

Laparoscopic Triple Compartment Pelvic Reconstruction

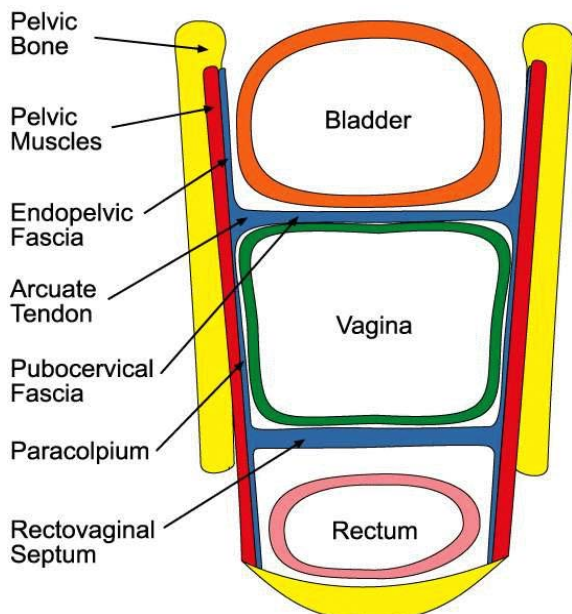
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ANATOMY

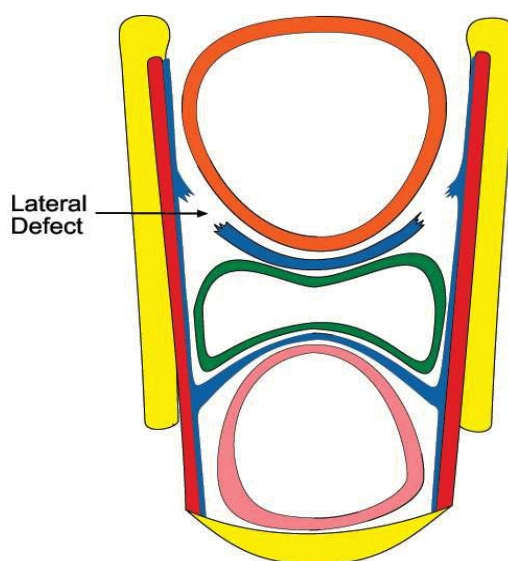
The pelvis consists of three compartments:

1. Anterior compartment (Bladder and Urethra)
2. Middle compartment (Vagina and Uterus)
3. Posterior compartment (Rectum)



The bony pelvis is lined on the inside by different muscle groups and the muscles are covered with a layer of fascia called the endopelvic fascia. The endopelvic fascia covers both side walls of the pelvis. The endopelvic fascia also forms two transverse layers of fascia which is attached laterally to the vertical layer of endopelvic fascia. The anterior transverse layer is called the pubocervical fascia and extends from the pubis anteriorly to the cervix posteriorly and is also laterally attached to the arcuate tendons which are areas of condensation of the lateral pelvic fascia. This layer supports the bladder and urethra and prevents the bladder from sagging into the vagina. The posterior transverse layer is called rectovaginal septum and extends from the perineal body anteriorly to the cervix posteriorly. This layer supports the rectum and prevents the rectum from bulging into the vagina.

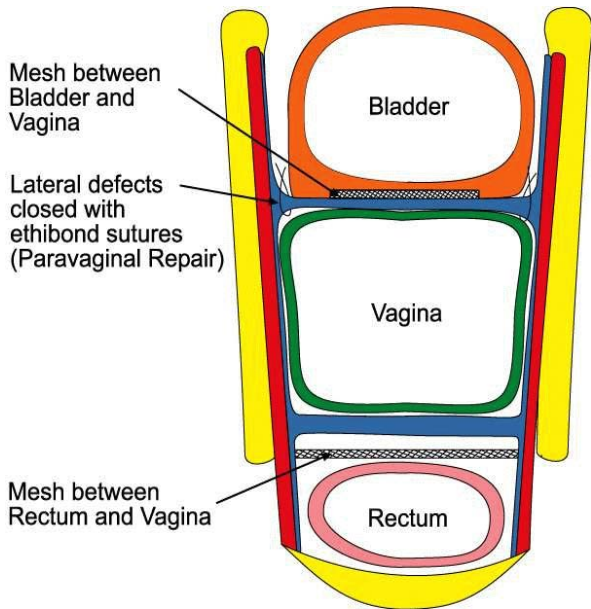
During childbirth the baby passes through the middle compartment and these two transverse layers of fascia are pushed anteriorly and posteriorly. This may cause stretching or tearing of the fascia and it may also be separated from its attachments to the side walls of the pelvis. The result is that the support of the bladder and rectum is damaged with either bladder prolapse (cystocele) or rectal prolapse (rectocele).



SACROPEXY / PROMONTOFIXATION

The most logical way of repairing these two layers of fascia would therefore be to strengthen these two layers by interpositioning of mesh between the bladder and the vagina and between the rectum and the vagina. The laparoscopic approach provides access to these spaces without having to cut through any important structures. The anterior mesh is inserted between the bladder and vagina as low as possible to the level of the bladder neck. The other end is then fixed to the promontory of the sacrum to provide a strong bony support at the top. The second layer of mesh is positioned between the rectum and vagina and is fixed inferiorly to the pelvic floor muscles, laterally to the uterosacral ligaments and is also attached to the promontory of the sacrum at the top. The

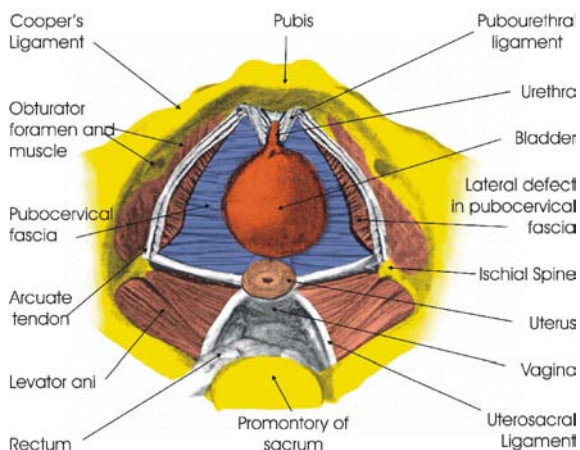
extension of the mesh to the promontory of the sacrum replaces the lateral ureterosacral ligaments which extend as high as the first sacral vertebra. This part of the uterosacral ligament is often very weak and damaged and cannot support the vaginal vault or uterus as it should do.



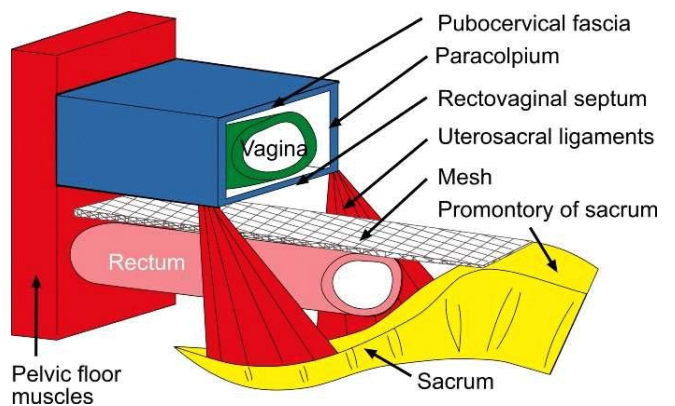
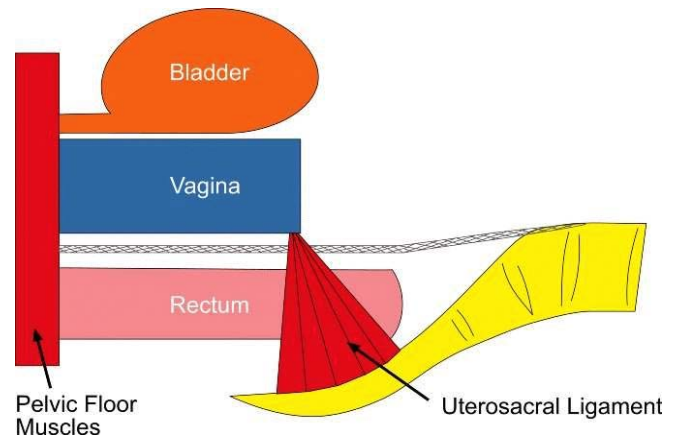
PARAVAGINAL REPAIR

As the pubocervical fascia is often torn away from the lateral pelvic walls this defect has to be repaired by laparoscopy to the area where the pubocervical fascia is separated from the pelvic wall. The gap is closed with ethibond sutures and also fixed to Cooper's ligament to keep it well supported.

Anatomy of Female pelvis with both right and left lateral defects in the pubocervical fascia



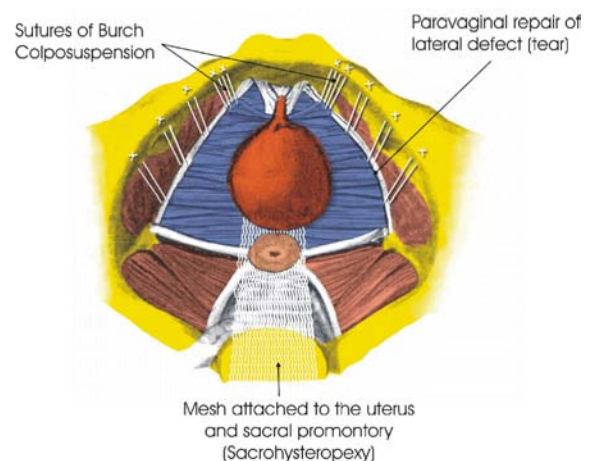
INTERPOSITIONING OF MESH BETWEEN RECTUM AND VAGINA



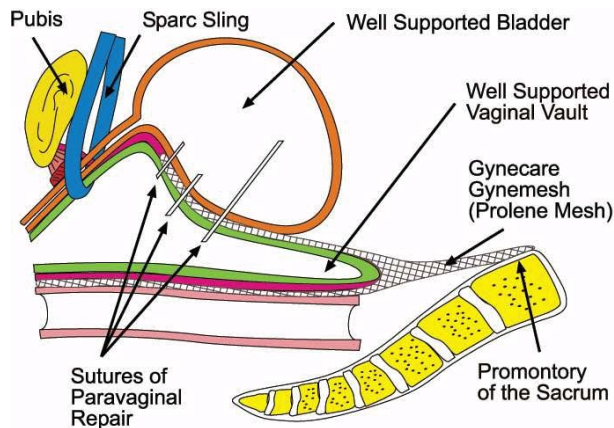
SLING OR BURCH COLPOSUSPENSION

If the patient has stress incontinence due to intrinsic sphincter deficiency, then a suburethral sling is indicated. If the patient has stress incontinence due to hypermobility of the urethra, then either a suburethral sling or laparoscopic Burch colposuspension could be performed to support the urethra.

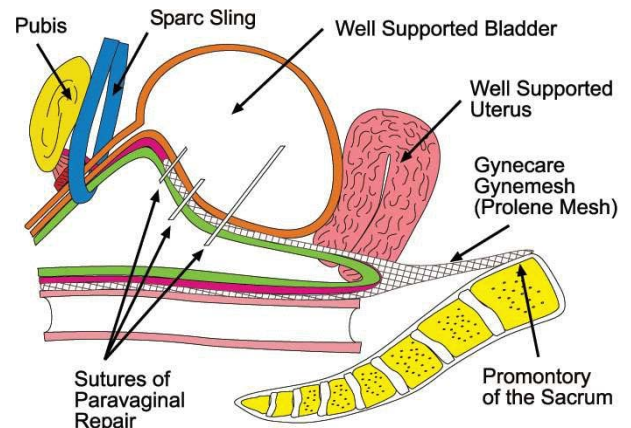
Laparoscopic Sacrohysteropexy, Paravaginal Repair, and Burch Colposuspension



Well Supported Bladder After Sacrocolpopexy, Paravaginal Repair, and Burch Colposuspension, or Sparc Sling



Well Supported Bladder After Sacrohysteropexy, Paravaginal Repair, and Burch Colposuspension, or Sparc Sling



REFERENCES

1. Wattiez, A et al: Promontofixation for the Treatment of Prolapse. *Urologic Clinics of North America*. Volume 28, Number 1, February 2001; pp. 151-157.
2. Wattiez, A et al: Laparoscopic Repair of Vaginal Vault Prolapse. *Current Opinion in Obstetrics and Gynecology* 2003, 15:315-319.
3. Wattiez, A. Laparoscopic Approach to Pelvic Prolapse. *The Trocar: Online Videojournal of Gynecologic and Surgical Endoscopy*. 4 June 2003.
4. Von Theobald, P: Promontofixation Laparoscopique. *J Chir* 2001; 138:353-357.
5. Von Theobald, P: Laparoscopic Sacrocolpopexy; Results of a 100-patient series with 8 years follow-up. *Gynecol Surg* (2004) 1:31-36.
6. Elad Leron, Stuart L Stanton: Sacrohysteropexy with Synthetic Mesh for the Management of Uterovaginal Prolapse. *British Journal of Obstetrics and Gynaecology*, June 2001, Vol 108; pp. 629-633.
7. Serge Peter Marinkovic, Stuart L Stanton: Triple Compartment Prolapse: Sacrocolpopexy with Anterior and Posterior Mesh Extensions. *British Journal of Obstetrics and Gynaecology* Gynaecology, March 2003, Vol. 110, pp. 323-326
8. Jean-Pierre Lefranc et al: Longterm Followup of Posthysterectomy Vaginal Vault Prolapse Abdominal Repair: A Report of 85 Cases. *Journal American College of Surgeons*. Vol 195, No.3 September 2002; pp. 352-358.
9. M. Cosson et al: Long-Term Results of the Burch Procedure Combined with Abdominal Sacrocolpopexy for Treatment of Vault Prolapse. *Int. Urogynecol J* (2003) 14: 104-107
10. Miklos John R., Kohli Neeraj: Laparoscopic paravaginal repair plus Burch colposuspension: Review and descriptive technique. *Urology*, December 2000; 56 (Supplement 6A) pp. 64-69