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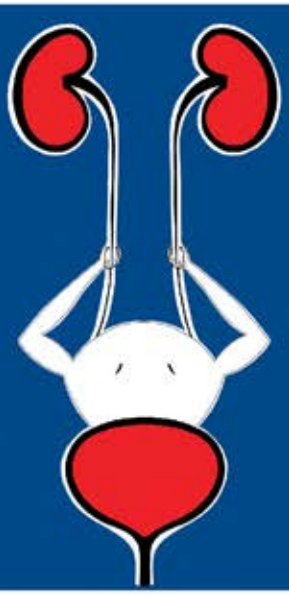

# UroGynecology Simplified

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*The Health Sciences Publisher*
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CHAPTER

# Retroperitoneum: What to Expect?

*Santosh Kumar Subudhi*

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

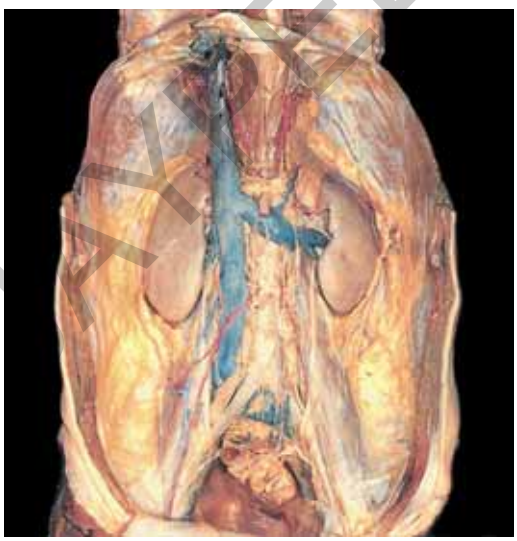


**Fig. 1:** Dissected retroperitoneum.

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-svesicouterine, vesicovaginal and rectovaginal; pelvic spaces—paravesical, pararectal, retropubic 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

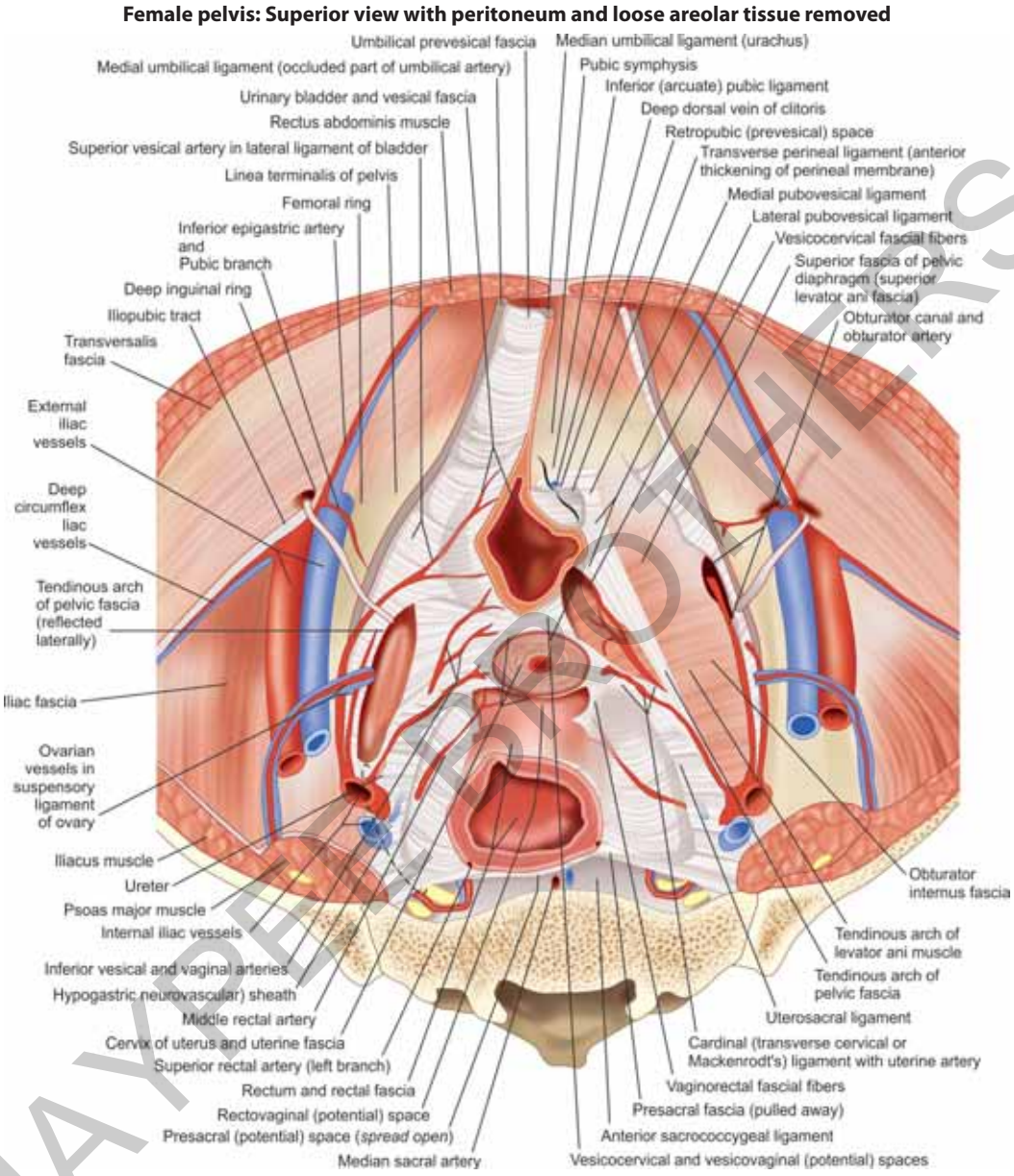



**Fig. 2:** Pelvic viscera and retroperitoneum.

- 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.

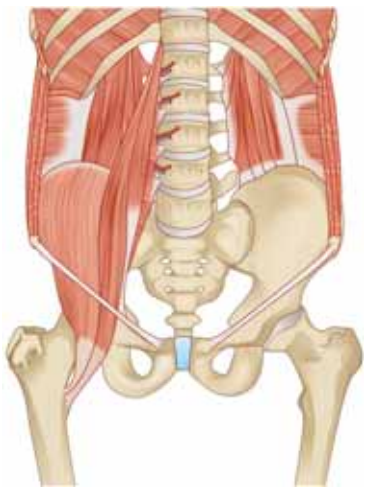
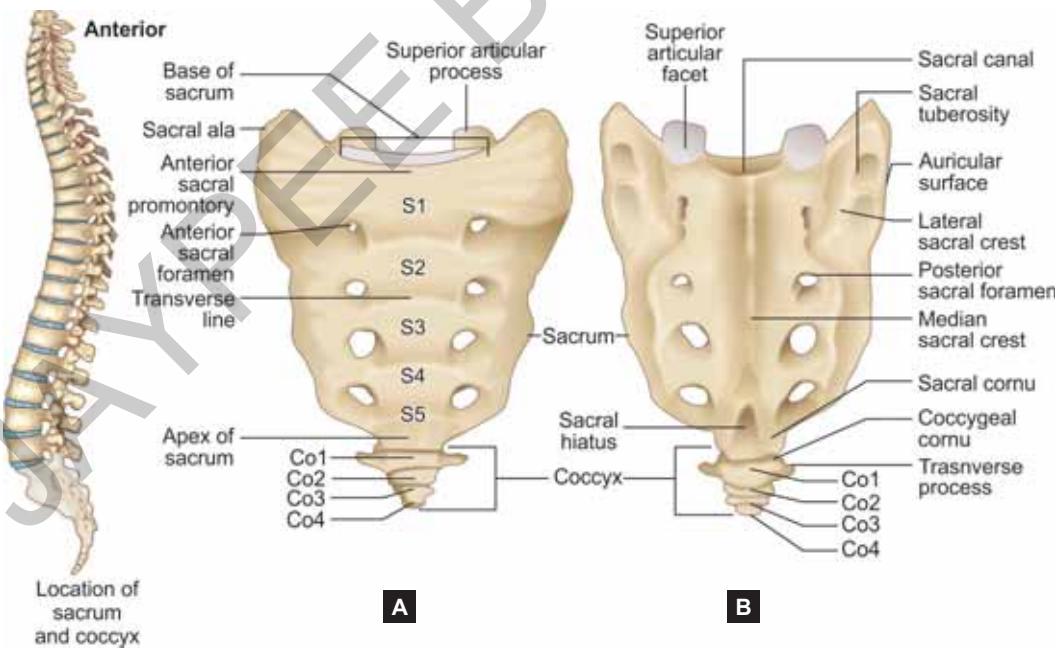


**Fig. 3:** Muscles of the posterior abdominal wall.

## 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.

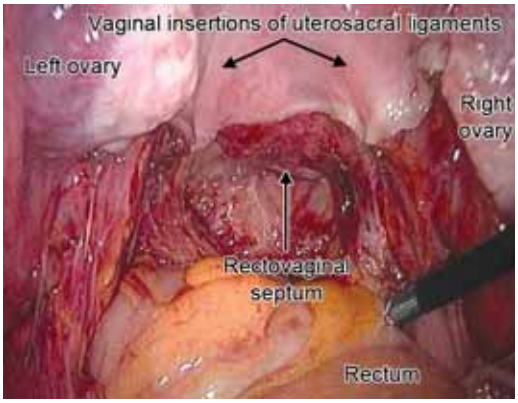



**Fig. 6:** Rectovaginal septum.

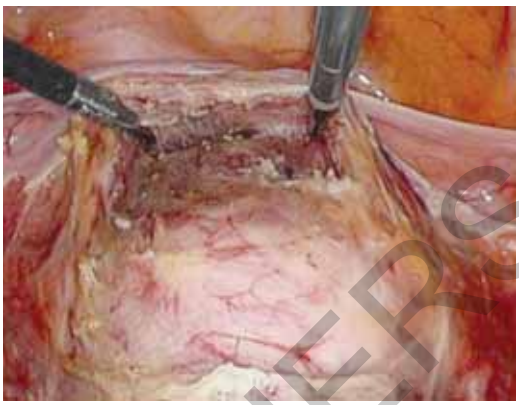


**Fig. 7:** Vesicovaginal dissection during promontofixation.

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).

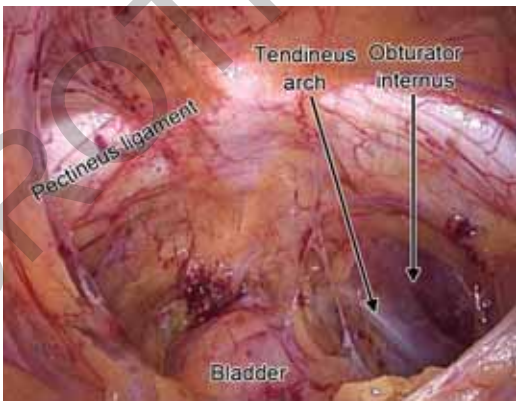



**Fig. 8:** Retropubic space.

## 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

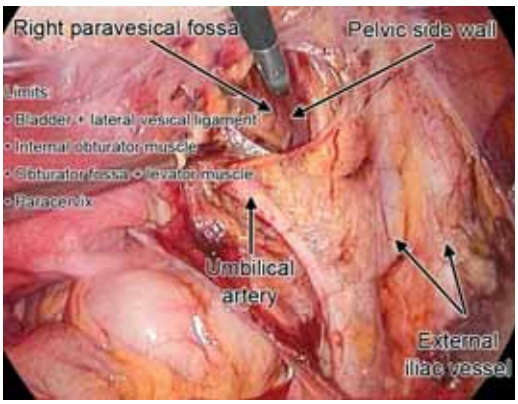



**Fig. 9:** Paravesical spaces.

- *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

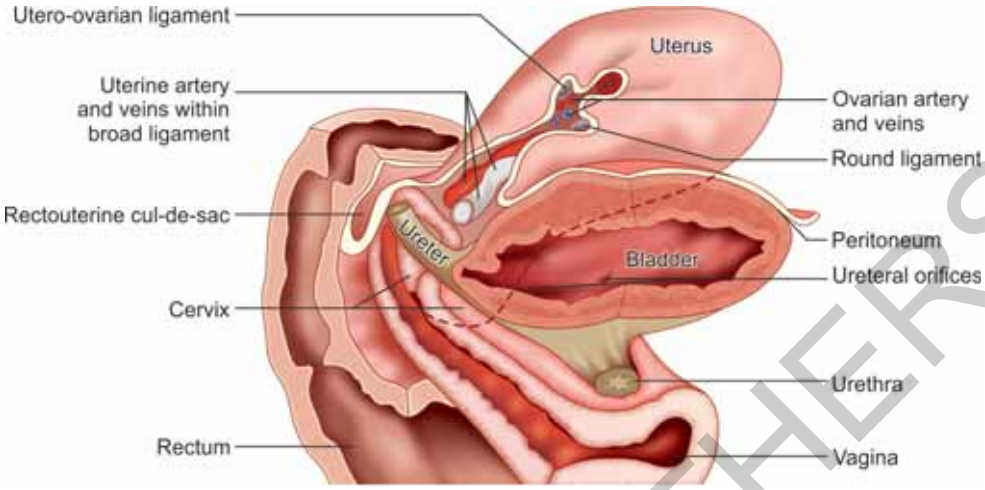



**Fig. 10:** Pelvic ureter.

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

## CONCLUSION

The knowledge of this retroperitoneal anatomy would make the surgeon confident doing the surgeries and avoid untoward complication.

## REFERENCE

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

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