

Uterosacral Ligament Dissection during McCall Culdoplasty to Prevent Ureteral Kinking, and Round Ligament Fixation to Support Vaginal Vault: A New Surgical Technique

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ABSTRACT

Objective: This study aims to describe a new surgical technique to prevent ureteral kinking via dissection uterosacral ligament from parietal peritoneum before McCall culdoplasty suture placement, and vaginal cuff fixation to round ligament to prevent apical vaginal vault prolapse after vaginal hysterectomy.

Materials and Methods: At the initial step of vaginal hysterectomy, a circumferential incision was done on vaginal tissue, which covers the uterine cervix. Then posterior cul-de-sac was entered. Bilateral uterosacral ligament was identified, separately clamped, cut and sutured. Classical vaginal hysterectomy was completed up to the round ligament, which was separately grasped, cut and sutured. After the vaginal hysterectomy, the uterosacral ligament dissected from cardinal ligament and parietal peritoneum to prevent ureteral kinking during McCall Culdoplasty suture placement. Two internal McCall sutures with non-absorbable sutures and one external suture with absorbable sutures were place on the uterosacral ligament. Then bilateral apical lateral vaginal walls were fixated to ipsilateral round ligament to further support to vaginal vault.

Results: I have applied the new technique to my patients with pelvic organ prolapse for about one year. Ureteral kinking has not occurred in any patient. Early complications such as hemorrhage, bladder and ureter injury did not observed.

Conclusion: Ureteral kinking is a challenging problem for gynecologists during suture placement on the uterosacral ligament. Dissection of the uterosacral ligament from the cardinal ligament and parietal peritoneum yielded the surgeon to safe suture passage during McCall Culdoplasty suture placement and eliminated the requirement of cystoscopy evaluation to check ureteral competency.

Keywords: McCall Culdoplasty, Pelvic organ prolapse, Round ligament, Uterosacral ligament, Vaginal hysterectomy

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INTRODUCTION

Development vaginal vault prolapse after pelvic organ prolapse surgery is still challenging issue to the surgeon. To prevent vaginal vault prolapse performing McCall Culdoplasty provides additional apical support to the vaginal vault. After the operation of McCall Culdoplasty, cystoscopic evaluation of ureteral flow is necessary to observe ureteral kinking does not occur. Dissection of the uterosacral ligament (USL) from the cardinal ligament and parietal peritoneum provides isolation of ligament, prevents ureteral kinking, and eliminates cystoscopy requirement after operation. Fixation of the lateral vaginal fornixes with the cardinal ligament to the round ligament provides additional support to the vaginal apex.

The aim of the article is to describe a new surgical technique to prevent vaginal vault prolapse after pelvic organ prolapse (POP). The presented new surgical technique prevent ureteral kinking during McCall Culdoplasty suture placement and provide opportunity to the surgeon to eliminate cystoscopy requirement after McCall Culdoplasty. Additionally fixation of the apical lateral vaginal wall with cardinal ligament to the round ligament provides additional apical support.

MATERIAL AND METHODS

The study was performed in Antalya Training and Research Hospital, Clinic of Obstetrics and Gynecology. The local ethics committee approved the study and it was performed in accordance with the ethical standards described in Declaration of Helsinki. Informed consent was obtained from the patient to use information, pictures, and video presentation.

In the initial of the vaginal hysterectomy, a circumferential incision was done vaginal tissue that covers the uterine cervix. Bladder tissue was dissected from the uterine cervix. The posterior cul-de-sac was entered with sharp dissection. Left and right side vaginal tissue, which cover the uterine cervix, were dissected from the uterosacral ligament (USL) and the cardinal ligament. The left USL was identified, grasped with a Heaney clamp, cut, and sutured with number 1 vicryl (an absorbable suture polyglactin 910) (**Figure1**).



Figure 1: Grasping, cutting and suturing the left uterosacral ligament.

The free end of the thread was held with a clamp. After that, the cardinal ligament was grasped with a clamp, cut, sutured, and the free end of the thread was held. The same surgical procedure was performed on the right side of the uterus. Anterior visceral peritoneum opened with sharp dissection. Following this, the left broad ligament and the uterine artery were clamped, cut, and sutured as classical hysterectomy. When the surgical procedure reached to the uterine fundus, the round ligament was identified, separately clamped, cut, sutured, and separated from the broad ligament. The free end of the suture thread was held with a mosquito forcep. After this, the utero-ovarian ligament and the fallopian tube were clamped together with Heaney clamp, cut, sutured, and ligated. The free end of the suture thread was held. The same surgical procedure was done right side of the uterus, and vaginal hysterectomy was completed. After vaginal hysterectomy, to repair of anterior vaginal wall prolapse (cystocele), the vaginal tissue was incised vertically and dissected from bladder fascia. This surgical maneuver allows the surgeon to better visualization of the pelvic region. Then surgery turned to the pelvic phase. Bilateral retrograde salpingo-oophorectomy was done as described by Kaba (1) in eligible patients, in which there was no contraindication.

To perform McCall Culdoplasty, the USL was pulled medially and inferiorly, the cardinal ligament pulled laterally, and superiorly withheld threads. The parietal peritoneum between them was dissected with scissors to separate the USL from the cardinal ligament. Then the uterosacral ligament was separated from the parietal peritoneum and loose connective tissues up to spina ischiadica. At the level of spina ischiadica, the ureter could be palpated in the dissected region. The separation of the USL serves the surgeon to the security of the ureter during McCall suture placement, prevents ureteral kinking, and eliminates cystoscopy requirements after operation. The same procedure was done on the right USL. To place first internal McCall suture, the needle was passed approximately 2 cm near to the spina ischiadica with non-absorbable 2-0 polypropylene suture on the left USL (**Figure2**).

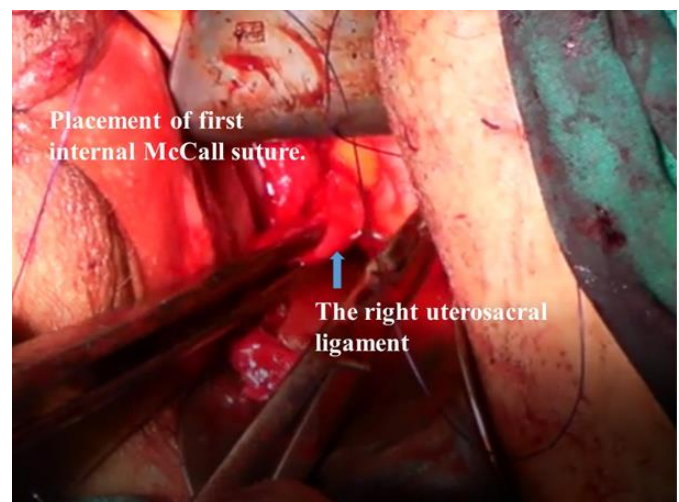


Figure 2: Placement of first internal McCall suture.

Then the needle was passed cul-de-sac peritoneum, and to the right USL. The second suture was placed approximately two cm distal of the first suture similarly. To place external McCall suture, a number 1 vicryl suture was passed through the posterior vaginal wall, the parietal peritoneum, left side uterosacral ligament, cul-de-sac peritoneum, right uterosacral ligament, the parietal peritoneum and vaginal wall. All three sutures were held with mosquito clamps. Later a number 1 vicryl suture was passed left lateral posterior vaginal wall, the free-end of the cardinal ligament. After that, the round ligament was pulled outward, and the needle was passed through the body of ligament approximately 2 or 3 cm away from free-end of the ligament, and then the anterior lateral vaginal wall (**Figure3**). The free-end of the thread was held. The same suture placement was done to the right side of vaginal apex.

After these, anterior vaginal wall incision was closed with 2-0 vicryl following Kelly's plication. Then the two internal McCall sutures were ligated. The apical vaginal wall was closed with number 1 vicryl by the locked manner. Finally, the two apical lateral vaginal round ligament fixation sutures and external McCall sutures were ligated. Surgery was completed with posterior colporrhaphy.

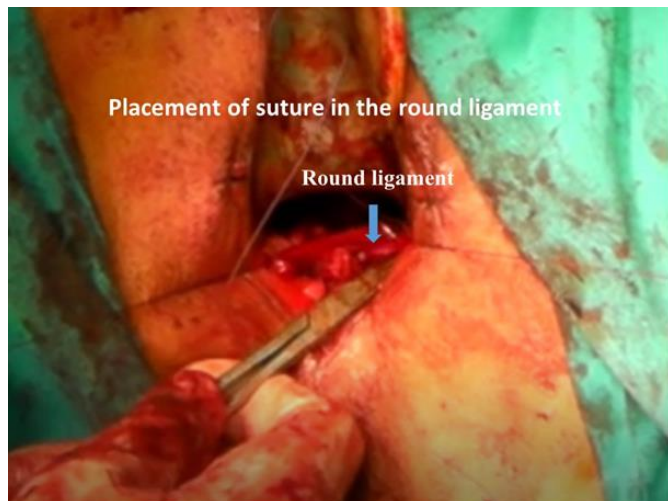


Figure 3: Placement of suture in the round ligament

RESULTS

I have performed the new surgical technique on my patient with pelvic organ prolapse. The technique was repeatable and suitable for all patients. Renal pelvic anatomy and ureteral courses were evaluated with ultrasonography to check pelvic dilatation and ureteral kinking at the second day after the operation. No early surgical complications such as ureteral kinking, or hemorrhage, which needed to reoperation, were developed.

Until now, no patient has applied to the clinic with vaginal vault prolapse or any other complication related to operation. In the presented case/video pelvic organ prolapse was not observed four months after operation (**Figure4**).



Figure 4: No vaginal vault prolapse was seen at fourth month control of patient.

DISCUSSION

The new surgical technique has performed to all patients without complication. Dissection of the USL supplied better visualization and safe suture placement, prevent ureteral kinking, and eliminate cystoscopy requirement after the operation. Fixation of the lateral vaginal wall to the round ligament supplies additional apical vaginal support.

Further studies are needed to evaluate the repeatability and effectiveness of this new surgical technique.

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Ethical approval: All procedures performed in studies involving human participants were in accordance with the institutional and/or national research committee's ethical standards and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

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