

A HANDBOOK OF OPERATIVE SURGERY

SURGICAL UROLOGY

by

R. H. FLOCKS, M.D.

Professor and Head, Department of Urology

DAVID A. CULP, M.D.

Professor of Urology

University of Iowa College of Medicine

Illustrated by PAUL VER VAIS

FOURTH EDITION

A HANDBOOK OF OPERATIVE SURGERY

SURGICAL UROLOGY

R. H. FLOCKS, M.D.:

Professor and Head, Department of Urology

DAVID A. CULP, M.D.

Professor of Urology

University of Iowa College of Medicine

Illustrated by PAUL VER VAIS

FOURTH EDITION

YEAR BOOK MEDICAL PUBLISHERS • INC.

35 EAST WACKER DRIVE • CHICAGO

Copyright © 1954, 1961, 1967 and 1975 by Year Book Medical Publishers, Inc. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic mechanical, photocopying, recording, or otherwise, without prior written permission from the publisher. Printed in the United States of America.

Reprinted, April 1956

Second edition, 1961

Reprinted, March 1963

Third edition, 1967

Fourth edition, 1975

Library of Congress Catalog Card Number: 74-83115

International Standard Book Number: 0-8151-3262-X

Table of Contents

Chapter	Page
List of Illustrations	19
<i>Section I. THE KIDNEY</i>	
1. Anatomy and Physiology of the Kidney	26
2. Surgical Approach to the Kidney	36
Lumbar Incision	38
Lumbar Incision with Resection of the Twelfth Rib	42
Wound Drainage with Hémovac Suction Apparatus	46
Anterior Abdominal Transperitoneal Approach	48
Anterior Abdominal Retroperitoneal Approach	50
Transpleural Transthoracic Approach	52
Extrapleural Transthoracic Approach	54
3. Renal and Pararenal Surgery	58
Nephrectomy	58
Pyelotomy and Pyelolithotomy	66
Extended Pyelolithotomy	68
Combined Nephrolithotomy and Pyelolithotomy	70
Nephrotomy; Nephrostomy; Nephrolithotomy	74
Nephrolithotomy, Calyorrhaphy and Calycooplasty	78
Heminephrectomy	80
Nephropexy	82
Renal Decapsulation	88
Pyeloplasty	90
Infundibuloplasty	98
Adrenalectomy	100
4. Surgical Treatment of Conditions of the Kidney	106

[14] **Table of Contents**

<i>Chapter</i>	<i>Page</i>
Anomalies	106
Infections	110
Nephrolithiasis	112
Cystic Disease of the Kidney	114
Injuries	114
Tumors	118
Renal Vascular Surgery	120

Section II. THE URETER

5. Anatomy and Physiology of the Ureter	138
6. Surgical Access to the Ureter	142
Approach to the Upper Portion	144
Approach to the Midportion	146
Approach to the Lower Portion	148
Anterior Approach to Entire Ureter	154
7. Surgical Procedures on the Ureter	156
Ureterolithotomy	156
Cutaneous Ureterostomy	160
Ureteroneocystostomy	172
Ureterointestinal Anastomosis	176
Transureteroureterostomy	186
Ipsilateral Ureteroureterostomy	190
Ureterectomy	192
8. Surgical Treatment of Conditions of the Ureter	194
Anomalies	194
Hydroureter and Pyoureter	194
Ureteral Calculi	195
Injuries	195
Tumors	197
Ureteral Reflux	198

Section III. THE BLADDER

9. Anatomy and Physiology of the Bladder	216
10. Surgical Access to the Bladder	226
Suprapubic Approach	226

<i>Chapter</i>	<i>Page</i>
11. Open Surgical Procedures on the Bladder	238
Suprapubic Cystostomy	238
Suprapubic Cystolithotomy	242
Coagulation of Tumor	244
Partial Cystectomy	246
Diverticulectomy	252
Total Cystectomy	254
Pelvic Lymphadenectomy	262
Repair of Bladder Injury	264
Repair of Vesicovaginal Fistula	266
Repair of Vesicoenteric Fistula	272
12. Surgical Treatment of Conditions of the Bladder	274
Exstrophy	274
Prolapse	279
Vesical Stones	279
Elusive Ulcer	279
Diverticulum	280
Tumors	280
Neurogenic Bladder	281
Bladder Neck Obstruction in Infants	282

Section IV. THE PROSTATE

13. Anatomy and Physiology of the Prostate	284
14. Surgical Access to the Prostate	294
General Measures in Preparation of the Patient	294
Suprapubic Abdominal Transvesical Approach	296
Abdominal Suprapubic Retropubic Approach	300
Perineal Approach	302
Transsacral Approach	310
15. Prostatectomy	312
Partial Prostatectomy	312
Total Prostatectomy	328
Vesicourethral Anastomosis	340
16. Surgical Treatment of Conditions of the Prostate	344
Abscess	344

Chapter	Page
Calculi	344
Hypertrophy	344
Biopsy of the Prostate	346
Carcinoma	350

Section V. THE URETHRA

17. Anatomy of the Urethra	356
18. Surgical Approach to the Urethra	360
Preparation and Position of the Patient	360
Approaches to the Urethra	362
19. Surgery of the Urethra	364
Bladder Neck Contracture	364
Posterior Urethral Valves	364
Rupture	368
Hypospadias	372
Epispadias	396
Periurethral Abscess	398
Urethral Stricture	400
Urethral Stone	416
Urethral Perineal Fistula	418
Urethrorectal Fistula	420
Meatotomy	424
Urethral Diverticulum	428
Urethral Lesions	430
Incontinence	432

Section VI. THE PENIS

20. Anatomy of the Penis	442
21. Surgery of the Penis	446
Circumcision	446
Partial Amputation of the Penis	448
Complete Amputation of the Penis	450
Radical Lymph Node Dissection for Carcinoma	452
Repair of Injuries to the Penis	456
Operation for Peyronie's Disease	456

Chapter	Page
Priapism	458

Section VII. THE SCROTUM

22. Anatomy of the Scrotum	460
23. Surgery of the Scrotum	462
Wounds	462
Carcinoma	462
Gangrene	463
Plastic Operations on the Scrotum	464
24. Surgery of the Scrotal Contents (excluding the testes)	470
Hydrocelectomy	470
Hematocelectomy	472
Spermatoclectomy	474
Hydrocele of the Spermatic Cord	476
Tumors of the Spermatic Cord	476
Torsion of the Spermatic Cord	478
Varicocelectomy	480

Section VIII. THE TESTIS

25. Anatomy and Physiology of the Testis	482
26. Surgery of the Testis	484
Orchitis	484
Anomalies of Position	484
Orchiopexy	486
Orchiectomy	494
Radical Orchiectomy and Lymph Node Dissection	496

Section IX. THE EPIDIDYMIS and VAS DEFERENS

27. The Epididymis	500
Anatomy and Physiology of the Epididymis	500
Surgical Treatment of Epididymitis	500
Epididymectomy	502
Epididymovasostomy	504
28. The Vas Deferens	506
Anatomy of the Vas Deferens	506

Chapter	Page
Vasotomy	508
Vasectomy	508
Reanastomosis of Vas Deferens	510

Section X. TRANSURETHRAL SURGERY

29. Transurethral Prostatic Resection	512
30. Other Transurethral Procedures	530
Coagulation and Resection of Bladder Tumors	530
Treatment of Vesical Calculus	534
Diverticulotomy	536

Section XI. ISOLATED BOWEL SEGMENTS in UROLOGIC SURGERY

31. Reconstructive Procedures	
with Isolated Segments of Intestines	538
Substitution of Ileal Segment for Bladder	542
Substitution of Ileal Segment for Ureter	548
Enlargement of Bladder	554
Ileal Conduit from Bladder	556
Use of Large Intestine in Reconstruction	558
Use of Large Intestine for Urinary Diversion	562
Index	567

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
Drainage of Wounds: Hemovac Suction Apparatus	9
Anterior Abdominal Transperitoneal Approach	10
Anterior Abdominal Retroperitoneal Approach	11
Transpleural Transthoracic Approach	12
Extrapleural Transthoracic Approach	13
Instruments for Renal Surgery	14
Nephrectomy	15
Intracapsular Nephrectomy	16
Nephrectomy by Morcellation	17
Pyelotomy and Pyelolithotomy	18
Extended Pyelolithotomy	19
Combined Nephrolithotomy and Pyelolithotomy	20
Nephrostomy; Nephrolithotomy	21
Bivalve Nephrolithotomy	22
Nephrolithotomy, Calyorrhaphy and Calycolasty	23
Heminephrectomy	24

	<i>Plate</i>
Nephropexy	25
Renal Decapsulation	26
Pyeloplasty	27
Infundibuloplasty	28
Adrenalectomy	29
Separation of the Horseshoe Kidney	30
Nephrolithiasis: Surgical Treatment	31
Cystic Disease of the Kidney: Treatment	32
Renal Injuries: Repair	33
Renal Tumors: Treatment	34
Lumbar Aortography	35
Retrograde Femoral Arteriography; Brachial Aortography	36
Endarterectomy	37
Renal Vascular Surgery: Bypass Graft	38
Autogenous Vein Grafts in Renal Artery Surgery	39
Renal Vascular Surgery: Splenorenal Anastomosis	40
Renal Artery Aneurysm; Embolectomy	41
Renal Homotransplantation	42
Anatomy of the Ureter	43
Anatomy of the Ureter: Blood and Lymph Supply	44
Surgical Approach to the Ureter	45
Approach to the Upper Portion of the Ureter	46
Approach to the Midportion of the Ureter	47
Approach to the Lower Portion of the Ureter	48
Anterior Approach to Entire Ureter	49
Open Ureterolithotomy	50
Transurethral Lithotomy	51
Cutaneous Ureterostomy	52
Bilateral Cutaneous Ureterostomy with Single Midline Stoma	53
High Cutaneous Ureterostomy	54
Temporary Cutaneous Ureterostomy and Pyelostomy	55
Ureterostomy In Situ	56
Ureteroneocystostomy	57

	<i>Plate</i>
Ureterointestinal Anastomosis	58
Transureteroureterostomy	59
Ipsilateral Ureteroureterostomy	60
Ureterectomy	61
Ureteral Reflux	62
Uteric Advancement Procedures for Vesicoureteral Reflux	63
Anatomy of the Bladder	64
Anatomy of the Female Bladder; Interior of the Bladder	65
Blood Supply of the Bladder	66
Nerve Supply of the Bladder	67
Lymphatic System of the Bladder	68
Suprapubic Approach to the Bladder	69
Instruments for Surgery on the Lower Urinary Tract	70
Suprapubic Cystostomy	71
Suprapubic Cystolithotomy	72
Coagulation of Tumor through the Open Bladder	73
Partial Cystectomy	74
Diverticulectomy	75
Total Cystectomy	76
Pelvic Lymphadenectomy	77
Bladder Injury: Repair	78
Bladder Injury: Vesicovaginal Fistula	79
Vesicoenteric Fistula	80
Exstrophy of the Bladder: Repair	81
Anatomy of the Prostate	82
Anatomy of the Prostate: Fascial Relationships	83
Blood Supply of the Prostate	84
Blood and Lymph Supply of the Prostate	85
Anatomy of the Prostate	86
Suprapubic Transvesical Approach to the Prostate	87
Suprapubic Retropubic Approach to the Prostate	88
Perineal Approach to the Prostate	89
Transsacral Approach to the Prostate	90

	<i>Plate</i>
Partial Prostatectomy: Retropubic Approach	91
Partial Prostatectomy: Suprapubic Transvesical Approach	92
Partial Prostatectomy: Retropubic Combined Type	93
Partial Prostatectomy: Pursestring Closure of Bladder Neck	94
Partial Prostatectomy: Perineal Approach	95
Total Prostatectomy: Perineal Approach	96
Total Prostatectomy: Retropubic Approach	97
Total Prostatectomy: Vesicourethral Anastomosis	98
Prostatic Abscess: Treatment	99
Prostatic Calculi: Treatment	100
Biopsy of the Prostate	101
Carcinoma of the Prostate: Radiogold in Treatment	102
Anatomy of the Male Urethra	103
Anatomy of the Female Urethra	104
Position of the Patient for Urethral Surgery	105
Surgical Approaches to the Urethra	106
Repair of Bladder Neck Contracture and Posterior Urethral Valves	107
Rupture of the Posterior Urethra: Repair	108
Rupture of the Anterior Urethra: Repair	109
Hypospadias: Two-Stage Repair	110
Hypospadias: One-Stage Repair	111
Epispadias: Repair	112
Urethral Stricture: Gradual Dilatation	113
Internal Urethrotomy	114
External Urethrotomy	115
Urethroplasty	116
Urethral Stone: Removal	117
Urethral Perineal Fistula: Treatment	118
Urethrectal Fistula: Treatment	119
Meatotomy	120
Urethral Diverticulectomy	121
Excision of Distal Female Urethral Lesions	122

Plate

Surgical Correction of Incontinence	123
Anatomy of the Penis	124
Blood and Lymph Supply of the Penis	125
Circumcision	126
Partial Amputation of the Penis	127
Complete Amputation of the Penis	128
Radical Lymph Node Dissection for Carcinoma of the Penis	129
Injuries to the Penis: Repair	130
Surgical Correction of Priapism	131
Anatomy of the Scrotum	132
Plastic Operations on the Scrotum	133
Hydrocelectomy	134
Spermatoclectomy	135
Torsion of the Spermatic Cord: Treatment	136
Varicocelectomy	137
Anatomy of the Testes	138
Orchiopexy	139
Orchiectomy	140
Radical Orchiectomy and Lymph Node Dissection	141
Anatomy of the Epididymis	142
Surgical Treatment of Epididymitis	143
Epididymectomy	144
Epididymovasostomy	145
Anatomy of the Vas Deferens	146
Vasotomy	147
Reanastomosis of Vas Deferens	148
Instruments for Transurethral Surgery	149
Transurethral Prostatic Resection	150
Transurethral Coagulation and Resection of Bladder Tumors	151
Transurethral Treatment of Vesical Calculus	152
Transurethral Diverticulotomy	153
Isolation of Small Bowel Segment	154
Ureteroileocutaneous Anastomosis	155

	<i>Plate</i>
Ureteroileourethral Anastomosis	156
Substitution of Isolated Ileum for Part of Ureter	157
Substitution of Isolated Ileum for Entire Ureter	158
Ileocystoplasty	159
Ileocystostomy	160
Use of Large Intestine in Bladder Reconstruction	161
Sigmoid Conduit	162

SURGICAL UROLOGY

WILLIAM B. ELLIS, M.D.

JOHN A. MCGEE, M.D.

JOHN A. MCGEE, M.D.

The HANDBOOKS of OPERATIVE SURGERY

THE STOMACH AND DUODENUM (5th ed.)

CLAUDE E. WELCH, M.D.

*Visiting Surgeon, Massachusetts General Hospital
Clinical Professor of Surgery, Harvard Medical School*

SURGICAL GYNECOLOGY (4th ed.)

J. P. GREENHILL, M.D.

*Professor of Gynecology, Cook County Graduate School of Medicine
Senior Attending Obstetrician and Gynecologist, Michael Reese Hospital
Attending Gynecologist, Cook County Hospital*

THE CHEST (4th ed.)

JULIAN JOHNSON, M.D., D.Sc. (Med.)

Professor of Surgery, School of Medicine, University of Pennsylvania

HORACE MACVAUGH, III, M.D.

Assistant Professor of Clinical Surgery, School of Medicine, University of Pennsylvania

JOHN A. WALDHAUSEN, M.D.

*Professor of Surgery and Chairman, Department of Surgery,
Milton S. Hershey School of Medicine, Pennsylvania State University*

THE BILIARY TRACT, PANCREAS AND SPLEEN (4th ed.)

CHARLES B. PUESTOW, M.D.

*Clinical Professor of Surgery, The Abraham Lincoln School of Medicine and
Graduate College, University of Illinois*

SURGICAL UROLOGY (4th ed.)

R. H. FLOCKS, M.D.

Professor and Head, Department of Urology

DAVID CULP, M.D.

Professor of Urology, University of Iowa College of Medicine