CME

Drive safely through the pelvis – know your pelvic roads: Rectovaginal space

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This is the sixth and final article in the series of articles unfolding avascular spaces of the pelvis. Authors recommend reading the series of articles starting from "Drive safely through the pelvis – know your pelvic roads: Retropubic space of Retzius" published in the *Sri Lanka Journal of Obstetrics and Gynaecololgy*[1].

Rectovaginal space is a retroperitoneal space between anterior surface of the rectumand posterior surface of the upper vagina and the uterine cervix. The lateral cervical (Mackenrodt's) and uterosacral ligaments make its lateral border while the peritoneal reflection makes the roof and the floor is made by thelevatorani muscle. Denonvilliers fascia is a condensation of pelvic fascia in this region which is made up of anterior and posterior leaves. These leaves line the vagina and rectum which makes it possible to dissect in to the space[2].

Figure 1 gives an overview of anatomy of the pelvic spaces.

Table 1 describes the surgical procedures, which use these spaces.

Figure 2 gives a schematic representation of the rectovaginal space.

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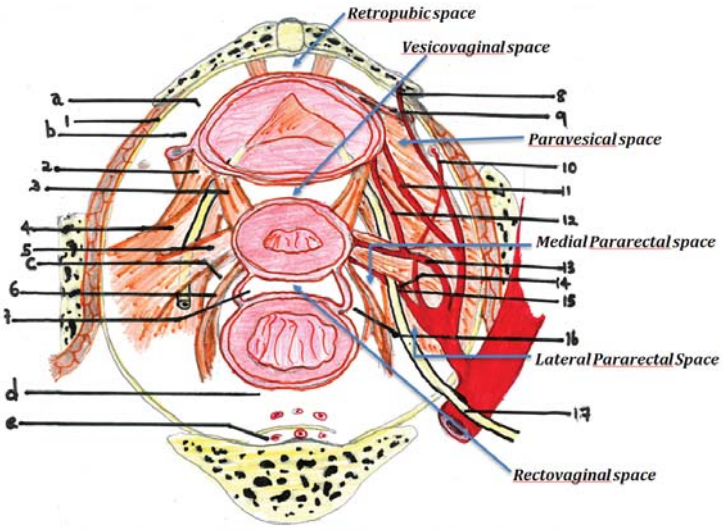

a: retropubic space; b: Paravesical space;
c: Pararectal space; d: retrorectal space;
e: presacral space
1. Parietal pelvic fascia; 2. Lateral vesical ligament.
3. Vesico-uterine ligament. 4. Paracervix.
5. Parametrium. 6. Uterosacral ligament.
7. Recto-uterine pouch.
8. Medial umbilical ligament.
9. Umbilicovesical fascia. 10. Obturator artery.
11. Superior vesical artery. 12. Vesicovaginal artery.
13. Uterine artery. 14. Vaginal artery.
15. Middle rectal artery. 16. Posterior vaginal fornix.
17. Ureter.

Figure 1. **The schematic representation of anatomy of the pelvic spaces.**

Table 1. Surgical procedures carried out in each retroperitoneal pelvic space

Retroperitoneal pelvic spaces		Surgical procedures carried out
Medial spaces	Retropubic	Burch colposuspension Paravaginal repair Bladder mobilization in ureteric re-implantation Mesh removals
	Vesicouterine	Mesh repair for cystocele Total laparoscopic hysterectomy Radical hysterectomy Vesicovaginal fistula repair Bladder endometriosis resection Vaginal cuff resection Sacrocolpopexy / Hysterocolpopexy Laparoscopic abdominal cerclage Scar ectopic excision
	Rectovaginal	Sacrocolpopexy DIE of rectosigmoid Vaginal endometriotic nodule dissection Bowel resection
	Retrorectal/ presacral	Bowel resection for DIE Sacrocolpopexy, sacrohysteropexy, enterocele repair with a mesh Pre-sacral neurectomy Initiation of para-aortic lymphadenectomy
Lateral	Paravaginal Paravesical Pararectal	Pelvic lymphadenectomy Radical hysterectomy Excision of ureteric endometriosis Ureteric reimplantation/ psoas hitch Bowel resection in DIE Excision of endometriosis involving sacral nerve roots

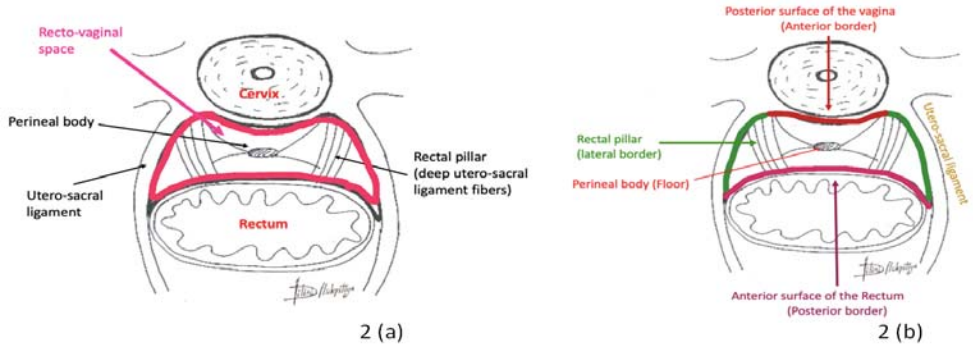

Figure 2. **Rectovaginal space.**

(a) Schematic representation of the rectovaginal space.

(b) Boundaries of the rectovaginal space.

List 1 – Contents of paravaginal space
• Rectovaginal septum / rectovaginal fascia

Sacrocolpopexy requires dissecting into this space to place a mesh between the vagina and the rectum. This mesh provides fascial like support and the mesh is anchored through this space to pelvic floor muscles. The mesh is usually cut in such a shape so the two tongue like protrusions of the mesh are anchored to the pelvic floor along either side of the rectum (thus avoiding the mesh sitting directly on the rectum). The base of the mesh is then anchored on to the vault to complete the fascial support to the posterior vaginal wall. The base of the mesh is then anchored to the anterior longitudinal ligament of the sacrum. Sacro-hysteropexy or sacrocervicopexy will follow the same principles[3].

Deep infiltrating endometriosis (DIE) will usually cause the rectum to be firmly adherent to the posterior vaginal wall, uterosacral ligaments and cervix. When the rectum is firmly adhered with obliteration of the pouch of Douglas (POD), it may be difficult and dangerous to dissect directly between the posterior aspect of the uterus and the rectum. Instead, the safest approach in this situation would be to initially dissect along the pararectal spaces and then join the two pararectal spaces inside the rectovaginal space under the utero-sacral arch. A finger in the posterior fornix of the vagina will facilitate this dissection while keeping the rectum safe. When the rectovaginal space is developed, the bowel falls away from the uterosacral arch enabling the surgeon to deal with rectal endometriosis safely which includes rectal shaving, discoid resection (manually or with circular staplers) or in extreme cases with segmental resection[4].

Denonvilliers fascia contains vaginal veins between the anterior and posterior leaves. Avascular space creation needs dissection between the two layers and caution must be exercised to prevent venous damage[2].

Rectovaginal septal nodules will necessitate opening in to the rectovaginal space. Once the vagina and bowel fall away from each other, the vagina can be safely opened up and all vaginal nodules can be excised.

The presence of painful scar tissue in the vaginal vault after hysterectomy will necessitate dissection into the rectovaginal space to excise a cuff of vagina before suturing the vagina.

In rectovaginal fistula repair, it is essential to open in to this space to cut away the fistula tract. Omentum is interposed between the rectum and the vagina to prevent a recurrence.

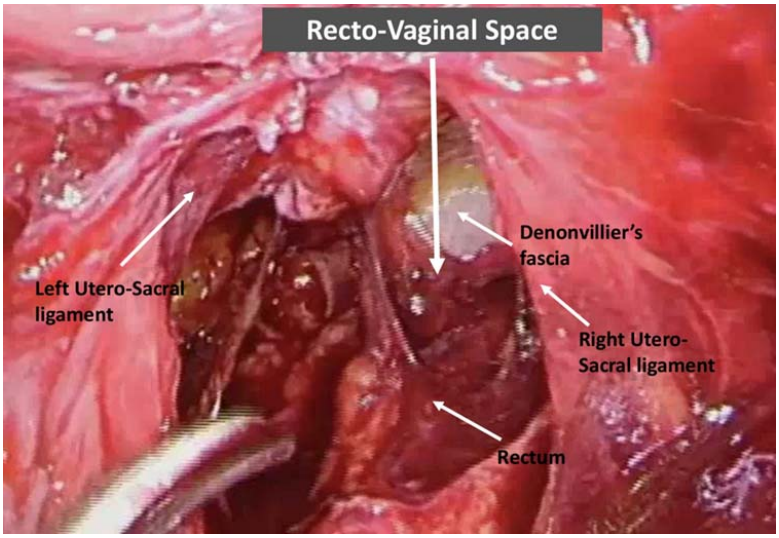

Figure 3. **Laparoscopic view of the pararectal space.**

In conclusion, the rectovaginal space contains the rectovaginal septum and fascia. Surgery in this space should be guided by meticulous anatomical knowledge. It is essential that a proper selection of suture material and needles are chosen and to have expertise in laparoscopic suturing.

Thorough knowledge about pelvic anatomy of these spaces is important for the pelvic surgeon to achieve surgical excellence while minimizing morbidity. Articles describing the other pelvic spaces will follow in future issues.

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