

Topographic Anatomy of the Pelvis: Avascular Spaces

Guido O. Vietri¹ and José M. Saadi¹

Servicio de Ginecología, Hospital Italiano. Argentina

We present a video article that describes the pelvic anatomy topographically, with a focus on its avascular spaces. The dissection begins by identifying the avascular triangle of the pelvis, bounded by the round ligament, the infundibulopelvic ligament, and the external iliac vessels. The posterior leaf of the broad ligament is opened until the ureter and the superior vesical artery (or obliterated umbilical artery) are identified. The superior vesical artery is a terminal branch of the hypogastric or internal iliac artery. Recognizing the superior vesical artery allows for dissection of this vessel in a cephalic direction until the hypogastric artery and the origin of the uterine artery –which runs perpendicularly toward the uterus– are located. In this way, the paravesical space is developed, allowing an anterolateral approach to the pelvis. This space is divided into a medial and a lateral compartment by the superior vesical artery.

The lateral paravesical space is bounded as follows:

- Lateral: external iliac vessels
- Medial: superior vesical artery or obliterated umbilical artery
- Posterior: lateral parametrium with uterine artery
- Anterior: ischiopubic rami
- Ventral: round ligament and anterior leaf of the broad ligament
- Dorsal: pelvic floor

The contents of this space correspond to the obturator neurovascular bundle. The obturator nerve provides motor innervation for thigh adduction and sensory innervation to the medial surface of the thigh.

The medial paravesical space is bounded as follows:

- Lateral: obliterated umbilical artery
- Medial: prevesical/paracolpal fascia
- Posterior: lateral parametrium
- Anterior: bladder
- Ventral: round ligament and anterior leaf of the broad ligament
- Dorsal: pelvic floor

Dissection of the ureter is continued until the pararectal space is developed, allowing a posterolateral approach to the pelvis. As with the paravesical space, it is divided by the ureter into a medial portion (**Okabayashi's Space**) and a lateral portion (Latzko's Space).

The Lateral Pararectal Space is bounded as follows:

- Lateral: internal iliac vessels
- Medial: ureter
- Posterior: sacrum
- Anterior: lateral parametrium
- Ventral: peritoneum over the ureter and uterine artery
- Dorsal: pelvic floor

The Medial Pararectal Space is bounded as follows:

- Lateral: ureter
- Medial: rectum
- Posterior: sacrum
- Anterior: lateral parametrium
- Ventral: peritoneum over the ureter
- Dorsal: pelvic floor

The contents of this space include the hypogastric nerve. It is essential to preserve this nerve and avoid injury, as damage may lead to bladder or intestinal dysfunction.

Finally, we develop the last avascular space, referred to as the **Fourth Space** or **Yabuki's Space**. Dissection of this space allows identification of the inferior hypogastric plexus and the ureteral entry into the bladder.

Its boundaries are as follows:

- Lateral: ureter
- Medial: vagina
- Posterior: uterine artery and endocervical fascia
- Anterior: bladder

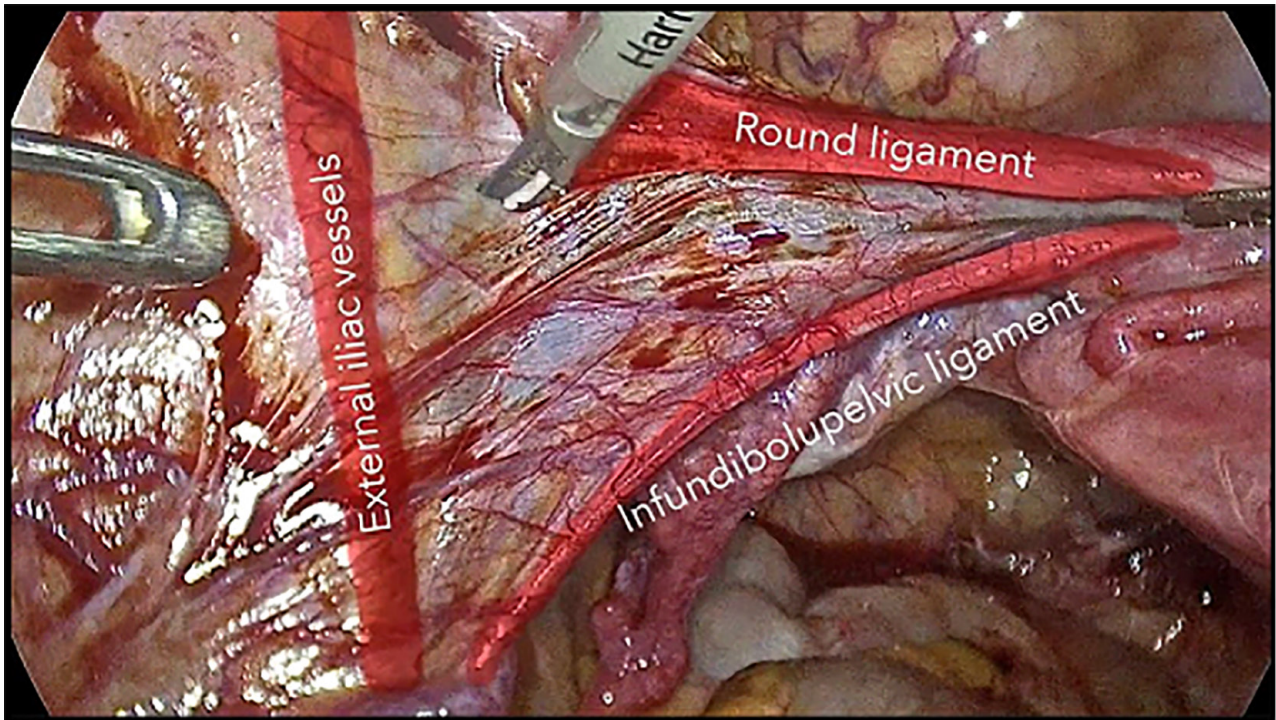
Understanding pelvic anatomy and the avascular spaces of this region is essential for accessing the retroperitoneum and performing surgical procedures safely in operations such as radical hysterectomies, pelvic lymphadenectomies, or the treatment of endometriosis. Learning the boundaries and contents of these spaces allows surgical procedures

Author for correspondence: guido.vietri@hospitalitaliano.org.ar, Vietri GO.

Received: 05/13/25 Accepted: 08/04/25

DOI: <http://doi.org/10.51987/rev.hosp.ital.b.aires.v45i3.1269>

How to cite: Vietri GO, Saadi JM. Topographic Anatomy of the Pelvis: Avascular Spaces. Rev. Hosp. Ital. B.Aires. 2025;45(3):e0001269



[Ver video: <https://youtu.be/lmELzfbllsgs>]

to be systematized, reducing operative time and ensuring their safe performance.

Author Contributions: Conceptualization, Methodology, Software, Writing – Review & Editing (GOV). Supervision (JMS).

Conflicts of Interest: The authors declare no conflicts of interest related to the content of this work.

Funding: The authors declare that this study received no external funding.