

Surgical Steps of Laparoscopic-Assisted Uterosacral Ligament Suspension as a Surgical Option for Apical Pelvic Organ Prolapse Repair

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Abstract

The objective of this case report is to present detailed surgical steps of apical suspension utilizing laparoscopic assisted vaginal uterosacral ligament suspension (LSC-assisted USLS).

LSC-assisted USLS is a good alternative surgical option for apical suspension, if the patient is undergoing laparoscopic hysterectomy for other indications and desires to avoid synthetic mesh suspension. Concurrent anterior or posterior colporrhaphy can be performed vaginally at the time of LSC-assisted USLS. LSC-assisted USLS is an excellent way of teaching residents to show how USLS suspends the vaginal cuff under direct visualization.

Keywords: Pelvic Organ Prolapse; Uterosacral Ligament Suspension; Apical Suspension

Introduction

Pelvic organ prolapse (POP) affects millions of women. 11 - 19% of women will undergo surgery for POP or urinary incontinence by age 80 to 85 years [1]. Anterior vaginal wall prolapse without concurrent apical prolapse is uncommon [2]. Multiple procedures are available to support apical prolapse, including sacrocolpopexy, uterosacral ligament suspension, sacrospinous ligament fixation, iliococcygeus suspension, etc. This presentation is to present detailed surgical steps of apical suspension utilizing LSC-assisted USLS [3].

Case Presentation

A 70-year-old postmenopausal female with no significant past medical history referred to Urogynecology clinic for management of stage 2 POP and simple ovarian cyst. Patient desired surgical management with native tissue repair. After thorough counseling and discussion on risks, benefits and alternatives, surgical plan was made to proceed to total laparoscopic hysterectomy, bilateral salpingo-oophorectomy, LSC-USLS, anterior colporrhaphy, and cystoscopy.

Surgical tools needed for LSC-assisted USLS

- Routine equipment for laparoscopic hysterectomy
- 12mm laparoscopic port to be inserted through the vagina

- Two pairs of laparoscopic needle drivers
- One pair of laparoscopic grasper to introduce the needle through the vaginal port
- Four to six of #0 delayed absorbable suture on CT-1 needle or equivalent
- Four to six hemostats.

Surgical steps of LSC-assisted USLS

1. After completing routine laparoscopic hysterectomy with salpingo-oophorectomy, the specimen was removed through the vagina and sent to pathology. A 12 mm laparoscopic port with vaginal balloon occluder was introduced through the vaginal cuff opening (Figure 1). The vaginal balloon occluder was inflated using air to re-create pneumoperitoneum.
2. Using a laparoscopic grasper, a delayed absorbable suture was introduced through the vaginal port to the pelvis under direct visualization.
3. While tenting up the USL at ischial spine level utilizing a laparoscopic needle driver, a stitch was placed through the full thickness of USL in the lateral to medial fashion (to avoid accidental grasping of the ureter that is located lateral to the USL: Figure 2) then the suture/needle was taken out through the vaginal port. The suture was then tagged outside of the vagina laterally.
4. Another delayed absorbable suture was introduced through the vaginal port while the suture end was tagged outside of the vaginal port. The portion of the USL about 1cm proximal from the first suspension stitch was tented up then the stitch was placed through the full thickness of the USL in the lateral to medial fashion. The suture/needle was brought out through the vaginal port. This second suspension suture was then tagged at the same side of the vagina as the first suspension suture. The third stitch can be placed ipsilaterally, if desired.
5. The same steps are repeated on the contralateral side.
6. Figure 3 represents the laparoscopic view after completion of all 4 USLS sutures placement.
7. Figure 4 represents the vaginal view after completion of all 4 USLS sutures placement.
8. The vaginal port was removed from the pelvis, while keeping all USLS sutures in place in the same orientation.
9. Anterior colporrhaphy was performed at this time in a conventional way.
10. Using a free-needle, each strand of USLS suture was passing through the vaginal cuff in full thickness: one in the anterior vaginal cuff edge and the other in the posterior vaginal cuff edge. See figure 5.
11. Each USLS suture was tied down without leaving a suture bridge. This step completely re-approximated the vaginal cuff and most of time, no extra stitches required to close the vaginal cuff. If any gap is noted on the vaginal cuff, extra interrupted or figure of 8 stitches can be placed.
12. All 4 USLS sutures were tied down without leaving a suture bridge (Figure 6). Each strand of the USLS sutures should be still tagged down until cystoscopy confirms ureteral patency. Figure 7 shows the final presentation from the laparoscopic view, after completion of LSC-assisted USLS. Figure 8 shows the final presentation from the vaginal view.
13. Cystoscopy was performed at this time to evaluate bilateral ureteral flow. After confirming the ureteral patency, the strands of USLS sutures were cut short. Total vaginal length was noted to be 9 cm. If a midurethral sling or posterior colporrhaphy are indicated, they can be performed at this point.

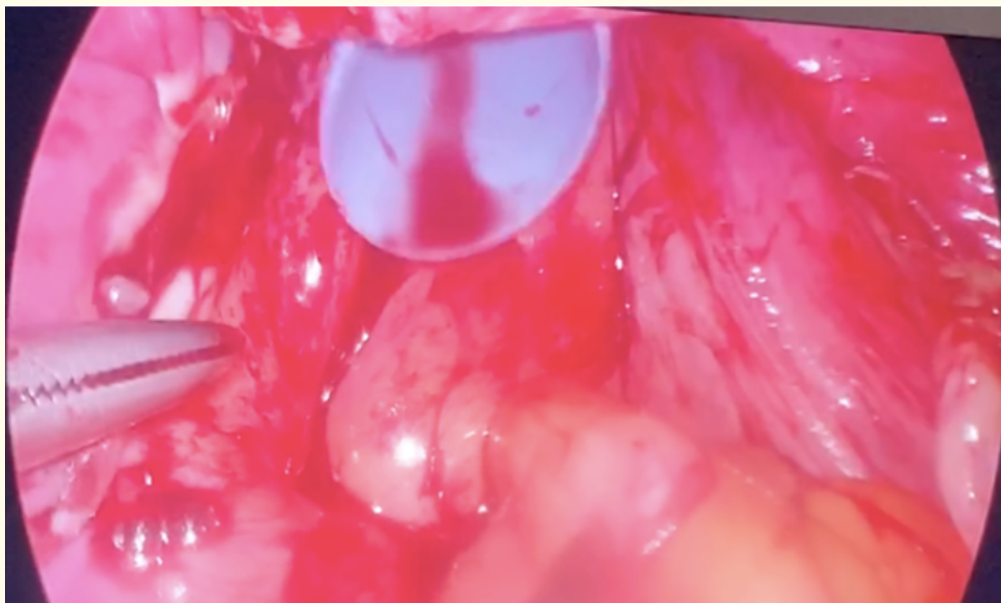


Figure 1: A 12 mm laparoscopic port is introduced through the vaginal cuff opening.

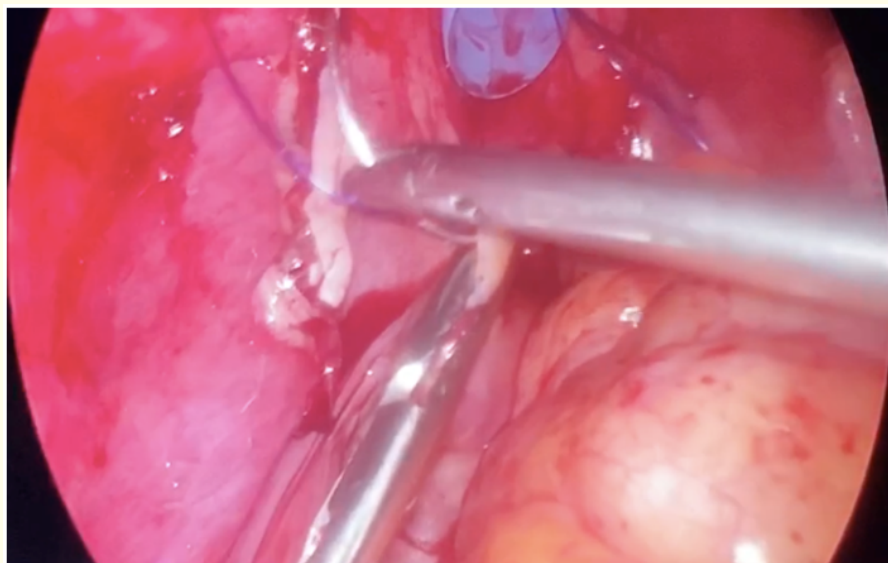


Figure 2: While tenting up the USL at ischial spine level utilizing a laparoscopic needle driver, place a stitch through the full thickness of USL in the lateral to medial fashion.

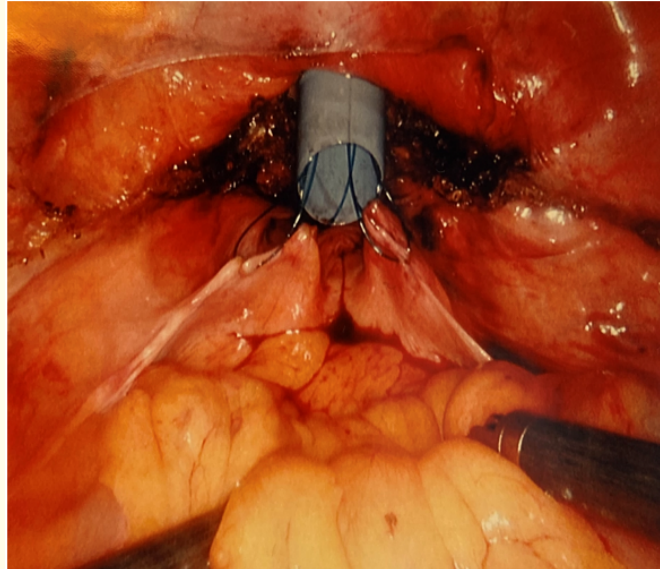


Figure 3: The laparoscopic view after completion of all 4 USLS sutures placement.

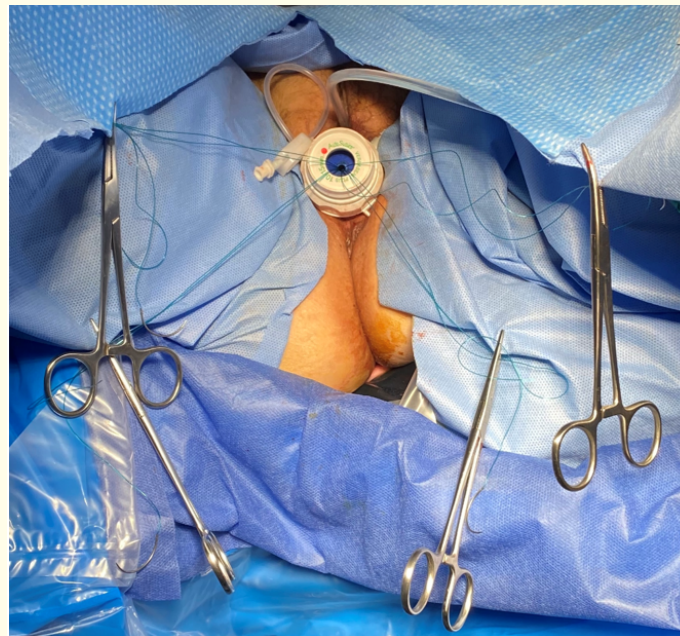


Figure 4: The vaginal view after completion of all 4 USLS sutures placement.

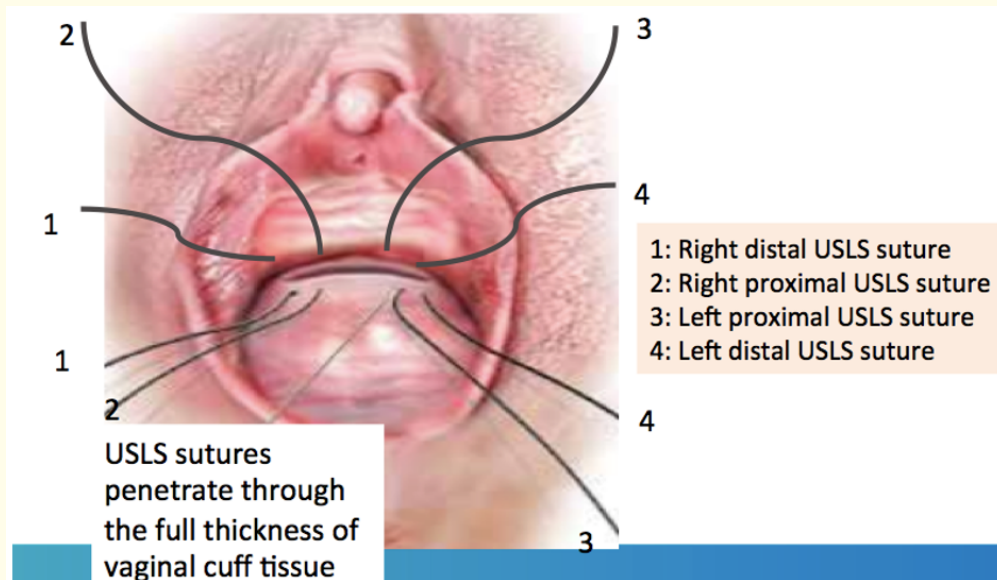


Figure 5: Using a free-needle, each strand of USLS suture is passing through the vaginal cuff in full thickness: one in the anterior vaginal cuff edge and the other in the posterior vaginal cuff edge.



Figure 6: All 4 USLS sutures are tied down without leaving a suture bridge.

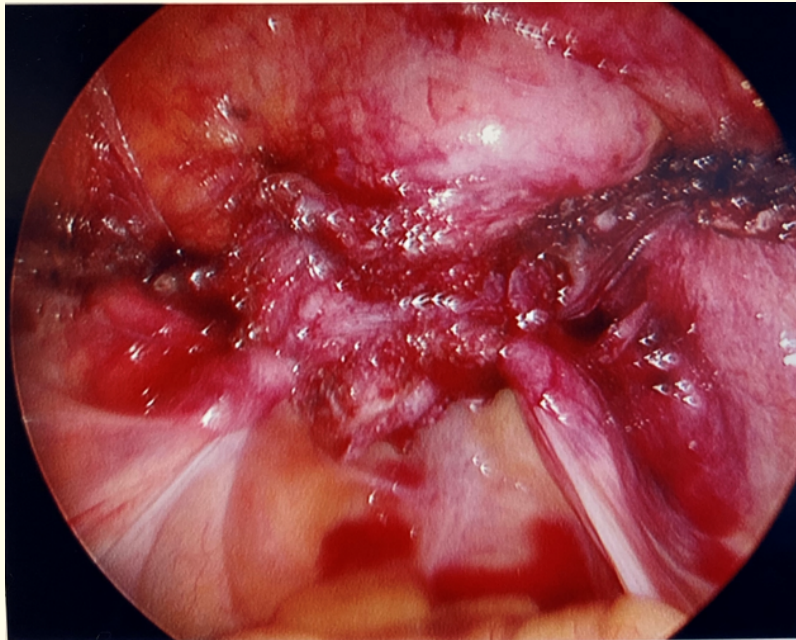


Figure 7: Final presentation from the laparoscopic view after completion of LSC-assisted USLS.



Figure 8: Final presentation from the vaginal view.

Discussion and Conclusion

Patient's postoperative course was uneventful and discharged home same day. Final pathology was benign. She was very happy with surgical outcome: her vaginal walls and apex were well supported at postoperative week #6 (POPQ: -2,-2,-8/3,2,9/-2,-2, x).

LSC-assisted USLS is a good alternative surgical option for apical suspension for patients with pelvic organ prolapse, who is undergoing laparoscopic hysterectomy for other indications and who desires to avoid synthetic mesh suspension. Concurrent anterior or posterior colporrhaphy can be performed vaginally with LSC-assisted USLS. In addition, LSC-assisted USLS is an excellent way of teaching residents to show how USLS suspends the vaginal cuff under direct visualization.

Disclosure

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