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IUJ VIDEO

Twelve years' experience with fascia lata autograft to replace complicated anterior vaginal mesh

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Abstract

Objectives To report 12-year experience with replacing transvaginal mesh (TVM) with fascia lata autograft.

Methods This was a chart review of TVM removal and replacement with a fascia lata autograft placement by a single surgeon between 2005 and 2017. The Pelvic Organ Prolapse Quantification (POP-Q) system before and 1 year following the procedure, patient-reported recurrence of symptoms, changes in the POP-Q examination and complication rates are analyzed.

Results Twenty-four patients were included. Mean age was 57.2 (95% CI 53.2–61.2) years. Mean number of days to Foley catheter removal was 3.2 days (95% CI 1.6–4.9) and mean number of days to drain removal was 10.9 days (95% CI 9.9–12.0). Following the surgery, no leg seroma, infection or numbness was reported. UTI occurred in four (16.7%) of the participants postoperatively. At 3-month follow-up, mild urinary symptoms were reported in five participants (20.8%). At 1-year follow-up, one participant was symptomatic of pelvic organ prolapse. Paired *t*-test analysis revealed statistically significant retraction of Aa and Ba vaginal points ($p < 0.001$). C, GH and PB points were also statistically significantly retracted.

Conclusion Fascia lata autograft for anterior compartment reconstruction due to TVM complications is associated with high safety and efficacy rates.

Keywords Fascia lata autograft · Hammock procedure · Transvaginal mesh replacement

Aim of the video/introduction

The first-generation transvaginal mesh kits (TVM) had high postoperative complication rates [1, 2]. The use of fascia lata autograft in correcting anterior vaginal wall defects was first reported by Chesson et al. in 1999 (Fig. 1) [3]. In this study, we provide details of the procedure of removing TVM followed immediately by fascia lata autograft hammock placement.

Electronic supplementary material The online version of this article (https://doi.org/10.1007/s00192-019-03957-2) contains supplementary material. This video is also available to watch on http://link.springer.com/. Please search for this article by the article title or DOI number, and on the article page click on 'Supplementary Material'.

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Methods

Procedure details

To choose which leg to extract the graft from, each patient's preference was taken into consideration. The leg with varicosities, pain or other problems was avoided. After palpating the lateral femoral condyle, a horizontal 5-cm incision was made at the level of the iliotibial tract insertion into the lateral knee. The fascia lata was dissected away from the overlying fat, followed by a 3–5-cm incision in the fascia lata to separate tissue from the underlying vastus lateralis muscle fibers using ring forceps. While retracting the lateral thigh skin with a right-angle retractor, the surgeon would use extra-long Mayo scissors and cut the lateral edges of the fascia (Fig. 2). Another skin incision was made 10 cm in length and 10 cm cephalad to the first lateral knee skin incision, and the fascia strip was delivered through it. The fascia was undermined cephalad to the second incision in the same fashion, and once the lateral edges were extended further up, a Jorgenson scissor was used to transect the cephalad edge of the fascia and remove the fascia. The lateral edges of the fascia were brought together

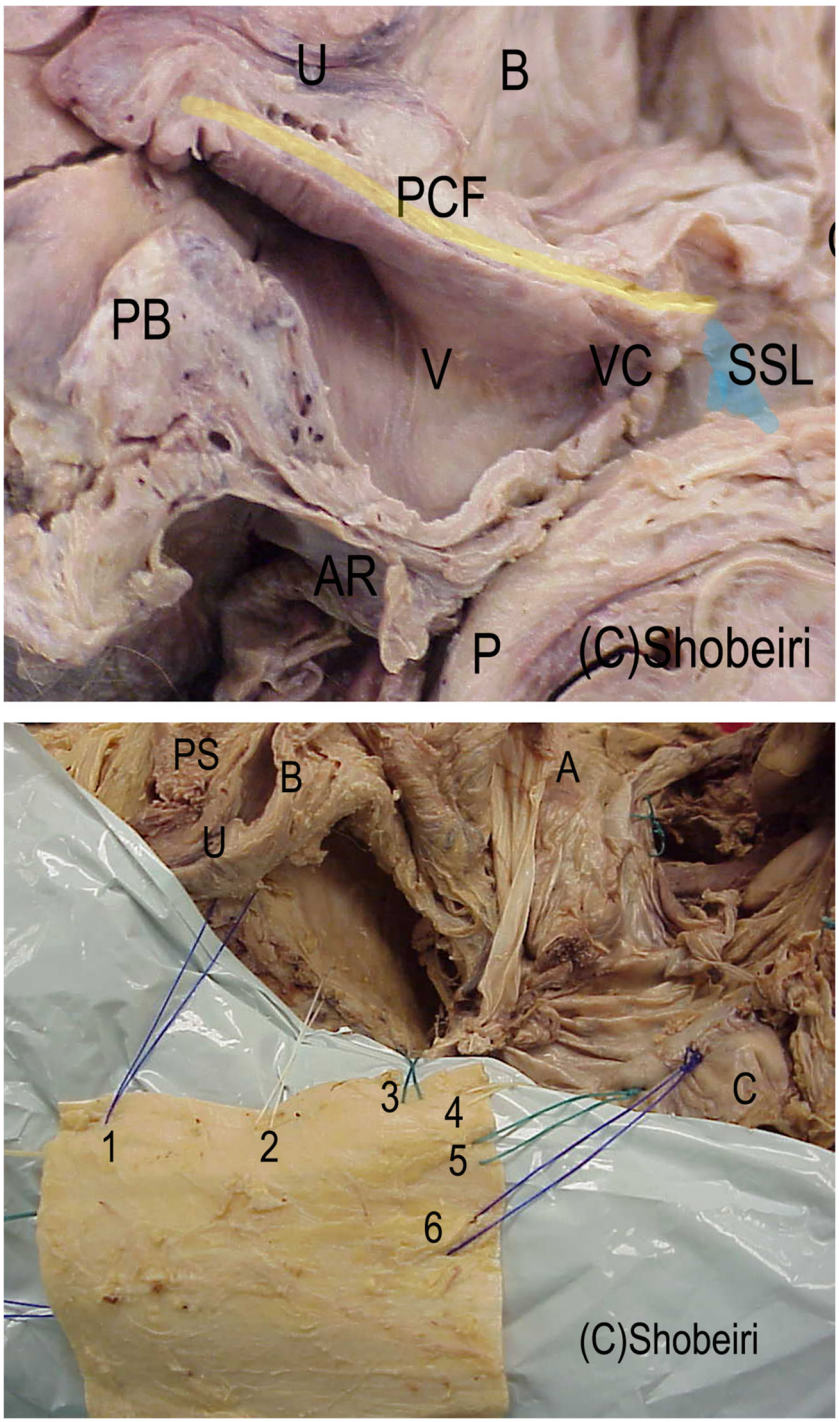

Fig. 1 Top: Right hemipelvis cadaveric dissection. The pubocervical area is shown in this cadaver. Bottom: Sutures are passed through the lateral and cephalad edges of the fascia. Numbers 1 to 6 are the six sutures placed on the right side of the graft. Symmetrical sutures are placed on the left side as well. A, anterior; AR, anorectum; B, bladder; C, caudal; P, posterior; PB, perineal body; PCF, pubocervical fibromuscularis; PS, pubic symphysis; SSL, sacrospinous ligament; U, urethra; V, vagina; VC, vaginal cuff

using 2.0 PDS sutures 2 cm apart. The sutures were tied loosely, and a drain was placed over the fascia, which was kept for 1 week and removed in the office. The leg was wrapped while monitoring distal extremity perfusion (Fig. 3). The harvested fascia was then fashioned into a triangular piece to be placed transvaginally under the bladder (Fig. 4). At this point, the patient was placed in a dorsal lithotomy position. The vaginal mesh was dissected off in its entirety to the sacrospinous fixation and laterally to the arcus tendineus fascia pelvis and caudal to the vesicourethral junction or further as needed. Three 2.0 Prolene sutures were placed along the length of the arcus tendineus, one in the sacrospinous and one or two in the vaginal cuff on either side. The sutures were passed through the lateral and cephalad edges of the fascia. Tying

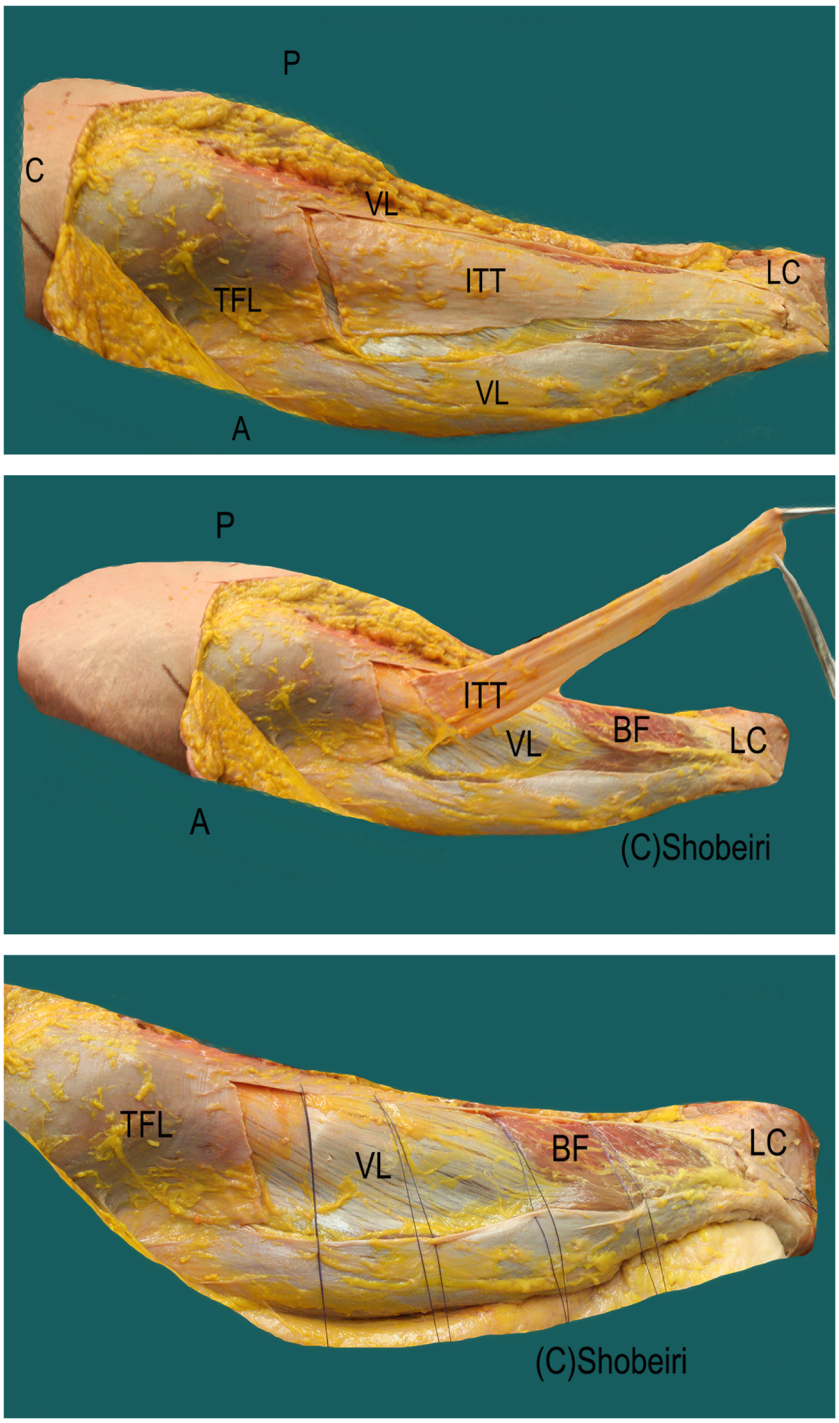

Fig. 2 Left cadaveric leg dissection. Top: harvested fascia lata in situ. Bottom: following graft removal. Lateral edges of the fascia are approximated using 2.0 PDS sutures to prevent herniation of the underlying muscle through the defect. A, anterior; BF, biceps femoris; C, caudal; P, posterior; ITT, iliotibial tract; LC, lateral condyle; TFL, tensor fascia lata; VL, vastus lateralis

the sutures would bring the fascia to its desired position under the bladder (Fig. 1).

Data analysis

A data set of all patients who underwent removal of TVM followed immediately followed by a fascia lata autograft procedure by the senior author (SAS) from 2005 to 2017 was analyzed. The inclusion criteria for the data set were patients who (1) had a vaginal mesh complication and concurrent cystocele, (2) had severe extrusion and primary closure due to lack of pubocervical fibromuscularis could result in vaginal stenosis or (3) concurrent erosion into the bladder made the formation of a vesicovaginal fistula likely. Patients were scheduled to

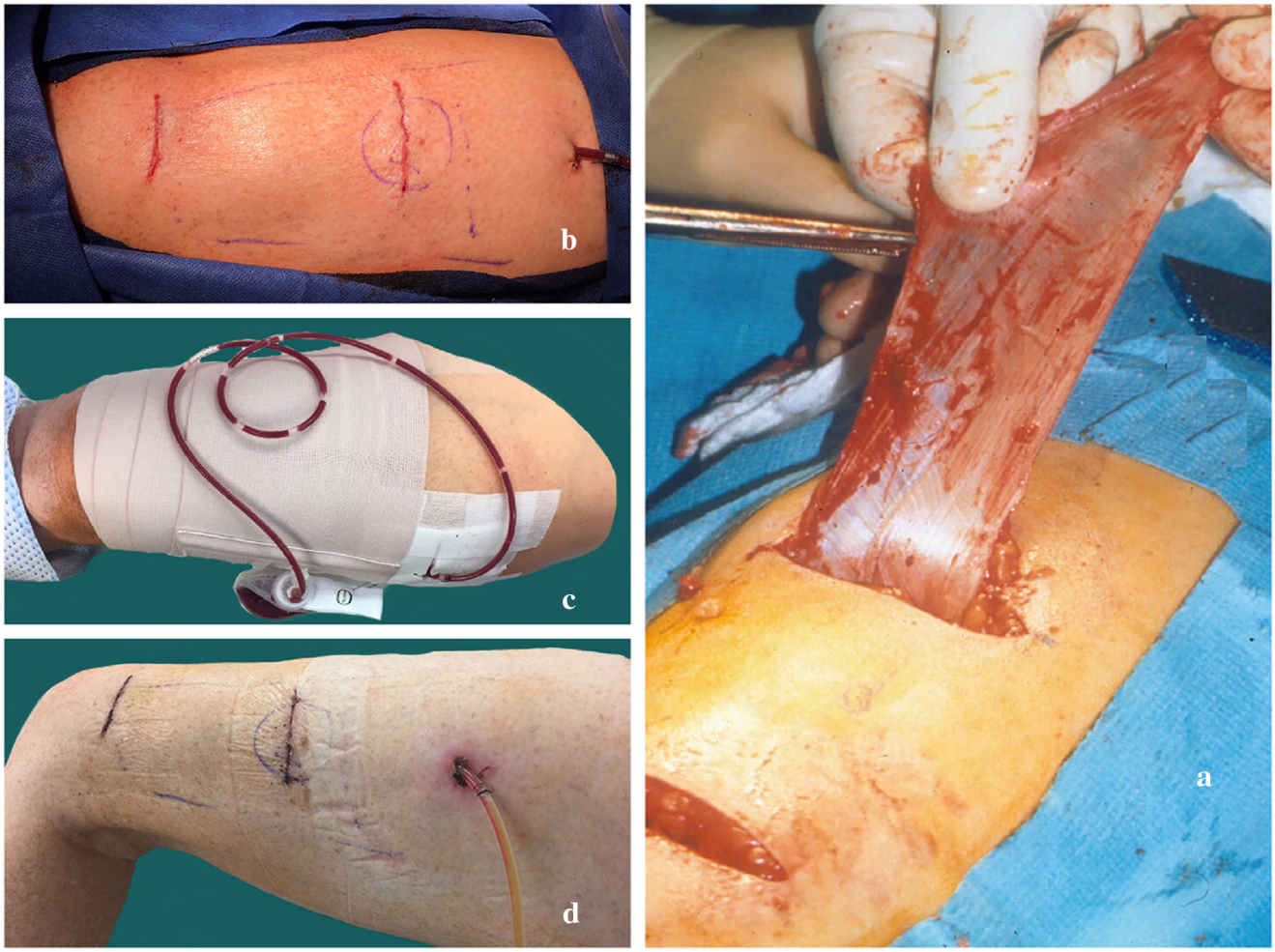

Fig. 3 A: Live surgery, fascia lata removal through the cephalad leg incision. B: Following graft extraction, a drain is placed over the fascia under the skin and is brought through the skin at the cephalad edge of the fascia harvest. Skin is closed in subcuticular fashion. C: Leg is wrapped following skin closure and drain placement while assuring adequate distal perfusion. D: Patient leg 1 week after the procedure

undergo urogynecologic and POP staging by the surgeon and were followed up on 3 months and 1 year postoperatively [4].

The study was exempt from review by the Institutional Review Board of INOVA Women's Hospital because of the absence of patient-identifying information in the clinical data set. All statistical analyses were performed using Stata/IC version 14.2 (StataCorp LLC, College Station, TX).

Results

There were a total of 24 surgeries using fascia lata autografts from 2005 to 2017. All patients underwent the procedure because of erosion in their TVM. Mean age was 57.2 (95% CI 53.2–61.2) years, mean BMI was 25.8 (95% CI 24.4–27.2), and median parity was 2.5. All participants except one were post-menopausal.

The graft was acquired from the right and the left leg in an equal number of patients. Mean estimated blood loss was 262 cc (95% CI 215–309 cc). Median time to Foley catheter removal was 2 days (mean: 3.2, 95% CI 1.6–4.9). Median time to drain removal was 10 days (mean: 10.9, 95% CI 9.9–12.0). No leg seroma, infection or numbness was detected in the 2-week postoperative period. UTI occurred in four of the participants (16.67%, 95% CI, 4.7%–37.4%), one participant reported urge and stress incontinence, one participant complained of inability to void, and one complained of urge incontinence. The only other complication was low-grade fever in one patient. At 3-month follow-up, four patients (16.67%) complained of urge incontinence and one patient complained of inability to void.

At 1-year follow-up one participant had POP symptoms. Urinary symptoms were completely resolved in all patients. The vaginal examination was recorded using the POP-Q system at 1-year follow-up. Paired *t*-test analysis revealed statistically significant retraction of the Aa, Ba, C and GH points compared with the preoperative examination. The PB point was borderline significantly retracted (Table 1). Two of the

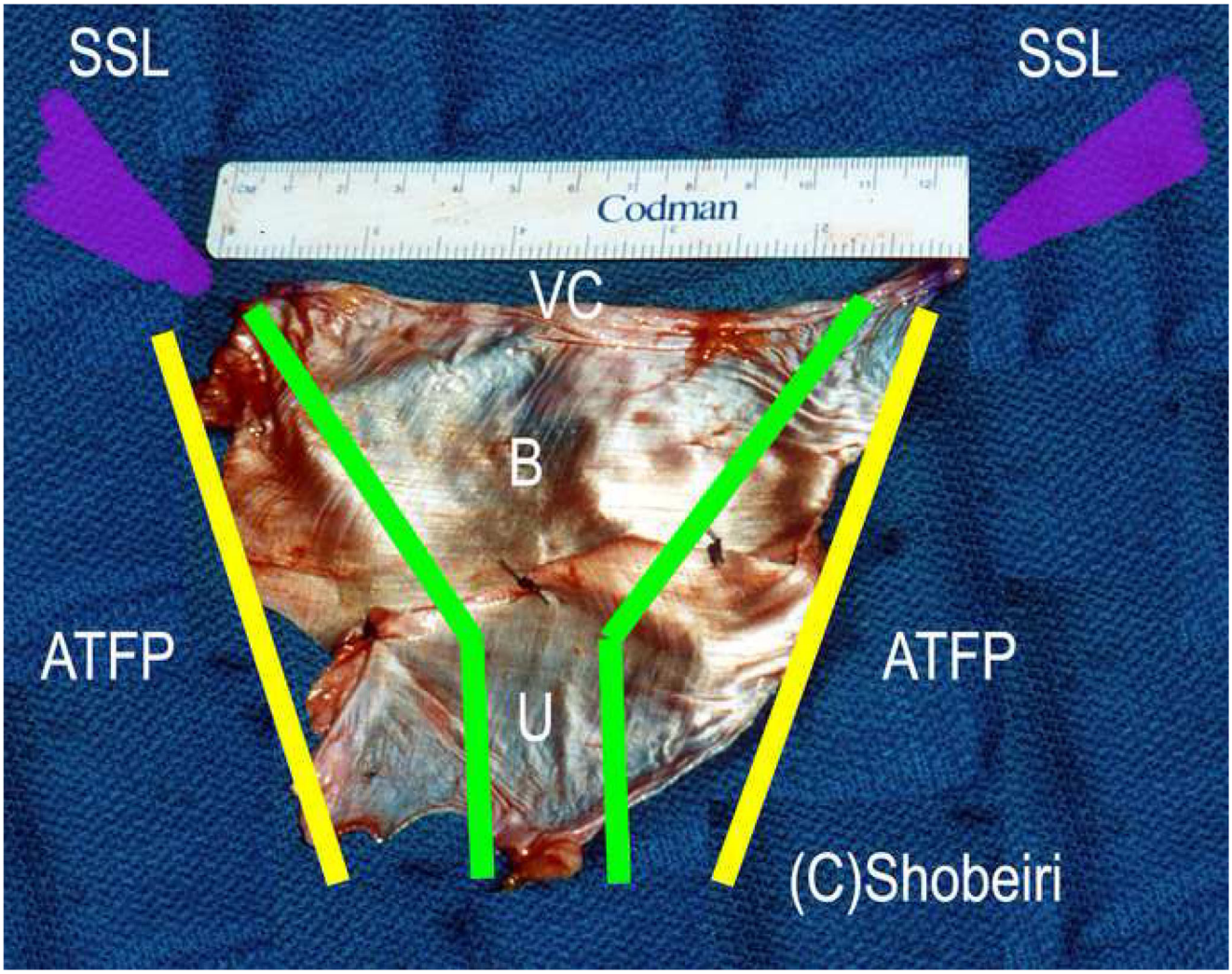

Fig. 4 The fascia lata graft is fashioned in a triangular fashion that can fit under the bladder. The yellow line outlines the arcus tendineus fascia pelvis (ATFP) attachment site. The green line is the outline of the bladder (B) and urethra (U) that lies on the fascia lata. The purple triangles are the sacrospinous ligament (SSL) outlines for the apical attachments. Additional sutures are placed to attach the vaginal cuff (VC) to the central portion of the graft

Table 1 Paired *t*-test analysis of improvement in the vaginal examination (cm) 1-year postoperatively. Confidence interval increased to 98.8% to increase the overall table confidence to (1−0.011) = 0.91

Vaginal section	Mean improvement ± SD	98.8% CI	*p* value
Aa	1.25 ± 1.07	0.65– 1.85	< 0.001
Ba	2.21 ± 1.47	1.39–3.03	< 0.001
Ap	0.33 ± 0.96	−0.20–0.87	0.052
Bp	−0.12 ± 0.99	−0.43–0.68	0.27
C	2.50 ± 4.07	0.23–4.77	0.003
D	NA*		
TVL	−0.04 ± 0.99	−0.59–0.51	0.58
GH	0.44 ± 0.88	0.05–0.92	0.011
PB	0.5 ± 1.10	−0.11–1.11	0.018

98.8% CI min: minimum improvement in 98.8% confidence interval

98.8% CI max: maximum improvement in 98.8% confidence interval

*The D section of the vagina was not assessed because of the absence of uterus in all patients

participants had asymptomatic posterior prolapse detected on physical examination. Mean Aa position changed from −0.42 cm to −1.67 cm (mean improvement: 1.25 cm, 98.8% CI: 0.65–1.84, $p < 0.001$). The Ba point was also statistically significantly retracted from a mean position of +0.04 cm to −2.17 cm (mean improvement: 2.21 cm, 98.8% CI 1.38 cm to 3.03 cm, $p < 0.001$) (Table 1).

Conclusion

To our knowledge, the use of fascia lata autograft to replace complicated synthetic TVM is not mentioned in the literature. A statistically significant improvement in Aa and Ba might suggest that the procedure is promising in treating anterior vaginal wall prolapse.

Use of fascia lata autograft has the advantage of very few adverse events while providing acceptable mechanical support for the vaginal wall. Its removal is shown to heal without any event in our study, and its autograft is unlikely to shrink or cause erosions. Pelvic examination improvement as shown by POP-Q was significant in the anterior compartment in our study. Lack of significant improvement in the posterior compartment can be attributed to the fact that this procedure focuses solely on the anterior compartment; therefore, no significant improvement in the posterior vaginal wall is expected.

Complications were uncommon in our set of participants. The most frequent complication was 4 UTIs in 24 patients. The calculated 95% confidence interval for the number of UTIs, however, revealed the very wide range of 0.10% to 21.1%.

Our group of patients was surgically challenging and complicated because we had to remove the mesh before reconstructing the prolapsed anterior wall. Removal of mesh is shown to be associated with significant blood loss. A few precautions that we took to minimize complications were the following:

1. vaginal packing;
2. intraoperative ureteral catheterization;
3. closure of the fascia lata defect and placement of a drain;
4. encouraging early ambulation.

Aside from the small sample size, we acknowledge the following weaknesses of our study.

The procedures were performed by a single surgeon, and the physical examinations both before and after the procedures were conducted by the same surgeon who also performed the procedures; therefore, the examiner was not blinded. Patient satisfaction was solely based on patient-reported complaints not validated questionnaires.

In conclusion, fascia lata autograft is a promising replacement for synthetic mesh in patients undergoing reoperation due to vaginal mesh complications and concurrent anterior compartment prolapse. The safety and efficacy of this procedure were high in our study.

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Compliance with Ethical Standards

Conflicts of interest None.

Disclaimers All but one of the patients' in this data set were collected and analyzed while the senior author was a faculty member at the University of Oklahoma Health Sciences Center in Oklahoma City, OK. The author collects the anatomic pictures during various workshops or cadaver teaching at various institutions.

Consent Written informed consent was obtained from the patient for publication of this video article and any accompanying images.

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