**Tensioned methods in pelvic reconstruction surgery in patients with genital prolapse**

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Abstract
The article gives an information about etiology, symptoms, commonly used grade scales of disease, methods of treatment, it’s advantages and disadvantages. The article contains 2 case reports of patients with high-grade genital prolapse, with disease development history and results of treatment. The analysis of this cases shown that traditional tensioned methods could be successfully used in patients with high-grade genital prolapse instead of synthetic meshes technology with good results.

**Key words:** genital prolapse, uterine myoma, pelvic reconstructive surgery

Genital prolapse in women refers to uterine, uterovaginal, or vaginal prolapse. The primary link in pathogenesis of genital prolapse is loss of support in the pelvic region. In uterine prolapse the uterus descends into the vaginal canal with the cervix at its leading edge; this may, in turn, pull down the vagina, in which case it may be referred to as uterovaginal prolapse. In the case of vaginal prolapse, one or more regions of the vaginal wall protrude into the vaginal canal. Vaginal prolapse is classified according to the region of the vaginal wall that is affected: a cystocele involves the upper anterior vaginal wall; urethrocele – the lower anterior vaginal wall; rectocele – the lower posterior vaginal wall; and enterocele – the upper posterior vaginal wall. After hysterectomy, the vaginal stump may descend as a vaginal vault prolapse. This usually pulls down both vaginal walls [1].

The two main systems grading the severity of genital prolapse are the BadenWalker halfway system and the Pelvic Organ Prolapse Quantification (POPQ) system (Table 1).

But the most simple and easy-to-use classification was represented by Malinovsky. This classification is overall-used in our country public health care. According to this classification:
- I stage – vaginal walls descends to the hymen site and we can see external fauces of cervix, located lower from the interspinalis line.
- II stage – cervix descends out from the vulvar cleft, uterine body is above the vulvar cleft.
- III stage (complete uterine prolapse) – the whole uterine body is outside of the vulvar cleft.

Mild genital prolapse may be asymptomatic. Symptoms of genital prolapse are usually non-specific. Common symptoms include pelvic heaviness, genital bulge, and difficulties during sexual intercourse, such as pain (dyspareunia) or loss of vaginal sensation.

<table>
<thead>
<tr>
<th>BadenWalker halfway system</th>
<th>POPQ</th>
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<tr>
<td>Grade</td>
<td>Position of prolapse site</td>
</tr>
<tr>
<td>0</td>
<td>No prolated</td>
</tr>
<tr>
<td>1</td>
<td>Halfway to hymen</td>
</tr>
<tr>
<td>2</td>
<td>To hymen</td>
</tr>
<tr>
<td>3</td>
<td>Halfway past hymen</td>
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<tr>
<td>4</td>
<td>Maximum descent</td>
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Symptoms that may be more commonly associated with specific forms of prolapse include: urinary incontinence, which is associated with cystocele; incomplete urinary emptying, poor uroflow or urinary retention, which is associated with cystocele or uterine prolapse, or both; and the need to apply digital pressure to the perineum or posterior vaginal wall for defecation, which is associated with rectocele.

The primary risk factors for pelvic organ prolapse are parity and labour injury, because delivery can cause damage to the pudendal nerves, and supporting structures such as fascia, pelvic ligaments, and pelvic floor muscles. Other conditions contributing the formation of genital prolapse are: systemic diseases of connective tissues (in this cases usually prolapses of other organs occur), hypoestrogenic conditions (menopause, ovarioectomy, steroidogenesis disorders), microcirculation disorders in the pelvic area.

A Swedish population-based study found that the prevalence of genital prolapse was higher in parous women (44%) than in non-parous women (5.8%). In addition, it found an association with pelvic floor muscle tone and genital prolapse. One case-control study found that other strong risk factors for severe (POPQ stages 3 or 4) genital prolapse are increasing age (OR 1.12 for each additional year, 95% CI 1.09 to 1.15), increasing weight of largest baby delivered vaginally (OR 1.24 for each additional 1 lb [450 g], 95% CI 1.06 lb to 1.44 lb), previous hysterectomy (OR 2.37, 95% CI 1.16 to 4.86), and previous surgery for genital prolapse (OR 5.09, 95% CI 1.49 to 17.26). The study found no significant association between severe genital prolapse and chronic medical conditions such as obesity, hypertension, or chronic obstructive pulmonary diseases (COPD) [5].

Treatment

The aims of treatment are to relieve symptoms, to remove the vaginal mass, to resolve urinary incontinence, poor flow, or urinary retention; to alleviate problems with sexual intercourse or emptying the bowel with minimal adverse effects.

Nonsurgical management of prolapse includes adjunct therapy to address concomitant symptoms, pelvic floor muscle training, and pessaries. Ideally, non-surgical management will decrease the frequency and severity of symptoms, delay or avoid surgery, and prevent worsening of the prolapse. This methods are commonly used when the patient has a somatic contraindication for the surgery or when the patient categorically rejects the suggested surgical method.

The primary aim of surgery is to relieve or improve prolapse symptoms and, if possible, symptoms associated with the lower urinary and gastrointestinal tracts. In some women, this means an attempt to restore normal vaginal anatomy and maintain or improve sexual function. In others, an oblitative approach is more appropriate and still yields the desired result of symptom relief.

Approaches to prolapse surgery include vaginal, abdominal, and laparoscopic routes or a combination of approaches. Depending on the extent and location of prolapse, surgery usually involves a combination of repairs addressing the anterior vagina, vaginal apex, posterior vagina, and perineum; concomitant surgery may be planned for the bladder neck or anal sphincters. Procedures for posterior vaginal prolapse most commonly use a transvaginal approach, or less commonly, a transanal approach. Apical and anterior vaginal prolapse can be approached by either vaginal or abdominal routes.

Surgical route is chosen based on the type and severity of prolapse, the surgeon’s training and experience, the patient’s preference, and the expected or
desired surgical outcome. Procedures for prolapse can be broadly categorized into 3 groups: 1) restorative; 2) compensatory; and 3) obliterator.

Anterior vaginal prolapse has traditionally been repaired with anterior colporrhaphy, where the vaginal epithelium is separated from the underlying fibromuscular connective tissue, followed by midline plication of the vaginal muscle with a series of interrupted stitches, usually absorbable suture, excision of excess epithelium, and closure. Variations include placing graft material on top of or instead of the midline plication.

Traditional posterior colporrhaphy involves separation of the vaginal epithelium from the underlying fibromuscular connective tissue (which includes the rectovaginal septum, in between the vaginal muscularis and the rectovaginal adventitia), followed by midline plication with interrupted stitches, excision of excess epithelium, and closure. As with anterior colporrhaphy, variations include placing graft material on top of or instead of the midline plication. Other procedures can be combined with posterior colporrhaphy, such as levator ani plication and perineorrhaphy, although the indications for these additions are controversial [3].

Apical vaginal prolapse includes uterine prolapse with or without enterocele and vaginal vault prolapse, typically with enterocele. Some cases of uterine prolapse present with marked elongation of the cervix as well. When the uterus is restricted to the abdomen and it’s size greater than the equivalent of 12-14 weeks of gestation, the elongated cervix protrudes to or past the hymen [4].

Enterocele repair is traditionally performed by sharply dissecting the peritoneal sac from the rectum and bladder. A purse-string suture can be used to close the peritoneum as high as possible [4].

Sacropinous ligament fixation entails attachment of the vaginal apex to the sacropinous ligament, the tendinous component of the coccygeus muscle. Initially described as a unilateral procedure, later series reported bilateral fixation. Access is traditionally extraperitoneal.

Iliococcygeal vaginal suspension involves attachment of the vaginal apex to the iliococcygeus muscle and fascia usually bilaterally. The extraperitoneal dissection to the area of the ischial spine is approached from midline posterior vaginal incision. Using the ischia spine as the landmark for identifying the sacropinous ligament medially and posteriorly and the iliococcygeus fascia anteriorly, a suture is placed and attached to the vaginal apex. In most cases the procedure is performed bilaterally [2].

Uterosacral ligament suspension was originally described by McCall [7]. It can be used prophylactically at hysterectomy or therapeutically for vaginal apical suspension. The access is performed through the posterior cul-de-sac wall incision. Up to 3 sutures are placed in each ligament and incorporated into the anterior and posterior fibromuscular layer of the vagina as well as the vaginal epithelium. Some surgeons approximate the ligaments in the midline, as described by McCall, to close the cul-de-sac with the intention of treating or preventing enterocele formation. Others prefer to suspend the right and left vaginal apex to the controlateral uterosacral ligament, leaving the cul-de-sac opened to avoid impinging on the rectum and adversely affecting bowel function [6].

The use of polypropylene meshes had shown great results. The currently available kits for use in the treatment of genital prolapse include Prolift (Gynecare), Apogee (American Medical Systems), Avaulta (CR Bard), and different types of urethral slings (TVT). But mesh reconstructive surgery is followed by certain complications like mesh erosion, mesh dislocation, mesh contraction, formation of granuloma, rectovaginal fistula, vascular injury, dyspareunia, and chronic pelvic pain.

Only 25% of gynecologists support synthetic meshes. Others consider that traditional methods are most reliable in genital prolapse and urinary incontinence surgery.

We present our experience in genital prolapse surgery with the use of traditional tensioned methods in cases of highly-graded stage of prolapse. We think that even in this cases surgical pelvic repair is possible without the use of synthetic meshes. However, first of all it’s necessary to specify that in such situations pelvic prolapse is caused by labor injury. Our surveillances completely demonstrate that.

**Cases report**

**Case 1.** Patient K., 49 years old. The patient has pelvic prolapse for more than 15 years, connecting the development of disease with prolonged labor, complicated by perineal and vaginal rupture, delivering a baby with a mass of 4600 g. Manual removal of placenta was performed after delivery due to abnormal hypotonic bleeding. One year after the delivery during preventive gynecological examination mild genital prolapse was diagnosed. With concomitant hard physical work later on the prolapse increased. Uterine myoma was diagnosed
in this patient 10 years after delivery, however the patient rejected surgical treatment. At the time on admission to the clinic the patient complained for impossible reset of the uterus to the vaginal cleft, discomfort and pain associated with walking, urgency of micturition, impossibility of sexual life (Fig. 1).

In consideration of total uterine prolapse in combination with uterine myoma (size equivalent to 10 weeks of pregnancy), we decided to perform vaginal hysterec- tomy, posterior colpoperineoplasty. The surgery was performed typically with some technical difficulties (Figs. 2-4).

Postoperative period occurred without complications. Follow up 3 years after surgery – no signs of prolapse, only signs of mild pollakiuria.

**Case 2.** Patient S., 51 years old, at the time of admission to the clinic complained of discomfort in the pelvic area, uterine prolapse, painful and difficult walking, urinary retention. The obstetric history included 4 pregnancies where the last pregnancy was multiple. The fetal mass of the twins was 2900 g and 3650 g. According to the anamnesis there were no ruptures during labour, however almost at once the patient developed signs of prolapse. In this case, just like in previous hard work facilitated worsening of the prolapse. Interesting, the patient before the admission to our hospital was treated for decubital ulcer which occupied almost the whole surface of the cervix, uterus and vagina by regional hospital with intensive methods for 2(!) months. It resulted in complete deformation of vagina, uterus and cervix with fibrous masses (Fig. 5).

Considering the clinical data, we have decided to perform vaginal hysterectomy and posterior colpoperineoplasty. The surgery was performed typically, postoperative period occurred without complications. Follow up 1 year after surgery – no complains, no signs of prolapse (Figs. 6, 7).
Both cases confirm that even in patients with high stages of genital prolapse is possible to perform pelvic repair surgery without the use of synthetic meshes. Both cases were similar, genital prolapse caused by complicated labor and hard physical work, not by the pathology of connective tissue. Exactly this fact allow to expect good results after traditional tensioned methods pelvic surgery. Both cases confirm a certain postulate – treatment should be individualized. And the main aim of gynecologist is to choose among the multitude of methods introduced for pelvic prolapse correction surgery the one which optimally suits the patient.

References


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