CASE REPORT

Abdominal Sacral Colpoperineopexy Technique for Vaginal Vault Prolapse

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Abstract

A forty-two year old G4 P3 women was referred to our hospital 6 months after vaginal hysterectomy in another hospital. Gynecological examination revealed 4th degree vaginal vault prolapse. On lithotomy position, abdominal cavity was entered using Pfannenstiel incision. Protruded vaginal vault was pushed back to abdomen. After a 1 cm incision was made 2 cm lateral to each side of the vestibule of the vagina, a long straight needle was introduced into this opening and pushed through the submucosa of the vagina, and entered to the abdomen. One end of a prolen mesh was attached to the tip of the Stamey needle, pulled back to the perineum and attached to fascia of perineum. The other end of the prolen mesh was initially attached to vaginal vault and then to the presacral fascia at the level of S3. Abdominal sacral colpoperineopexy can be an alternative tecnique to other surgical methods for treatment of vaginal vault prolapse.

Keywords: vaginal vault prolapse, abdominal sacral colpoperineopexy, colpopexy

Özet

Vajinal Kubbe Prolapsusu Tedavisinde Abdominal Sakral Kolpoperineopeksi Tekniği

Kırk iki yaşında G4 P3 olan ve dış mekezde vajinal histerektomi operasyonundan yaklaşık 6 ay sonra vulvada ele gelen kitle şikayeti ile hastanemiz jinekoloji kliniğine başvuran hastamızın, yapılan genital muayenesinde 4. derece vajinal kubbe prolapsusu olduğu tespit edildi. Litotomi pozisyonunda Pfannenstiel insizyonuyla batına girildi. Sakrum ön yüzü peritonu açılıp diseksiyonla presakral ligamente ulaşıldı. Vajinal kubbe saplı gaz tampon ile batın içine doğru itilip gerginleştirildikten sonra vajinal vestibülün 2 cm lateralinden yapılan 1 cm'lik kesinin içinden vajinal kubbeye doğru vajen mukozasının altından uzun ve düz bir iğne ilerletildi. Batından çıkan uca prolen "mesh"in ucuna dikilmiş ip geçirilerek perineye geri çekildi. Aynı işlem karşı tarafta da tekrarlandı. "Mesh"lerin birer uçları perinedeki fasya dokusuna dikildikten sonra batın içindeki uçlar önce kubbeye, daha sonra sakral 3 seviyesinde presakral ligamente ikişer sütürle tespit edildi. Abdominal sakral kolpoperineopeksi, vajinal kubbe prolapsusunun tedavisinde diğer yöntemlere alternatif bir tedavi yöntemi olabilir.

Anahtar sözcükler: vajinal kubbe prolapsusu, abdominal sakral kolpoperineopeksi, kolpopeksi

Introduction

Hysterectomy is the most common major gynecological operation performed in the UK and North America. The incidence of post-hysterectomy vaginal vault prolapse is approximately 11.6% when assessed at surgery for prolapse and 1.8% for other benign diseases (1,2).

Vault prolapse results from the lack of suspensory support from the pelvic sidewalls and the uterosacral cardinal ligament complex. This support can be weakened by childbirth (neuromuscular damage or direct trauma) or by global pelvic connective tissue remodelling from increased elastase or collagenase activity. The dynamics and anatomical aspects were well described by Delancey (3).

Satisfactory correction of a vaginal vault prolapse is a considerable surgical challenge. Every effort should be made to restore the normal vaginal axis and maintain the vaginal length. In order to achieve this, many operative procedures have been described. In recent years, abdominal sacrocol-popexy has become a more popular choice for suspending the vault following prolapse: between 1971 and 1999, there were 11 articles on sacrocolpopexy quoted by the American National Library of Medicine Archives, from 2000 onwards, there were over 40 (4).

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Abdominal sacrocolpopexy has traditionally been performed abdominally and non-absorbable mesh is sutured to the upper two-thirds of the posterior vaginal wall preferably by non-absorbable sutures before being suspended from the pre-sacral ligaments. The mesh may also be extended from posterior vaginal wall to the perineal body (called abdominal sacral colpoperineopexy) as performed in the previous study by Cundiff et al. (5). Furthermore Marinkovic and Stanton (6) have recently presented the results of sacrocolpopexy with anterior and posterior mesh extensions.

Case Report

A forty-two-years old otherwise healthy woman with gravida 4 parity 3 was referred to our hospital 6 months after vaginal hysterectomy in another hospital in February 2005. Gynecological examination with full bladder and at maximum valsalva maneuver revealed 4th degree vaginal vault prolapse, grade 2 rectocele without cystocele. According to pelvic organ prolapse quantification (pop-q) system (7) the defects scored as: Aa:-1, Ba:-1, C:+4, Ap:-1, Bp:0, gh:7. Both valsalva and cough stress tests revealed no urinary leak. Because the patient was free of any bowel and defecation symptoms defecography was not performed.

After obtaining the approval from the local ethics committee of Zekai Tahir Burak Women's Health, Training and Research Hospital at Ankara and written informed consent from the patient, she was prepared for surgery. Twenty-four hours before surgery, she was put on a fluid-only diet and underwent bowel preparation in order to ensure the bowel was evacuated. Antibiotic prophylaxis regimen with 1 gram cefazolin *i.v.* 1 hour before operation was started and applied again at postoperative 8th and 24th hours.

The anaesthetised patient was put into the lithotomy position. The bladder was catheterised. After preparing and draping, the abdomen was opened through a Pfannenstiel incision. Then, vaginal vault is pushed by sponge forceps through the abdomen by an assistant.

At the abdominal side, the vaginal vault was freed up by dissecting the bladder anteriorly and peritoneum posteriorly. The peritoneum of the sacral cavity was incised in the midline with care to avoid the presacral vessels.

Two monofilament polypropylene mesh (Prolene, Ethicon, Johnson & Johnson, Somerville, New Jersey, USA) strips were cut at dimensions of 1 cm to 20 cm from a 20 cm to 20 cm sheet. And, one end of these strips (at a point 1 cm to the end) were sutured by any kind of heavy suture (no:1 polypropylene in this case) in order to be pulled by the needle.

One cm incisions was made 2 cm lateral to each side of the vestibule of the vagina. Then a straight needle long enough to reach abdominal cavity (may be a least curved Stamey needle) was introduced into this opening and pushed through the submucosa of vagina (Figure 1) carefully, avoiding penetration of vaginal hollow and abdominal cavity, to prevent both bacterial contamination from vagina and the possibility of bladder and ureter damage, towards the vaginal cuff under direct vision from the abdominal side, while the pushed sponge forceps stretching and making the axis of the vagina straight. The tip of the needle was adjusted to get out of the vaginal cuff at the presumed cuff corner at each side and entered the abdomen (Figure 2). Then suture of one of the polypropylene strips was passed from the eye of the long straight needle to the end. Now the strip was under the control of the needle by the suture attached to its end. Then the needle was pulled back slowly. The strip followed the needle through the tunnel to the perineum (Figure 3). The same procedure was repeated at the other side. Then the end of the strip was attached to fascia of perineum using no:0 absorbable suture (Vicryl® Ethicon, Johnson & Johnson) then the skin was sutured over. The abdominal free ends of the polypropylene mesh strips were initially attached to vaginal vault by the abdominal side, close to the exit points (presumed cuff corners), using two interrupted absorbable sutures of no:0 Vicryl® 1 cm apart, which included the vaginal outer fascia, muscularis, submucosa and the mesh strip avoiding penetrance of the hollow of vagina. To remove excess of mesh, the strip was stretched and touched to the body of third sacral vertebra. After leaving 1 cm more strip, the excess was cut and removed. Beginning from 1 cm to the free end of each strips two of no:1 multifilament and non absorbable sutures (Ethibond® Johnson & Johnson) sutures were passed through 1 cm apart to each other. Then one end of these sutures were passed through midline ligamentous structures of vertebra either side. After tying the sutures the peritoneum was closed over the mesh strips. Now the mesh strips were stretched between sacrum and the perineal body together with the vagina. At this step vaginal examination performed again. Vaginal anterior and posterior walls and fornices were all grasped by an atraumatic tissue forceps and pulled forcefuly and weak points were explored for repair. No weak regions out of perineum were elicited, which was evident before operation and planned to be repaired. After closing the abdomen layer by layer, perineorraphy was performed.

The procedure took 2 hours and estimated blood loss was about 250 ml. There was no perioperative complication including hemorrhage, bowel or bladder injury, and wound infection, hematoma and dehiscence.

There was no mesh erosion at the first follow-up visit at the end of first month, or 6 and 12 months after surgery.

After 13 months of surgery, the patient was free of any pressure symptoms, sensation of protrusion and lump, urinary incontinence and coital dysfunction. At gynecologic examination with full bladder at semilithotomy position and by augmentation of maximum valsalva maneuver, some cystocele was evident (according to pop-q system; Aa:-1, Ba:-2).

Figure 1. Stamey needle is being pushed from perineum to abdomen 2 cm lateral to vestibule through submucosa of vagina.

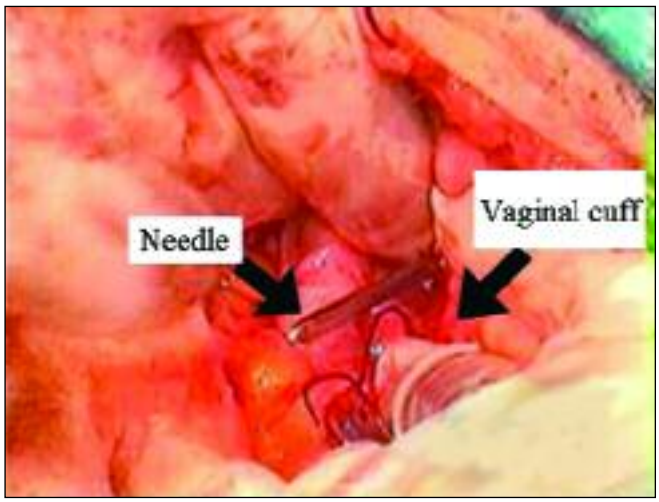

Figure 2. Stamey needle is being entered to the abdomen.

Discussion

The main aim of pelvic floor reconstructive surgery is to correct anatomical defects while maintaining or restoring bladder, bowel and sexual function. A safe, well-tolerated procedure with good long term success in all these areas is required. Numerous procedures have been described for the surgical management of apical defects. Recently sacrocolpopexy has become a common choice for suspending the vault following prolapse. As compared with the three vaginal approaches to vault prolapse (iliococcygeal hitch, uterosacral ligament plication, sacrospinous fixation), sacrocolpopexy may better preserve maximum vaginal length and sexual function (6). Cundiff et al. (5) reviewed their experience with sacrocolpoperineopexy with perineal descent in 19 patients with a mean follow up of 11 weeks. Eight of 12 women had complete resolution of their symptoms of incomplete rectal emptying, while no subjects had greater than a recurrent International Continence Society Prolapse Staging, grade 2 prolapse. One patient incurred mesh erosion. In a recent study by Marinkovic and Stanton (6), using both an anterior and posterior mesh extension to treat vault prolapse with concomitant cystocele and rectocele/enterocele is, of smaller scale than Cundiff et al. (5) but has much longer follow up and demonstrates equally impressive results. In our case each polypropylene mesh was extended laterally to vaginal wall from sacrum to the perineum as pointed out by Cundiff et al.

This modification of advancing mesh strip to perineal corpuscle during correction of vaginal cuff prolapse may be performed principally for two purposes: one is for the correcting of a coincidental perineal descent (5), and the other is to augment adherence surface of mesh to vaginal wall. The latter was the rationale of this case. Theoretically, augmenting adherence surface relieves tension on sutures which join the mesh and vaginal wall and reduces the number of sutures and lets the surgeon change the type of the suture material to an absorbable one. So reducing the probability of mesh complications (e.g. erosion). In this case the mesh and vaginal wall united by fine and absorbable sutures.

There is another theorethical advantage of applying a mesh bridge between two anatomical landmarks (sacral ligaments and perineal body); they could be used as reliable suspension lines for various corrective procedures should a cystocele or rectocele appear.

These two theoretical advantages seem logical at first sight. But, this hypothesis must be tested by a randomized controlled trial. On the other hand, advancing the mesh through perineal body requires considerable experience, and needs double set up (abdominal and vaginal). And the procedure takes more time than a standart abdominal sacrocolpopexy.

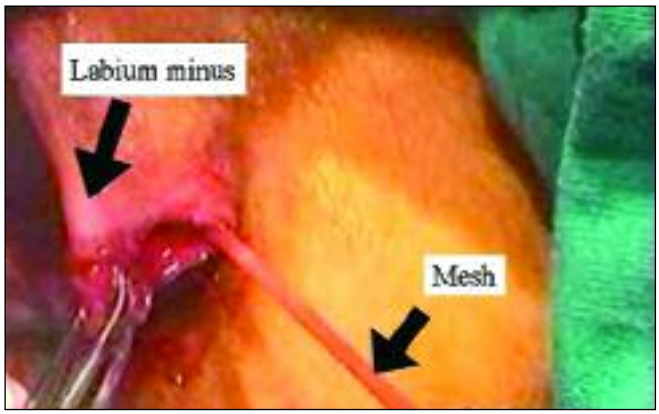

Figure 3. One end of a polypropylene mesh was attached to the tip of the stamey needle and pulled back back to the perineum.

The complications of abdominal apical prolapse procedures are similar regardless of surgical approach and include hemorrhage from the middle sacral vessels overlying the periosteum; and injuries to bowel or bladder (6). When the mesh is re-peritonealised, there may be direct or indirect ureteric injury or bleeding from the sutures placed in the peritoneum in which the latter may lead to the formation of potentially fatal retroperitoneal haematomas. Re-peritonealisation of the mesh is performed to prevent extrusion and to lower the incidence of bowel complications, although there appears to be no evidence to suggest whether burial or non-burial of the mesh is clinically significant. In our case the peritoneum was closed over the mesh.

Mesh erosion is a serious complication of sacrocolpopexy. Numerous types of mesh are available and the severity of the inflammatory response is determined by the chemical nature and pore size of the mesh. The rate of erosion through the vaginal wall is quoted between 0 and 11% (9), with the higher rate associated with multifilament polytetra fluorethylene and polyethylene tetraphtalate mesh.

In conclusion, advancing mesh to perineum through vaginal wall can be an alternative tecnique to other surgical methods for treatment of vaginal vault prolapse. Further studies comparing different techniques of sacrocolpopexy should be established with larger sample sizes and long term follow-up.

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