunction as popularized by Wein [6], and a simple to remember acronym, “the 9 C’s of Urodynamics” (see Chap. 2), all the aspects of a proper and complete interpretation of the pressure-flow urodynamic study are well organized within an easy to understand framework. Part III, Final Examination, consists of a series of “unknowns.” Part III will allow the reader to test their newly acquired skills in interpreting urodynamic studies.

It is hoped that this book will assist practitioners in helping a broad population of patients who are currently being underserved or suboptimally treated. This book is applicable to any reader who is interested in this standardized approach, but will be especially useful to the practitioner who desires more practical knowledge in the performance of urodynamics. *Rapid and Practical Interpretation of Urodynamics*

provides practitioners with a practical, easy-to-read, and well-organized approach to the performance and analysis of pressure-flow urodynamics.

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