

A HANDBOOK OF OPERATIVE SURGERY

SURGICAL UROLOGY

by

R. H. FLOCKS, M.D.

Professor and Head, Department of Urology

DAVID CULP, M.D.

*Associate Professor of Urology
State University of Iowa College of Medicine*

Illustrated by PAUL VER VAIS

SECOND EDITION

THE YEAR BOOK PUBLISHERS • INC.
200 EAST ILLINOIS STREET • CHICAGO

© COPYRIGHT 1954 AND 1961 BY THE YEAR BOOK PUBLISHERS, INC.

Reprinted, April 1956

Second edition. 1961

Library of Congress Catalog Card Number: 61-7245

PRINTED IN U.S.A.

Preface to the Second Edition

MORE THAN SIX YEARS have passed since the publication of the first edition of this handbook. Although the fundamental concepts underlying urologic surgery remain unchanged, significant advances have been made in many fields. These have been incorporated in the new edition. Hamm's technic of pyeloplasty, the newer operations for the correction of ureteral reflux, the operation of Lapiès for vesicocutaneous anastomosis, newer operations for exstrophy of the bladder, for biopsy of the prostate, for bladder neck contracture and for undescended testis are among the important additions. The sections on the treatment of prostatic cancer and tumor of the testis have also been enlarged. An entirely new section is included on the use of segments of small and large bowel for various plastic procedures upon the urinary tract. We trust that these revisions and additions will serve to maintain the book's usefulness.

We continue to be deeply indebted for assistance given by those mentioned in the preface to the first edition and again wish to thank them.

—R. H. FLOCKS.

—DAVID CULP.

Preface to the First Edition

THE PRACTICE of urology is more than the performance of surgical procedures upon those organs making up the urinary tract and the male genital tract. The diagnosis and management of disease of these structures involve a wide knowledge of general medicine and of general surgical principles in addition to that fundamentally applying to the urinary tract. It has been said that the operation is only an incident in the management of the patient, and this is all too true. Accuracy of diagnosis and an understanding of the clinical problem are basic to the selection and performance of the *correct* therapeutic procedure at the *correct* time, and no one should attempt to carry out urologic procedures without the necessary fundamental and clinical background.

It has been our experience, however, in the training of young urologists that there has been a need for bringing together under one roof, so to speak, the more important anatomic, physiologic and surgical principles involved in operative urology. This we have attempted to do here. It is hoped that in the course of management of the patient, the diagnosis having been made and the time of operation decided upon, the urologist will secure aid from this handbook with regard to the surgical armamentarium and the technical details involved in the selected operation. He will find details on how to gain access to the area concerned and what types of procedures are available once access has been gained. The technical performance of the possible procedures is described and illustrated, and operations specifically related to the more common conditions are given. Obviously, not every condition or situation can be covered. We hope the information provided will be helpful to the resident urologist, to the practicing urologist and to the teacher of urology. It also may be of aid to those physicians and surgeons who

at times are confronted with the care of patients with urologic disease.

This book is not designed to give a complete description of urologic physiology, pathology, disease, diagnosis and therapy, or even to give a complete discussion of the relative merits of the various operative procedures used in urology. All the nuances of preoperative and postoperative care of the very young and the very aged who make up the majority of urologic patients are also beyond its scope. Nursing care of these patients involves specialized technics with regard to the collection of urine and the maintenance of adequate nutrition. Patience and an understanding of the emotional problems peculiar to the young and old are especially important in the nursing care of these individuals if satisfactory emotional equilibrium is to be maintained. When renal dysfunction is added to the vagaries of age, the problems connected with the maintenance of fluid, electrolyte and protein equilibrium can be manifold and extremely difficult. Their correct solution is essential if a good result is to be obtained. Although many points with regard to these problems have been brought out in this handbook, space limitations preclude a full discussion. In short, the purpose of this volume is to aid the physician in the performance of the operative portion of the management of his patient.

The foundation which has resulted from the efforts of a great many individuals, not only in urology itself but in the ancillary sciences, is the basis of this book. This foundation, the literature and the combined experience of the authors and their associates in the management of patients and in the training of residents at the University Hospitals for more than 20 years have all been utilized. We are grateful to that large body of medical men and more specifically to the urologists who have over many years contributed to the knowledge which has been used so freely in the construction of this book. Because progress in urology has resulted from the efforts of so many, priority is often difficult to establish. No claims to originality are made. Names have been attached to operations when common usage has made this pertinent and, in the case of recent contributions, to aid the reader in obtaining the original reference.

We wish to thank our associates, Drs. R. G. Bunge and John Greenleaf, and Dr. R. T. Tidrick, Chief of Surgery, University

[12] **Preface**

Hospitals, Iowa City, Iowa, who have contributed so much in time and in suggestions. We are grateful to our secretary Mrs. Alice Bloodhart, for her work on the manuscript. To Mr. Paul Ver Vais and his assistant Miss Mary Arp we are indebted for the excellence of the illustrations. Much time and effort were necessary to make the drawings an integral part of the book and we are most grateful for their co-operation. Finally, we wish to thank the Year Book Publishers for their help.

Table of Contents

<i>Chapter</i>	<i>Page</i>
List of Illustrations	19
 <i>Section I. THE KIDNEY</i>	
1. Anatomy and Physiology of the Kidney	24
2. Surgical Approach to the Kidney	34
Lumbar Incision	36
Lumbar Incision with Resection of the Twelfth Rib	40
Anterior Abdominal Transperitoneal Approach	44
Anterior Abdominal Retroperitoneal Approach	46
Transpleural Transthoracic Approach	48
Extrapleural Transthoracic Approach	50
3. Renal and Pararenal Surgery	54
Nephrectomy	54
Pyelotomy and Pyelolithotomy	62
Nephrotomy; Nephrostomy; Nephrolithotomy	64
Heminephrectomy	68
Nephropexy	70
Renal Decapsulation	76
Pyeloplasty	78
Adrenalectomy	86
4. Surgical Treatment of Conditions of the Kidney	92
Anomalies	92
Infections	96
Nephrolithiasis	98
Cystic Disease of the Kidney	100
Injuries	102
Tumors	102

[14] **Table of Contents**

<i>Chapter</i>	<i>Page</i>
Section II. THE URETER	
5. Anatomy and Physiology of the Ureter	104
6. Surgical Access to the Ureter	108
Approach to the Upper Portion	110
Approach to the Midportion	112
Approach to the Lower Portion	114
7. Surgical Procedures on the Ureter	120
Ureterolithotomy	120
Cutaneous Ureterostomy	124
Ureteroneocystostomy	126
Ureterointestinal Anastomosis	130
Ureterectomy	140
8. Surgical Treatment of Conditions of the Ureter	142
Anomalies	142
Hydroureter and Pyoureter	142
Ureteral Calculi	143
Injuries	143
Tumors	144
Ureteral Reflux	144
Section III. THE BLADDER	
9. Anatomy and Physiology of the Bladder	154
10. Surgical Access to the Bladder	164
Suprapubic Approach	164
11. Open Surgical Procedures on the Bladder	176
Suprapubic Cystostomy	176
Suprapubic Cystolithotomy	180
Coagulation of Tumor	182
Partial Cystectomy	184
Diverticulectomy	190
Total Cystectomy	192
Repair of Bladder Injury	200

<i>Chapter</i>	<i>Page</i>
12. Surgical Treatment of Conditions of the Bladder	202
Prolapse	202
Exstrophy	202
Vesical Stones	208
Elusive Ulcer	208
Diverticulum	208
Tumors	209
Neurogenic Bladder	209
Bladder Neck Obstruction in Infants	210

Section IV. THE PROSTATE

13. Anatomy and Physiology of the Prostate	212
14. Surgical Access to the Prostate	222
General Measures in Preparation of the Patient	222
Suprapubic Abdominal Transvesical Approach	224
Abdominal Suprapubic Retropubic Approach	228
Perineal Approach	230
15. Prostatectomy	238
Partial Prostatectomy	238
Total Prostatectomy	252
Vesicourethral Anastomosis	260
16. Surgical Treatment of Conditions of the Prostate	264
Abscess	264
Calculi	264
Hypertrophy	264
Biopsy of the Prostate	266
Carcinoma	270

Section V. THE URETHRA

17. Anatomy of the Urethra	274
18. Surgical Approach to the Urethra	278
Preparation and Position of the Patient	278
Approaches to the Urethra	280

[16] **Table of Contents**

<i>Chapter</i>	<i>Page</i>
19. Surgery of the Urethra	282
Bladder Neck Contractures	282
Posterior Urethral Valves	282
Rupture	286
Hypospadias	290
Epispadias	298
Periurethral Abscess	300
Urethral Stricture	302
Urethral Stone	314
Urethral Perineal Fistula	316
Meatotomy	318
Incontinence	320

Section VI. THE PENIS

20. Anatomy of the Penis	324
21. Surgery of the Penis	328
Circumcision	328
Operation for Peyronie's Disease	329
Partial Amputation of the Penis	330
Complete Amputation of the Penis	332
Radical Lymph Node Dissection for Carcinoma	334
Repair of Injuries to the Penis	338

Section VII. THE SCROTUM

22. Anatomy of the Scrotum	340
23. Surgery of the Scrotum	342
Wounds	342
Carcinoma	342
Gangrene	343
Plastic Operations on the Scrotum	344
24. Surgery of the Scrotal Contents (excluding the testis)	346
Hydrocelectomy	346

<i>Chapter</i>	<i>Page</i>
Heinatocelectomy	348
Spermatocelectomy	350
Hydrocele of the Spermatic Cord	352
Torsion of the Spermatic Cord	354
Varicocelectomy	356

Section VIII. THE TESTIS

25. Anatomy and Physiology of the Testis	358
26. Surgery of the Testis	360
Orchitis	360
Anomalies of Position	360
Orchiopexy	362
Orchiectomy	370
Radical Orchiectomy and Lymph Node Dissection	372

Section IX. THE EPIDIDYMIS and VAS DEFERENS

27. The Epididymis	376
Anatomy and Physiology of the Epididymis	376
Surgical Treatment of Epididymitis	376
Epididymectomy	378
Epididymovasostomy	380
28. The Vas Deferens	382
Anatomy of the Vas Deferens	382
Vasotomy	384
Vasectomy	384

Section X. TRANSURETHRAL SURGERY

29. Transurethral Prostatic Resection	386
30. Other Transurethral Procedures	404
Coagulation and Resection of Bladder Tumors	404
Treatment of Vesical Calculus	408
Diverticulotomy	410

[18] **Table of Contents**

<i>Chapter</i>	<i>Page</i>
 Section XI. ISOLATED BOWEL SEGMENTS in UROLOGIC SURGERY	
31. Reconstructive Procedures with Isolated Segments of Intestines	412
Substitution of Ileal Segment for Bladder	416
Substitution of Ileal Segment for Ureter	422
Enlargement of Bladder	426
Ileal Conduit from Bladder	428
Use of Large Intestine in Reconstruction	430

List of Illustrations

	<i>Plate</i>
General Topography of the Kidney	1
Blood Supply of the Kidney	2
Nerves and Lymphatics of the Kidney; Renal Fixation	3
Intrinsic Gross Anatomy of the Kidney	4
Surgical Approach to the Kidney	5
Lumbar Incision	6
Lumbar Incision with Resection of the Twelfth Rib	7
Closure of the Lumbar Incision	8
Anterior Abdominal Transperitoneal Approach	9
Anterior Abdominal Retroperitoneal Approach	10
Transpleural Transthoracic Approach	11
Extrapleural Transthoracic Approach	12
Instruments for Renal Surgery	13
Nephrectomy	14
Intracapsular Nephrectomy	15
Nephrectomy by Morcellation	16
Pyelotomy and Pyelolithotomy	17
Combined Nephrolithotomy and Pyelolithotomy	18
Nephrostomy; Nephrolithotomy	19
Heminephrectomy	20
Nephropexy	21
Renal Decapsulation	22
Pyeloplasty	23
Adrenalectomy	24
Separation of the Horseshoe Kidney	25

	<i>Plate</i>
Nephrolithiasis: Surgical Treatment	26
Cystic Disease of the Kidney: Treatment	27
Anatomy of the Ureter	28
Anatomy of the Ureter	29
Surgical Approach to the Ureter	30
Approach to the Upper Portion of the Ureter	31
Approach to the Midportion of the Ureter	32
Approach to the Lower Portion of the Ureter	33
Open Ureterolithotomy	34
Transurethral Lithotomy	35
Cutaneous Ureterostomy	36
Ureteroneocystostomy	37
Ureterointestinal Anastomosis	38
Ureterectomy	39
Ureteral Reflux	40
Anatomy of the Bladder	41
Anatomy of the Bladder	42
Blood Supply of the Bladder	43
Nerve Supply of the Bladder	44
Lymphatic System of the Bladder	45
Suprapubic Approach to the Bladder	46
Instruments for Surgery on the Lower Urinary Tract	47
Suprapubic Cystostomy	48
Suprapubic Cystolithotomy	49
Coagulation of Tumor through the Open Bladder	50
Partial Cystectomy	51
Diverticulectomy	52
Total Cystectomy	53
Bladder Injury: Repair	54
Exstrophy of the Bladder: Repair	55
Anatomy of the Prostate	56
Anatomy of the Prostate: Fascial Relationships	57
Blood Supply of the Prostate	58

	<i>Plate</i>
Blood and Lymph Supply of the Prostate	59
Anatomy of the Prostate	60
Suprapubic Transvesical Approach to the Prostate	61
Suprapubic Retropubic Approach to the Prostate	62
Perineal Approach to the Prostate	63
Partial Prostatectomy: Retropubic Approach	64
Partial Prostatectomy: Suprapubic Transvesical Approach	65
Partial Prostatectomy: Retropubic Combined Type	66
Partial Prostatectomy: Perineal Approach	67
Total Prostatectomy: Perineal Approach	68
Total Prostatectomy: Retropubic Approach	69
Total Prostatectomy: Vesicourethral Anastomosis	70
Prostatic Abscess: Treatment	71
Prostatic Calculi: Treatment	72
Biopsy of the Prostate	73
Carcinoma of the Prostate: Radiogold in Treatment	74
Anatomy of the Male Urethra	75
Anatomy of the Female Urethra	76
Position of the Patient for Urethral Surgery	77
Surgical Approach to the Urethra	78
Repair of Bladder Neck Contracture and Posterior Urethral Valves	79
Rupture of the Posterior Urethra: Repair	80
Rupture of the Anterior Urethra: Repair	81
Hypospadias: Repair	82
Epispadias: Repair	83
Urethral Stricture: Gradual Dilatation	84
Internal Urethrotomy	85
External Urethrotomy	86
Urethroplasty	87
Urethral Stone: Removal	88
Urethral Perineal Fistula: Treatment	89
Meatotomy	90

[22] **List of Illustrations**

	<i>Plate</i>
Surgical Correction of Incontinence	91
Anatomy of the Penis	92
Blood and Lymph Supply of the Penis	93
Partial Amputation of the Penis	94
Complete Amputation of the Penis	95
Radical Lymph Node Dissection for Carcinoma of the Penis	96
Injuries to the Penis: Repair	97
Anatomy of the Scrotum	98
Plastic Operations on the Scrotum	99
Hydrocelectomy	100
Spermatocoelectomy	101
Torsion of the Spermatic Cord: Treatment	102
Varicocelectomy	103
Anatomy of the Testes	104
Orchiopexy	105
Orchiectomy	106
Radical Orchiectomy and Lymph Node Dissection	107
Anatomy of the Epididymis	108
Surgical Treatment of Epididymitis	109
Epididymectomy	110
Epididymovasostomy	111
Anatomy of the Vas Deferens	112
Vasotomy	113
Instruments for Transurethral Surgery	114
Transurethral Prostatic Resection	115
Transurethral Coagulation and Resection of Bladder Tumors	116
Transurethral Treatment of Vesical Calculus	117
Transurethral Diverticulotomy	118
Isolation of Small Bowel Segment	119
Ureteroileocutaneous Anastomosis	120
Ureteroileourethral Anastomosis	121
Substitution of Isolated Ileum for Part of Ureter	122
Substitution of Isolated Ileum for Entire Ureter	123