



Scan code to
check out courses

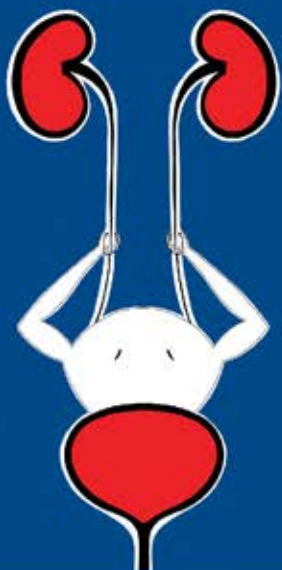
Video Lectures

Notes

Self-Assessment

diginerve
A Jaypee Initiative

YOUR GUIDE AT EVERY STEP



UroGynecology Simplified

Editors

**Nandita Palshetkar
Shakir Tabrez Z**

Co-Editors

**Rubina Shanawaz Z
Selvapriya Saravanan**

Forewords

**S Shantha Kumari
Hrishikesh D Pai**



JAYPEE

UroGynecology Simplified

Editors

Nandita Palshetkar

MD FCPS FICOG FRCOG (UK)
Scientific Director, Bloom IVF, Mumbai
Professor
Department of Obstetrics and Gynecology
Dr DY Patil Medical College,
Hospital and Research Centre
Navi Mumbai, Maharashtra, India
President, FOGSI (2019–20)
President, AMOGS (2018–20)
President, IAGE (2017–18)
Chairperson, MSR (2017–18)

Shakir Tabrez Z

MS (General Surgery) MCh (Urology)
FICS FIAGES Dip in MAS (Urology)
Dip in Robotic Surgery (Lorraine University, France)
Senior Consultant – Urology, Uro-Oncology,
Andrology, Kidney Transplant and
Robotic Surgery
Fortis Hospitals
Bengaluru, Karnataka, India

Co-Editors

Rubina Shanawaz Z

MS (Obs & Gyn) FICS CU DRM (Germany)
Consultant – Urogynecology, Gynec Endoscopy,
and Robotic Surgery
Fortis Hospitals
Bengaluru, Karnataka, India

Selvapriya Saravanan

MD (Obs & Gyn) FICOG DRM (Kiel)
Fellow in Fetal Medicine (MGR Univ)
Director
SPring Fertility Fetocare Fetogene Centre
Kanyakumari, Tamil Nadu, India

Forewords

S Shantha Kumari

Hrishikesh D Pai



JAYPEE BROTHERS MEDICAL PUBLISHERS

The Health Sciences Publisher

New Delhi | London

Contents

1. Pelvic Ureter and Its Applied Anatomy.....	1
<i>Rubina Shanawaz Z</i>	
2. Pelvic Floor: Anatomy and Significance in Urogynecology	5
<i>Kiran Ashok</i>	
3. Retroperitoneum: What to Expect?	14
<i>Santosh Kumar Subudhi</i>	
4. Important Renal Physiological and Biochemical Parameters	20
<i>Ritu Hinduja, Rohan Palshetkar</i>	
5. History and Clinical Assessment of Lower Urinary Tract Symptoms	26
<i>Shreyas Nagaraj</i>	
6. Imaging in Urogynecology.....	33
<i>Chander P Lulla, Selvapriya Saravanan</i>	
7. Basics of Urodynamics	42
<i>Premkumar Krishnappa</i>	
8. Stress Urinary Incontinence: Assessment and Management.....	53
<i>Nita Thakre, Anuj Thakre</i>	
9. Tension-free Vaginal Tape	67
<i>Shakir Tabrez Z</i>	
10. Tension-free Transobturator Tape Insertion	70
<i>Ashish Kale</i>	
11. Autologous Rectus Fascia Sling	72
<i>T Srikala Prasad</i>	
12. Urge Urinary Incontinence: Management Options.....	82
<i>Urvashi Neelagar, Basavaraj Neelagar</i>	
13. Assessment and Management of Patient with Obstructive Lower Urinary Tract Symptoms.....	88
<i>Vishal</i>	
14. Current Trends in the Management of Recurrent Urinary Tract Infections	97
<i>Karthik Rao</i>	

15. Urinary Tract Calculi in Pregnancy	101
<i>Mohan Balaiah Aswathaiya</i>	
16. Basics of Cystoscopy	107
<i>Ramesh Hanumegowda</i>	
17. Urinary Tract Injuries in Difficult Gynecologic Surgeries: Tips and Tricks to Anticipate and Avoid	114
<i>Manjula Anagani, Prabha Agrawal</i>	
18. Identification and Management of Ureteric Injuries in Gynecological Surgeries	122
<i>Sreeharsha Harinatha</i>	
19. Urinary Bladder Injuries during Cesarean Section	129
<i>Mala Raj, Prashanth K Adiga</i>	
20. Postpartum Urinary Issues and Management	135
<i>Ameya C Purandare, Ashwin Shetty</i>	
21. Identification and Management of Genitourinary Fistulae	140
<i>Madhusudhan Naidu</i>	
22. Genital Prolapse	150
<i>Manish Machave</i>	
23. Vaginal Apical Suspension Procedures	165
<i>T Srikala Prasad</i>	
24. High Uterosacral Ligament Suspension for Apical Prolapse	175
<i>N Rajamaheswari</i>	
25. Abdominal Apical Suspension Procedures for Pelvic Organ Prolapse	185
<i>Bimal M John, Raji S</i>	
26. Advances in Pelvic Repair and Reconstructive Surgeries	194
<i>Vineet Mishra, Neeta Mishra, Deepa Chaudhary</i>	
27. Robotics in Urogynecology	204
<i>Mohan Keshavamurthy</i>	
28. Female Genital Cosmetic Surgery	209
<i>Deepa Ganesh</i>	
29. Her Unspoken Problems	217
<i>Narendra Malhotra, Molina Patel, Neharika Malhotra, Jaideep Malhotra, Manpreet Sharma, Shemi Bansal</i>	

<i>Index</i>	225
--------------------	------------

INTRODUCTION

The retroperitoneum can be described as the entirety of the structures contained anteriorly by the posterior reflection of the peritoneum, posteriorly by the posterior abdominal wall with its muscle layers, cranially by the diaphragm and caudally by the extraperitoneal pelvic structures. The retroperitoneum is different from extraperitoneal space which includes the retroperitoneum and the space that circumferentially surrounds the abdominal cavity (**Fig. 1**).

STRUCTURE

The retroperitoneum relevant to the urogynecologists is the pelvic retroperitoneum, which lies between the parietal peritoneum

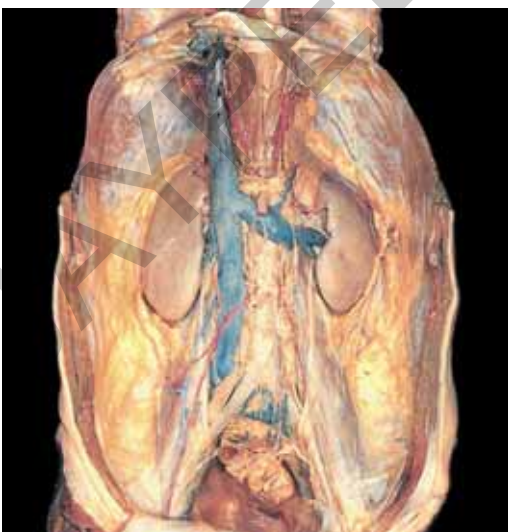


Fig. 1: Dissected retroperitoneum.

and the parietal pelvic fascia behind the pelvic structures in the pelvis of females (**Fig. 2**).

The pelvic retroperitoneum is a connective tissue space crossed by pelvic ureter, visceral vessels, and nerves.

This space is organized in three functional structures:

1. Visceral ligaments
2. Acollaged visceral surfaces
3. Visceral pelvic fascia

This has great surgical and functional importance in urogynecology, endometriosis and in oncology.

The posterior aspect of the pelvis contains the sacrum and the pelvic girdle formed by ilium, ischium and pubic bones. These bones are lined by the iliacus, psoas major and sometimes psoas minor muscles (**Fig. 3**).

The *visceral ligaments* are connective support of vessels which lie along sagittal-vesicopubic, vesicouterine (pillar bladder), uterosacral laterallateral sacral, parametric and paracervical, lateral rectal (**Fig. 4**).

The *acollaged visceral surfaces* are: septum-vesicouterine, vesicovaginal and rectovaginal; pelvic spaces—paravesical, pararectal, retro-pubic space of Retzius, retrorectal and presacral.

The *visceral pelvic fascia* lines the pelvic viscera.

The open or the laparoscopic anatomy can be divided into:

- *Sagittal spaces and septums—from posterior to anterior:*
 - Promontory
 - Rectovaginal septum

Female pelvis: Superior view with peritoneum and loose areolar tissue removed

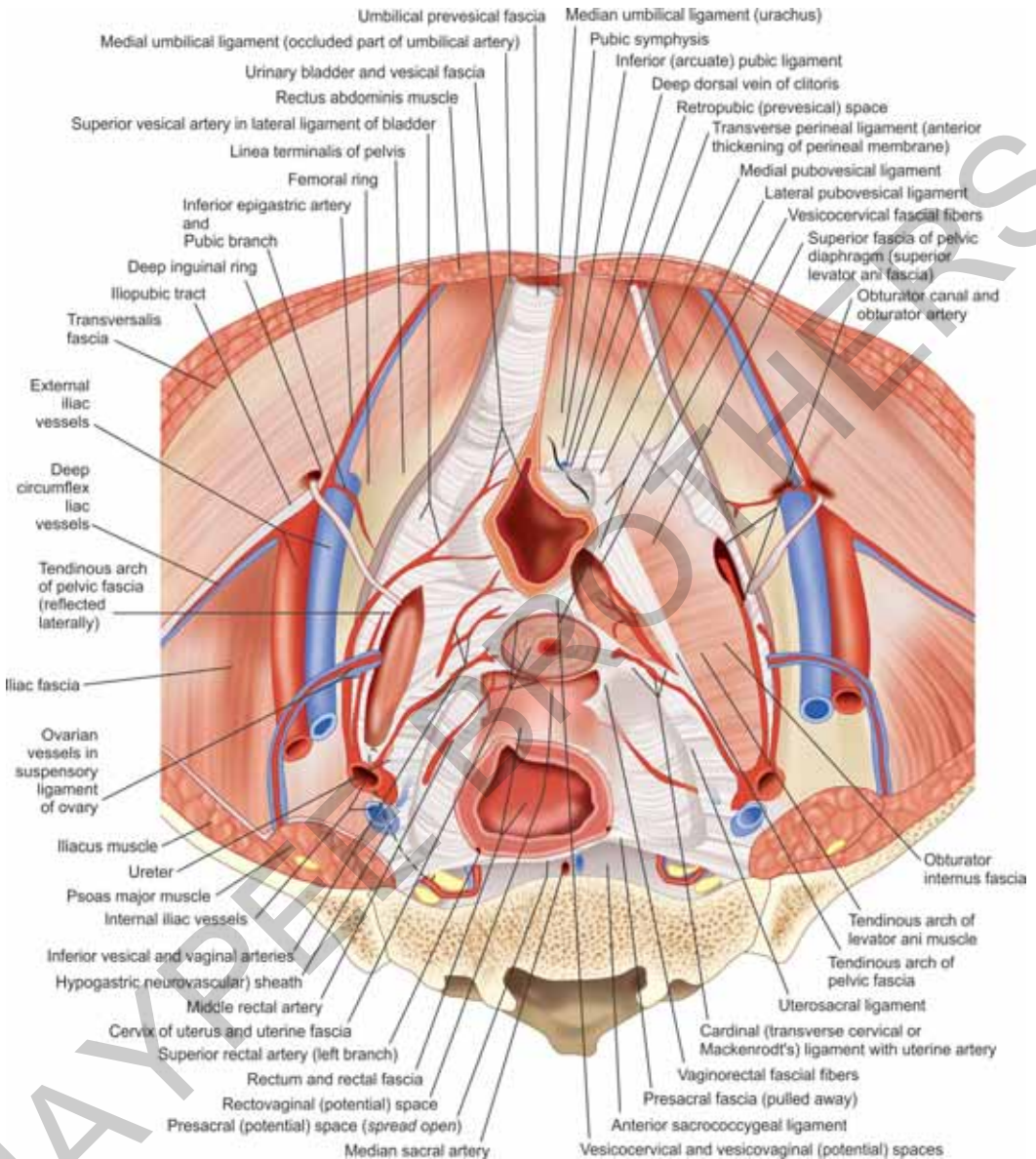


Fig. 2: Pelvic viscera and retroperitoneum.

- Vesicovaginal septum
- Retropubic space of Retzius
- *Lateral spaces:*
 - Paravesical and pararectal spaces
 - Parametrium and paracervix
 - Pelvic ureter

Promontory

This is the projection of the first sacral vertebrae into the retroperitoneum and the peritoneal cavity. It constitutes a portion of the margin of the pelvic inlet. It joins at an angle of 30° to the vertebral

column and is called the sacrovertebral angle (**Figs. 5A and B**).

This landmark is important during sacral colpopexy for fixation of mesh in vault prolapse.

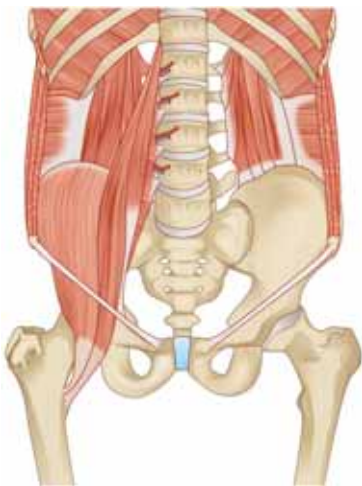


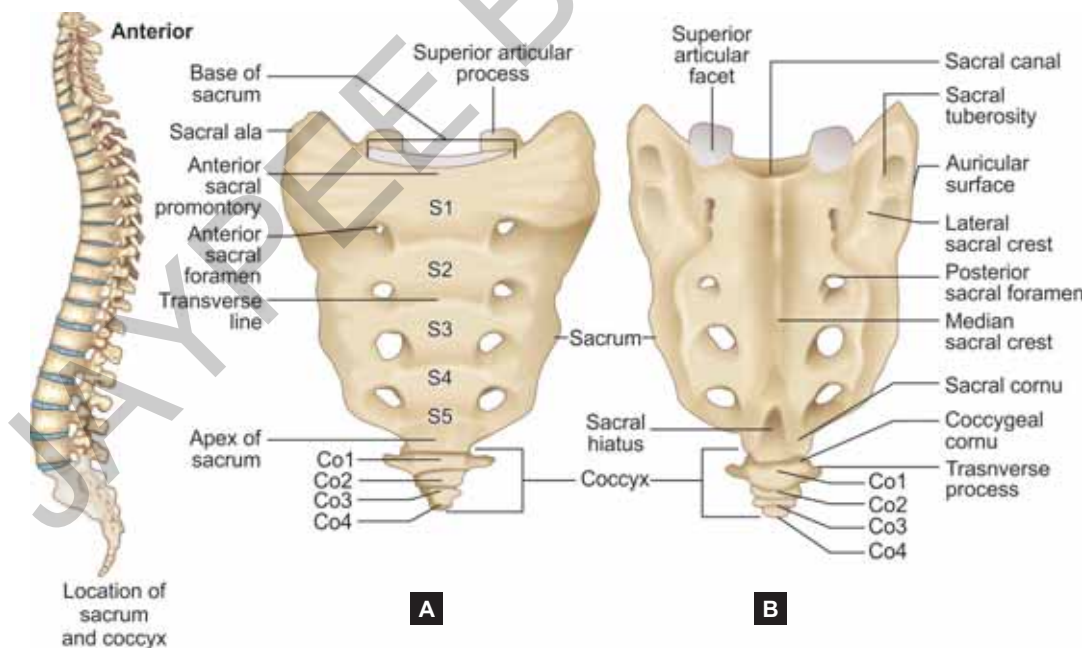
Fig. 3: Muscles of the posterior abdominal wall.

Rectovaginal Septum

The rectovaginal septum or the rectovaginal fascia also called fascia of Otto. It is a thin structure separating the vagina from the rectum. Inferiorly and laterally, it is bound by the perineal body (**Fig. 6**).



Fig. 4: Visceral ligaments.



Figs. 5A and B: Structure of the sacrum: (A) Anterior view and (B) Posterior view.

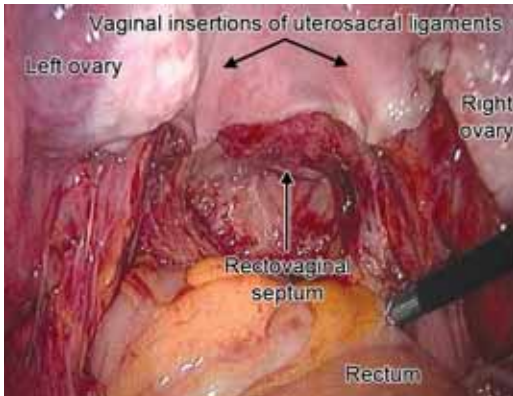


Fig. 6: Rectovaginal septum.

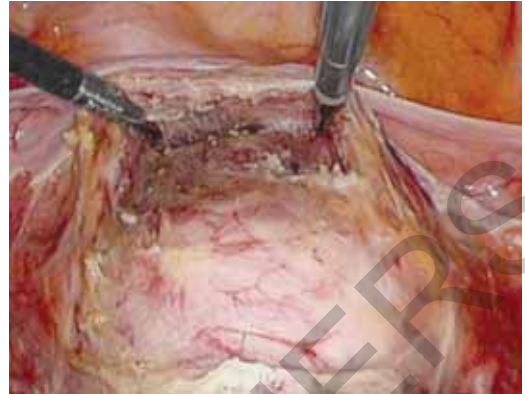


Fig. 7: Vesicovaginal dissection during promontofixation.

Two levels of dissection are required in the septum:

1. For *promontofixation*: Vagina/rectum and the levator ani muscles
2. For *radical hysterectomy or deep endometriosis*: Vagina/rectum/uterosacral ligaments.

Vesicovaginal Septum

The vesicovaginal space is the commonly dissected space by gynecologists. It is a potential avascular space except its lateral boundaries formed by the vesicocervical ligament or bladder pillars (**Fig. 7**). It is demarcated anteriorly by the urinary bladder and posteriorly by the cervix and uterus.

Retropubic Space of Retzius

Retropubic space is a potential extraperitoneal avascular space with vascular borders between the pubic symphysis and the urinary bladder (**Fig. 8**). The retropubic space is a preperitoneal space, behind the transversalis fascia and in front of the peritoneum.

The floor of this space is formed by the paraurethral ligaments and the urethrovesical junction (bladder neck).

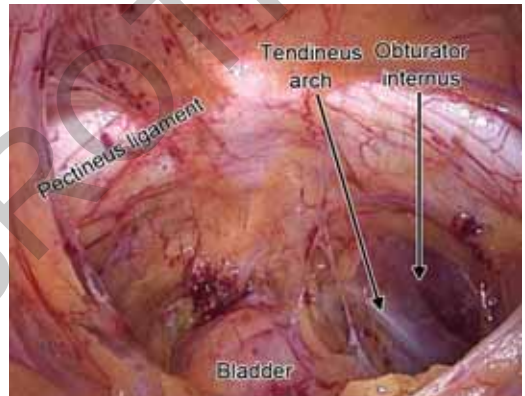


Fig. 8: Retropubic space.

Paravesical Spaces

The paravesical spaces are paired avascular spaces of the pelvis. The paravesical spaces generally contain fat, but can become filled with ascites, blood or pus.

Boundaries

- *Superior*: Lateral umbilical folds
- *Inferior*: Pubocervical fascia as it inserts into the tendinous portion of the levator ani muscle
- *Anterior*: Arcuate rim of the ileum

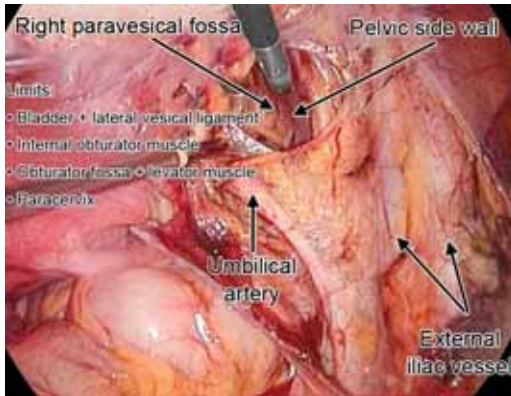


Fig. 9: Paravesical spaces.

- *Posterior:* Cardinal ligament dividing the paravesical spaces from the pararectal spaces
- *Medial:* Bladder pillars
- *Lateral:* Pelvic walls, obturator internus and levator ani muscles

Relations

- Continuous with the retropubic space (space of Retzius), which lies medially
- Continuous with the infrarenal space, which lies superiorly

In approximately 40% of patients, this space is traversed by accessory obturator arteries and veins which originate from the inferior epigastric vessels and drape across the pectineal (Cooper's) ligament on their way to anastomose with the obturator vessels in the obturator canal (**Fig. 9**). The surgeon must always look for them especially when performing retropubic colposuspension.

Pararectal Space

The pararectal spaces are paired, triangular-shaped spaces in the posterior pelvis.

Boundaries

- *Anterior:* Base of cardinal ligament
- *Medial:* Rectal pillars

- *Lateral:* Levator ani muscle, internal iliac arteries
- *Posterior:* Sacrum

Contents

- Fat
- Connective tissue

Relations

- Separated from the *paravesical spaces* by the cardinal ligament
- Separated from the *presacral (retrorectal) space* by the rectal septa

This space can be easily developed by bluntly dissection lateral to the ureter and posterior to the origin of the uterine artery.

Parametrium and Paracervix

The parametrium is the fibrous and fatty connective tissue that surrounds the uterus.¹

This tissue separates the supravaginal portion of the cervix from the bladder. The parametrium (called cervical stroma in some texts) lies in front of the cervix and extends laterally between the layers of the broad ligaments. It connects the uterus to other tissues in the pelvis.

Contents: Uterine artery and ovarian ligament.

An associated form of pelvic inflammatory disease is inflammation of the parametrium known as parametritis.

THE PELVIC URETER

Out of all the structures mentioned, the ureter is the most feared structure in the retroperitoneum as it is likely to be injured and missed intraoperatively (**Fig. 10**). The course is important but its recognition by its peristalsis and the crisscrossing vessels on

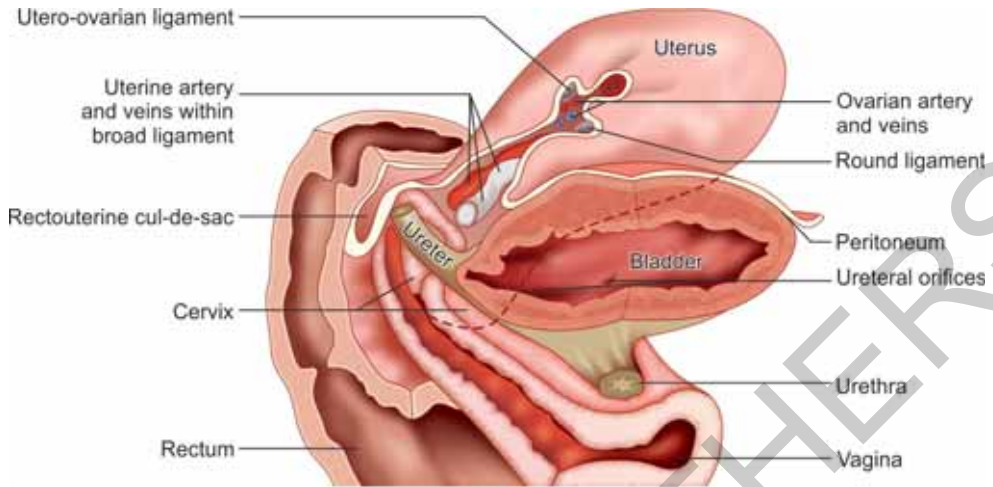


Fig. 10: Pelvic ureter.

the surface would avoid injury in situations where the anatomy is altered due to pathology.

doing the surgeries and avoid untoward complication.

CONCLUSION

The knowledge of this retroperitoneal anatomy would make the surgeon confident

REFERENCE

1. Laparoscopy Blog. Intraoperative images from www.laparoscopy.blogs.com.

UroGynecology Simplified

Salient Features

- A comprehensive, pioneering book from Indian authors on the essentials of Urogynecology from the perspective of Gynecologists and Urologists combined in a single platform
- Basics to recent advances in urogynecology
- Understanding urological procedures to treat urogynecological issues better
- Useful for postgraduates and practitioners to familiarize themselves with the recent advances.



Printed in India

Available at all medical bookstores
or buy online at www.jaypeebrothers.com



JAYPEE BROTHERS
Medical Publishers (P) Ltd.
EMCA House, 23/23-B, Ansari Road,
Daryaganj, New Delhi - 110 002, INDIA
www.jaypeebrothers.com

Join us on [f](https://www.facebook.com/JaypeeMedicalPublishers) [facebook.com/JaypeeMedicalPublishers](https://www.facebook.com/JaypeeMedicalPublishers)

Shelving Recommendation
OBSTETRICS & GYNECOLOGY

ISBN 978-93-5465-205-9



9 789354 652059