J Surg Med. 2019;3(8):619-622.
DOI: 10.28982/josam.605975

Review
Derleme

Journal of Surgery and Medicine
e-ISSN: 2602-2079

The two new surgical techniques for vaginal cuff prolapse and uterine prolapse

Vajinal kaf prolapsusu ve uterus prolapsusu için iki yeni cerrahi teknik

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Abstract

Pelvic organ prolapse and vaginal cuff prolapse are clinical conditions that affect women's quality of life and require surgical treatment. In this study, we aimed to present apical vaginal prolapse and uterine descensus treatment with two new techniques. The classical sacrospinous ligament fixation technique fixes only one or two corners of the vaginal apex to the sacrospinous ligament, but it does not support the upper anterior and posterior vaginal fascia. Since it expands the upper part of the vagina with a suture put on the sides of the vaginal apex, it may not only expose the anterior and posterior vaginal walls to greater intraabdominal pressure and cause cystocele and enterocele development, but lead to sexual problems, as well. Apart from this, if sacrospinous colpopexy is performed to one side only, the vaginal apex is deviated towards the fixation, thus spoiling the vaginal anatomy. With our following methods, we imitate the physiological anatomy: Transapical circular Sacrospinous colpopexy (TACSAC) and Transcervical apical circular Sacrospinous uteropexy (TACSU). TACSAC: Bilateral side walls of the vaginal apex are marked with a color pencil 2 cm medially to the right and left ischial spine and 2 cm in length. Vaginal apex walls are bilaterally and vertically incised until the submucosa layer. Two submucosal tunnels are opened by using a right-angle clamp between the tips of two vertical incisions on the vaginal apex. The vaginal apex is fixed with a TOT mesh through these channels. In TACSU, the same procedure is followed for the cervix. These methods are more likely to mimic normal anatomy, easier to perform, and lower risk of complications.

Keywords: Pelvic organ prolapse, Vaginal cuff prolapse, Sacrospinous colpopexy

Öz

Pelvik organ prolapsusu ve vajinal kaf prolapsusu kadınların yaşam kalitesini etkileyen ve cerrahi tedavi gerektiren bir klinik durumdur. Bu çalışma ile biz apikal vajinal prolapsus ve uterin desensusun tedavisini sunmayı hedefledik. Klasik sakrospinöz ligament fiksasyon tekniği, vajinal kaf'ın sadece bir veya iki köşesini sakrospinöz ligamana sabitler, ancak üst ön ve arka vajinal fasyaya herhangi bir destek vermez. Vajina apeksinin yanlarına konan bir sütür ile vajinanın üst kısmını genişlettiğinden, bu durum sadece ön ve arka vajinal duvarların daha büyük karın içi basıncına maruz kalmasına neden olmaz aynı zamanda sistosel ve enterosel gelişimine neden olur, ancak genişlemiş vajinal apeks cinsel sorunlara neden olabilir. Bunun dışında sakrospinöz kolpopeksi sadece bir tarafa yapılırsa, vajinal apeks fiksasyona doğru saparak vajinal anatomiyi bozar. Geliştirdiğimiz yöntemlerle fizyolojik anatomi taklit edilmiş olacaktır. Bu teknikler transapikal sirkuler sakrospinoz ve transservikal apikal sakrospinoz uteropeksi dir. TACSAC; Renkli kalemle bilateral olarak vajinal apeksin yan duvarları medial olarak sağ ve sol iskiyal spinden 2 cm uzunluğunda 2 cm olarak işaretlenir. Vajinal apeks duvarları, sublukoza kadar iki taraflı ve dikey olarak kesilir. Vajinal kaf üzerinde iki dikey insizyonun uçları arasında dik açılı bir klemp kullanılarak iki submukozal tünel açılır. Vajinal apeks bu kanallardan TOT meshi ile sabitlenir. TACSU serviksi olan hastalarda da benzer şekilde uygulanır. Bu yöntemler normal anatomiyi daha çok taklit eden, uygulanabilirliği daha kolay ve komplikasyon riski daha düşük yöntemlerdir.

Anahtar kelimeler: Pelvik organ prolapsusu, Vajinal kaf prolapsusu, Sakrospinöz kolpopeksi

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Conflict of Interest: No conflict of interest was declared by the authors.
Çıkar Çatışması: Yazarlar çıkar çatışması bildirmemişlerdir.

Financial Disclosure: The authors declared that this study has received no financial support.
Finansal Destek: Yazarlar bu çalışma için finansal destek almadıklarını beyan etmişlerdir.

Published: 8/29/2019
Yayın Tarihi: 29.08.2019

How to cite / Atıf için: Bıldırcın FD, Özdemir AZ, Karlı P. The two new surgical techniques for vaginal cuff prolapse and uterine prolapse. J Surg Med. 2019;3(8):619-622.

Introduction

As women live longer and healthier lives, pelvic floor disorders continue to become even more prevalent and are an important health and social issue. The cardinal-uterosacral complex suspends the upper third of the vagina as well as the uterus from the bony sacrum. Collagen fibers arising from the uterosacral ligaments fuse distally with the visceral fascia over the cervix, lower uterine segment, and upper vagina to form the pericervical ring. Disruption of the cardinal-uterosacral complex may result in uterine descensus or vaginal vault (apical) prolapse. The goal of pelvic reconstructive surgery is to restore anatomy, maintain or restore visceral function, and maintain or restore normal sexual function. Sacrospinous ligament is a strong ligament that runs within the coccygeus muscle from the ischial spine to the sacrum [1,2]. The fixation of the vaginal apex to the sacrospinous ligament, the tendinous component of the coccygeus muscle, was first described in mid-20th century. Traditionally, access is extraperitoneal via the rectovaginal space with penetration of the pararectal fascia (Denonvillier's fascia) at the level of the ischial spine to expose the muscle and ligament [3]. Bilateral sacrospinous ligament suspensions have also been advocated; however, these techniques may impose a greater degree of tension on the sutures and, at times, create a band of apical vagina across the rectum at the level of the suspension. Whether this can cause defecatory dysfunction is debatable [4].

Abdominal sacral colpopexy and vaginal sacrospinous colpopexy have been demonstrated to be equally effective in the treatment of vaginal vault prolapse. Subjective and objective assessment, patient satisfaction, and the impact on quality of life were similar in both groups. Sacral colpopexy was associated with a longer operating time, slower return to daily life, and greater cost than the sacrospinous colpopexy [5]. The disadvantages of the classical sacrospinous colpopexy procedure include (a) an unnatural lateral vaginal deflection toward the fixation site, (b) an inability to perform without excessive tension when the vaginal length is compromised, (c) high rates of anterior vaginal prolapse following the procedure, (d) occasional need to shorten or narrow the upper vagina when a fibromuscular defect involves much of the apical area [3].

The classical sacrospinous ligament fixation technique fixes only one or two corners of the vaginal apex to the sacrospinous ligament, but it does not support the upper anterior and posterior vaginal fascia. Since it expands the upper part of the vagina with a suture put on the sides of the vaginal apex, it may not only expose the anterior and posterior vaginal walls to greater intraabdominal pressure and cause cystocele and enterocele development, but lead to sexual problems, as well. Apart from this, if sacrospinous colpopexy is performed to one side only, the vaginal apex is deviated towards the fixation, thus spoiling the vaginal anatomy. We present a new and simple surgical technique for the treatment of apical vaginal cuff prolapse, developed by us, which may eliminate these complications of the classical sacrospinous fixation technique.

Sacrospinous suspension, in which one or both of the sacrospinous ligaments are sutured to the vaginal apex, is one of the few vault prolapse repairs. Although sacrospinous suspension is the vaginal procedure most familiar to general gynecologists, it is not ideal. It relies on only 1 or 2 sutures to hold the vagina in place until scarring occurs; it creates a small amount of dead space at the attached end of the vagina; and when performed unilaterally, it causes deviation of the apex toward the ligament of attachment [2].

Transapical circular Sacrospinous colpopexy (TACSAC) and Transcervical apical circular Sacrospinous uteropexy (TACSU) by mini incisions are the two new and simple techniques suggested by us for the treatment of the apical vaginal prolapse and uterine descensus.

The new surgical technique-1

Transapical circular sacrospinous colpopexy (TACSAC)

This procedure may be performed under epidural, spinal or general anesthesia. Patients are placed in the lithotomy position with thighs flexed at approximately 90°. After cleaning the entire surgical area with antiseptic, an in-dwelling catheter is placed. All patients are administered an intravenous perioperative antibiotic prophylaxis [6]. The vaginal apex is grasped with two Allis clamps and pulled out so that the extent of the prolapse can be assessed. The vagina is then reduced to the level of the ischial spines. Bilateral side walls of the vaginal apex are marked with a color pencil, 2 cm in length and 2 cm medially to the right and left ischial spine (Figure 1). Then, vaginal apex is pulled out again and the marked vaginal apex walls are incised until the submucosa layer bilaterally and vertically. Two submucosal tunnels are opened by using a right-angle clamp between the tips of two vertical incisions on the vaginal apex (Figure 2). The vaginal apex is again reduced to the level of the ischial spines. The next step is entry into the perirectal space. A window can be created with the tips of a tonsil clamp or a hemostat. The sacrospinous ligament can be palpated by palpating the spine and moving the fingers dorsally and medially. The excess tissue on the cervical sacrospinous ligament can be removed by blunt dissection. The rectum and surrounding connective tissue are typically swept medially with blunt dissection and pararectal space is entered. The sacrospinous ligament complex is visualized, and ischial spine is palpated. The coccygeus muscle-sacrospinous ligament complex running posteriomedially from the ischial spine to the sacrococcygeal area is exposed and grasped with a long-handled Allis or Babcock clamp. The ligament can be grasped with an Allis clamp or Babcock to isolate the tissue away from vessels and nerves. Then, under direct vision, the tip of the long-handled Deschamps is penetrated into the right sacrospinous ligament 2 cm medial to the ischial spine and a TOT mesh implant is passed. A tip of TOT mesh implant passed through the sacrospinous ligament is passed to the left side through one of the submucosal tunnels connecting two vertical incisions. The same procedure is applied on the right side. The tip of TOT mesh implant passed through the right sacrospinous ligament is passed to the left side within the other submucosal tunnel connecting two vertical incisions. While the two tips of the prosthetic implant in the left side is pulled down, the vaginal apex is pushed upward with the left hand. The two tips of the prosthetic implant are then connected with a single vicryl suture under the vaginal mucosa and excess parts of its tips are excised (Figure 3). Each one of the vertical mucosal incisions on the vaginal apex is then

closed with interrupted 3-0 absorbable sutures (Figure 4). The ideal material should be inert, mechanically and infection resistant. At the surgery of pelvic organ prolapse, the trend is towards the use of polypropylene mesh with low fiber density [3,7]. According to the current evidence of the great tolerance of the TVT or TOT polypropylene mesh, in this procedure, TVT or TOT polypropylene mesh can be used to reduce the risk of infection and erosion.

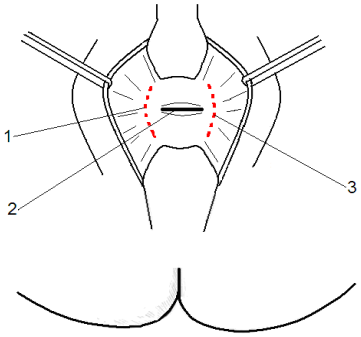

Figure 1: Vaginal apex pushed as far as level of ischial spines upwards with two Allis clamps (1-Marked right lateral edge of vaginal apex, 2-Vaginal cuff scar, 3-Marked left lateral edge of vaginal apex)

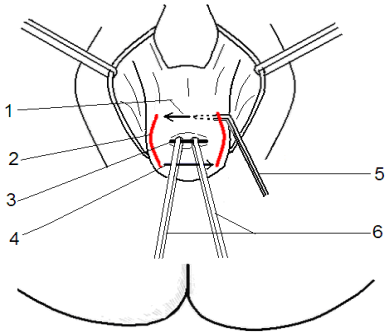

Figure 2: Traction of vaginal apex outwards with Allis clamps (1-Anterior vaginal tunnel, 2-Marked right lateral edge of vaginal apex, 3-Vaginal cuff scar, 4-Posterior vaginal tunnel, 5-Right-angled clamp, 6-Allis clamps)

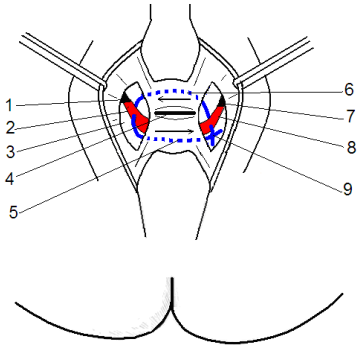

Figure 3: View of mesh tape attached circularly and submucosally to the vaginal apex (1-Right ischial spine, 2-Right sacrospinous ligament, 3-Right lateral incision to vaginal apex, 4-Vaginal cuff scar, 5-TOT mesh in posterior vaginal tunnel, 6-TOT mesh in anterior vaginal tunnel, 7-Left ischial spine, 8-Left sacrospinous ligament, 9-Sutured ends of mesh)

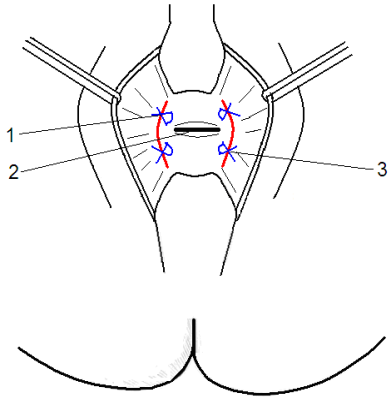

Figure 4: Sutured vaginal apex incisions (1, 2 and 3 sutured vaginal apex incisions)

To avoid vascular and neural complications is particularly important during penetration of the sacrospinous ligament. Penetration of the muscle-sacrospinous ligament complex must be performed through its midline and 2 cm medially to the ischial spine, not posteriorly.

If an enterocele sac is present, it is mobilized off the posterior vaginal wall up to its neck; the sac is opened and the peritoneum excised, and the defect is closed with purse-string sutures. If the patient requires a cystocele repair or a stress urinary incontinence procedure, these should be performed following the sacrospinous colpopexy. After the colpopexy sutures are tied, a posterior colpoperineorrhaphy is performed. The vagina is then packed with moist gauze for 24 hours. Patients can be discharged within 24-48 hours.

The disadvantages of the classical sacrospinous fixation procedure include (a) an unnatural lateral vaginal deflection toward the fixation site, (b) an inability to perform without excessive tension when the vaginal length is compromised, (c) high rates of anterior vaginal prolapse following the procedure, (d) occasional need to shorten or narrow the upper vagina when a fibromuscular defect involves much of the apical area [3]. Distortion of the vaginal vault, whether anteriorly, posteriorly, or laterally, can lead to a recurrent prolapse opposite the vaginal vault in a significant number of patients. The presented technique, however, reapproximates the upper vagina in the midline over the levator plate [1].

This new procedure may prevent the recurrence of a vaginal prolapse, but it does not disturb vaginal anatomy. It rather constitutes a strong fascial support for the vaginal apex and the upper part of the anterior and posterior vaginal walls and shortening or narrowing the upper vagina is not required. It is a simple procedure to perform, and blood loss is less compared to bilateral or unilateral classical sacrospinous colpopexy procedure. This technique forms a circumferential fibrous ring surrounding the apex of vaginal cuff. Because this fibrous ring will cause to unite sacrospinous ligaments with both upper vesicovaginal and rectovaginal fascia, it constitutes a strong fascial support to vaginal apex.

The new surgical technique-2

Cervical sacrospinous uteropexy (CSU)

A similar procedure with TACSAC, with a few technical differences, can be performed to young patients with uterine descensus. Uterine cervix is grasped with a tenaculum and it is pushed into the vagina as far as ischial spinous level. The next step is to palpate the ischial spines, and then bilateral mucosal incisions of 2-3 cm in length are performed vertically on the side fornices 2 cm medially from the ischial spines. The upper and lower tips of bilateral vertical incisions are connected by a submucosal tunnel using a right-angled clamp from the front and back of the cervix. Contrary to that of the cuff prolapse, anterior and posterior cervical submucosal tunnels are formed when the cervix is on the level of the ischial spins. Following the cervical submucosal tunnels, as in cuff prolapse, TOT mesh is passed through the left sacrospinous ligament, and its tip is passed to the right side through anterior cervical tunnel. Then, this tip, passing through the right sacrospinous ligament, is passed to the left side through the posterior cervical tunnel. The tips of the mesh are sutured to make the cervix level with ischial

spines, and excess mesh tips are removed. Lateral fornix incisions are closed with two or three sutures. With this procedure the pericervical fascial ring are connected the the sacrospinous ligaments bilaterally, forming a strong fascial support for uterus.

This technique might be the gold standard treatment for apical vaginal prolapse and uterine prolapse. However, a longer follow-up to support its widespread use and to confirm the effectiveness of this procedure is necessary.

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The National Library of Medicine (NLM) citation style guide has been used in this paper.

Suggested citation: Patrias K. Citing medicine: the NLM style guide for authors, editors, and publishers [Internet]. 2nd ed. Wendling DL, technical editor. Bethesda (MD): National Library of Medicine (US); 2007-[updated 2015 Oct 2; cited Year Month Day]. Available from: http://www.nlm.nih.gov/citingmedicine