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Use of autologous fascia in midurethral sling surgeries; comparison of transobtrator and retropubic ways

Harun Ozdemir[1], Yunus Colakoglu[1], Kemal Topaloglu[1], Emin Taha Keskin[1], Metin Savun[1], Ali Ayten[2], Alkan Cubuk[3], Abdulmuttalip Simsek[1]

[1]Department of Urology, Basaksehir Cam and Sakura City Hospital, Istanbul, Turkiye
[2]Department of Urology, Dr. Sadi Konuk Training and Research Hospital, University of Health Sciences, Istanbul, Turkiye
[3]Faculty of Medicine, Department of Urology, Kırklareli University, Kirklareli, Turkiye

ABSTRACT

Objectives: To compare autologous transobturator-tape (A-TOT) and autologous transvaginal tape (A-TVT) surgeries in terms of effectivity and complications.

Material and methods: Preoperative data, duration of the operation, complications and postoperative visual analogue scores were noted. Patients were assessed 12 months after surgery. An objective cure was defined as a negative CST and no need for reoperation due to SUI. Subjective cure was defined as a PGI-I score ≤ 2. Symptom severity and QoL were measured using the total score and the total QoL score of the ICIQ-FLUTS.

Results: Retrospectively 44 patients (A-TOT:29, A-TVT:15) were enrolled in this study. Mean follow-18 months. Preoperative parameters were similar. The VAS score at the 8th hour postoperatively was higher in the A-TOT group and similar at the 24th h ($p = 0.007$ and $p = 0.587$, respectively). Grade 3 complications according to clavien dindo were only observed in the A-TOT group. At 12 month the objective cure rates according to CST were 96.5% and 100 the subjective cure rates according to PGI-I veew 96.5% and 100%. A positive CST finding was recorded in one patient (3.3%) in the A-TOT group. Total score and total quality of life (QoL) scores on the ICIQ-FLUTS were found to be significantly improved in both groups ($p = 0.001$ and $p = 0.001$, respectively) (Tab. 4). Similar improvements were found in both groups in the overall and quality of life subscores of the ICIQ-FLUTS filling and voiding sections ($p = 0.476$, $p = 0.315$, $p = 0.520$, and $p = 0.448$, respectively).

Conclusions: The A-TOT technique has objective, subjective cure, and overall complication rates comparable to those of the A-TVT technique. The use of autologous fascia provides an opportunity to avoid mesh-related complications.

Keywords: autologous tape; complication; stress urinary incontinence

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INTRODUCTION

Stress urinary incontinence (SUI) is the involuntary loss of urine caused by increased abdominal pressure during physical exertion, such as walking, sprinting, coughing, or sneezing. Many procedures have been described for the treatment of female patients with SUI. The most performed surgical procedure is midurethral sling surgery (MUSS). This surgery is performed using the retropubic approach [transvaginal tape (TVT)] or the transobturator approach (transobturator tape [TOT]) and non-tensile, non-absorbable synthetic tape to provide support under the urethra [1]. The long-term average cure rate of MUSS varies from 62 to 98% in the literature [2].

Pain, dyspareunia, bladder perforation, and postoperative voiding dysfunction are the common complications of MUSS and other SUI surgeries. However, in current litherature, mesh-related complications, including erosion, migration, extrusion, and infections, were reported with a rate of up to 2% following MUSS. These complications usually require revision surgery (mesh removal, cutting) [3, 4]. The Food and Drug Administration of the United States (US FDA) has issued warnings regarding complications associated with mesh use [5]. As a result of these warnings, meshes were classified in class 3 devices in POP surgeries (highest risk devices) while class 2 devices in SUI surgeries.

Corresponding author:
Harun Ozdemir
Department of Urology, Basaksehir Cam and Sakura City Hospital, Basaksehir, Olimpiyat Bulvarı Yolu, 34480 Basaksehir/Istanbul, Turkiye
e-mail: dr.harun-17@hotmail.com

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Although these reports were not directly about mesh use in SUI surgery, after these reports patients and surgeons have been increasingly questioning the mesh use for SUI. Additionally, while the incidence of complications after MUSS has remained stable, patient complaints have increased recently. Due to current concerns about mesh, traditional techniques [burch and pubovaginal sling (PVS)] have gained popularity again. In addition, new TVT and TOT techniques utilizing autologous tissues instead of synthetic meshes have been published. They reported a success rate of 79–94% and lower rates of complications compared to standard MUSS [6–10]. Some studies have compared new modifications to conventional slings. However, to the best of our knowledge, no study has compared these new midurethral sling techniques performed with autologous fascia rather than a synthetic meshes in terms of their effectiveness and complications.

Objectives

In this study, we aimed to compare the efficacy and safety of two new techniquesAutologous TOT (A-TOT) and Autologous TVT (A-TVT).

MATERIAL AND METHODS

Study Design

This retrospective observational study was conducted between December 2020 and March 2023 in a urology clinic. After obtaining approval from the Institutional Review Board and signed informed consent, the study evaluated patients who underwent A-TOT and patients who underwent A-TVT for SUI.

Preoperative assessment

The assessment of patients involved several diagnostic procedures: a comprehensive review of their medical history, a urine culture, a pelvic examinations that including the urethral hypermobility test (Q-tip test), cough stress test (CST), and POP examination; and uroflowmetry with postvoid residual volume (PVRV) measurement. A positive CST was characterized by the presence of urine incontinence during lithotomy and while standing with one to three coughs while the bladder volume was approximately 300 mL. A lubricated coton swab was inserted to urethra and the straining and resting angles in horizantale plane was measure to assess Q-tip test. Uroflowmetry (UF) was carried out on every patient. A PVRV greater than 150 mL is the threshold for increased volume [11]. The patients were asked to fill out the International Consultation on Incontinence Questionnaire-Female Lower Urinary Tract Symptoms (ICIQ-FLUTS), which is a valid form used to measure the lower urinary tract symptoms and quality of life (QoL) in three parts: incontinence, voiding, and filling. Mixed urinary incontinence (MUI) was defined as a combination of urge urinary incontinence and SUI.

Only patients who met the criteria for uncomplicated SUI were included in the study. The exclusion criteria were as follows: pregnancy, a history of pelvic radiation and the presence of neurologic diseases, a previous surgical history of SUI, an increased PVRV, poor voiding patterns on UF, and a POP grade 2 or higher as determined by the simplified Pelvic Organ Prolapse Quantification (POP-Q) system. At least three months of lifestyle modifications and pelvic floor muscle therapy were recommended for patients diagnosed with SUI. Surgical indications included reluctance or discontent after conservative treatment. All the surgical options were discussed with the patients (TOT, TVT, Burch Colposuspension, Pubovaginal sling surgery, Bulking agent injection, A-TOT and A-TVT). Also, we informed the patients about mesh related concerns. The type of surgery was determined through the patients' preferences. Patients who preferred A-TOT and A-TVT were included in this study.

Surgical techniques

General anesthesia was used in all surgical procedures. At the end of the procedure and four hours after the procedure, 1 g of paracetamol was administered intravenously to each patient. Surgical details regarding A-TOT were published in 2016 [6]. A longitudinal vaginal incision 2 cm in length was performed at the midurethral level with the patient in the lithotomy position. Periurethral dissection was performed bilaterally to reach the inferior ischiopubic ramus. A Pfannenstiel incision measuring 3 cm was utilized to obtain a 5 × 1.5 cm rectangle of the rectus fascia. On each corner of the fascial graft, two 2–0 nonabsorbable polyester stay sutures (Ethibond, Ethicon, Raritan, NJ, USA) were placed. A TOT needle was passed twice through the anterolateral part of the obturator foramen at the level of the clitoris, and the stitches were separately transferred from the vaginal incision to the skin. A tissue bridge measuring around 1 cm had been created between separate sutures on both sides along the gracilis, adductor muscle tendons, obturator externus muscle, obturator membrane, and obturator internus muscle. Without tension, the graft was placed in the mid-urethral region. The free movement of the surgical scissors in the space between the fascial graft and the urethra was defined the criterion for ensuring tension-free positioning of the fascial graft. The sutures were tied to each other above the bridge created on both sides. Two absorbable sutures were used to secure the fascial graft to the periurethral tissue in order to prevent migration and graft folding. Additionally, a cystoscopy is performed during A-TOT if a bladder injury is suspected. In the final phase of the procedure, the incisions were closed by sutures, and vaginal packing was done [7].

The A-TVT procedure was started with a longitudinal vaginal incision 2 cm in length was performed at the midurethral level with the patient in the lithotomy position. Periurethral dissection was performed bilaterally to reach the inferior ischiopubic ramus. A Pfannenstiel incision measuring 3 cm was utilized to obtain a 7.5 × 1.5 cm rectangle of the rectus fascia. On each corner of the fascial graft, two 2–0 nonabsorbable polyester stay sutures (Ethibond, Ethicon) were placed. A-TVT needle was passed ("top down") through the rectus fascia at a point 1–2 cm lateral to the midline and is guided into the vaginal incision onto the index finger of the other hand. The ends of polyester suture at one end of the fascial graft are pulled through the vaginal incision into the abdominal incision ("bottom up"). The procedure was repeated on the other side. We routinely perform cystoscopy to check bladder injury during A-TVT. The free movement of the surgical scissors in the space between the fascial graft and the urethra was defined the criterion for ensuring tension-free positioning of the fascial graft. After ensuring that the graft is lying flat, the two lengths of polyester sutures are tied using a surgeon's (double throw) knot. Two absorbable sutures were used to secure the fascial graft to the periurethral tissue in order to prevent migration and graft folding. In the final phase of the procedure, the incisions were closed by sutures, and vaginal packing was done [12].

Follow-up period

The duration of the operation and complications, using the Clavien-Dindo grading system, were recorded as perioperative data [13]. Using the visual analog scale (VAS), the patients were evaluated on the 8th and 24th hours postoperatively. All patients were discharged on the first postoperative day following to ultrasonography-confirmed spontaneous voiding of a minimum of two-thirds of the total bladder volume. A clinical evaluation of surgical incisions and assessment of complications related to the procedure was carried out on patients at the first week following the procedure. Following to the procedure, patients were examined at first, third, sixth and twelfth months. The outcomes have been evaluated using the CST, ICIQ-FLUTS, and Patient Global Impression of Improvement (PGI-I) scale at the 12-month postoperative period. Additional surgical interventions associated with complications or surgical failures were recorded for each patient. A negative CST and the absence of reoperation requirements defined an objective cure. Subjective cure was defined as a PGI-I score ≤ 2. Total ICIQ-FLUTS scores and total QoL scores were used to evaluate symptom severity and quality of life. Complications, subjective cure, quality of life, and objective cure were evaluated compared to the A-TOT and A-TVT procedures.

Statistical analysis

The variables for the distribution were tested for normality by the Kolmogorov-Smirnov test. Frequencies (n) and percentages (%) were used to represent categorical variables. The mean and standard deviation (SD) values of continuous variables were compared using paired Student's *t*-tests. To compare the groups, *t*-test and Mann-Whitney-U were used for these parameters. The Wilcoxon and Paired *t*-test were used to compare quantitative variables before and after the surgery. A 2-way repeated measures analysis of variance followed by the Holm–Sidak test was performed to evaluate changes in the 12 months after surgery and the different impacts of the 2 surgical procedures (ie, A-TOT and A-TVT) on the ICIQ-FLUTS. Data were analyzed using Statistical Package for Social Sciences (SPSS) for Windows version 20.0 (IBM Corp., Armonk, NY, USA). A 2-tailed p value of < 0.05 was considered significant.

RESULTS

Two hundred eleven patients met the criteria for uncomplicated SUI after initial evaluation. The number of patients operated on with each technique was as follows: 90 TOT, 40A-TOT, 15 A-TVT, and 66 TVT. Totally 11 A-TOT patients did not continue the follow up protocol of the study, those cases were not included in the study cohort. This study evaluated 29 female patients who underwent A-TOT and 15 female patients who underwent A-TVT for SUI. The mean follow-up durations for the A-TOT and A-TVT groups were 18 ± 1.1 and 17 ± 1.2 months, respectively. Preoperative parameters were not found to be significantly different between both groups (Tab. 1). In the A-TOT group, 2 patients underwent laparoscopic myomectomy and 2 patients underwent hysterectomy, while in the A-TVT group, 3 patients had hysterectomy and 2 patients had laparoscopic ovarian cyst excision. In terms of pure stress and stress-predominant mixed urinary incontinence rates, the groups were comparable (p = 0.94).

Table 1. Comparison of pre-operative parameters of the groups

	A-TOT [29]	A-TVT [15]	p
Age [year]*	50.8 ± 9.0	56.1 ± 6.7	0.055
BMI [kg/m^2]*	29.1 ± 3.4	30.8 ± 3.8	0.172
Number of births*	3.1 ± 1.1	2.7 ± 1.2	0.419
Vaginal birth*	2.7 ± 1.5	2.4 ± 1.4	0.619
Cesarean*	0.5 ± 0.8	0.3 ± 0.5	0.960
Pelvic surgery history	4 (13.7%)	5 (33.3%)	0.235
Menopause	13 (44.8%)	11 (73.3%)	0.111
Incontinence (pure stress/mixed)	21/8	10/5	0.942

*mean + standard deviation; BMI — Body mass index

Table 2. Operative and post-operative data

	A-TOT	A-TVT	P
Operation time [minutes]*	41.7 ± 6.6	38.3 ± 3.6	0.145
VAS score (post op 8. hours)*	6.3 ± 0.7	5.3 ± 1.3	**0.007**
VAS score (post op 24. hours)*	2.4 ± 1.2	2.7 ± 1.4	0.587
Complication			0.647
Grade 1	3 (15.0%)	3 (20.0%)	
Grade 2	1 (5.0%)	0	
Grade 3	1 (5.0%)	0	
Duration of follow up (months)*	18 ± 1.1	17 ± 1.2	0.153

*mean + standard deviation; VAS — visual analogue score

Table 3. Comparison of the groups according to objective and subjective cure parameters

	a-TOT (n = 29)	a-TVT (n = 15)	p
Negative CST	28 (96.5%)	15 (100%)	0.718
Re-operation	0	0	N/A
PGI-I score (1 or 2)	28 (96.5%)	15 (100%)	0.718

CST — cough stress test; N/A — not available; PGI-I — The Patient Global Impression of Improvement

The duration of the operations was 41.7 ± 6.6 minutes (min) for the A-TOT group and 38.3 ± 3.6 min for the A-TVT group (p = 0.145). The VAS score at the 8th hour postoperatively was higher in the A-TOT group and similar at the 24th hour (p = 0.007 and p = 0.587, respectively) (Tab. 2). Between the groups, the incidence of complications was comparable (p = 0.647), while complications of Clavien–Dindo grade 3 were only found in the A-TOT group. In the A-TOT group, one patient (3%) had suprapubic wound infection and was treated with surgical interventions, one patient was administered topical estradiol to treat vaginal exposure, one patient was given topical antibiotics to treat vaginitis, and a one patient was given oral antibiotics to treat a wound infection in the suprapubic incision. Three patients in the A-TVT group required topical antibiotics due to vaginitis (Tab. 2).

At 12 month the objective cure rates according to CST were 96.5% and 100% the subjective cure rates according to PGI-I veew 96.5 % and 100%respectively. Only 1 patient (3.3%) in the A-TOT group had a positive CST, while patients reported a subjective cure according to PGI-I scale. In neither group was a second surgery required (Tab. 3). There were no significant differences in objective and subjective cure parameters between the groups.

At the postoperative 12th month, the mean total score and total QoL score on the ICIQ-FLUTS were 20.5 ± 5.2 and 39.5 ± 10.3, respectively, for the A-TOT group, and 18.1 ± ± 3.4 and 50.2 ± 5.8, respectively, for the A-TVT group. The A-TOT and a-TVT groups showed greater improvement in both the total score and total QoL score on the ICIQ-FLUTS (p = 0.001 and p = 0.001, respectively) (Tab. 4). Similar improvements were found in both groups in the overall and quality of life subscores of the ICIQ-FLUTS filling and voiding sections (p = 0.476, p = 0.315, p = 0.520, and p = 0.448, respectively).

DISCUSSION

Although PVS is one of the oldest and most effective methods, MUSS has become the most commonly performed incontinence surgery, with minimal invasiveness and successful results reported for up to 18 years (Braga, 2018). However, after FDA warnings, these surgeries became questionable and were even banned in some countries (England). Meshless surgeries (Burch and PVS) have become popular. The A-TOT and A-TVT, which we developed to capture the minimal invasiveness and success of MUS surgeries, are the results of this process.

Table 4. Comparison of groups according to the International Consultation on Incontinence Questionnaire-Female Lower Urinary Tract Symptoms (ICIQ-FLUTS) questionnaire

	A-TOT			A-TVT			p**
	Preoperative	Postoperative	p	Preoperative	Postoperative	p	
ICIQ Filling*	8.2 ± 2.9	8.5 ± 2.7	0.754	8.7 ± 2.4	9.3 ± 1.8	0.119	0.476
ICIQ Filling QoL*	19.3 ± 7.4	15.9 ± 5.7	0.077	27.1 ± 5.2	25.9 ± 4.5	0.312	0.315
ICIQ Voiding*	4.3 ± 2.2	5.4 ± 1.5	0.090	5.1 ± 2.7	6.3 ± 1.7	**0.023**	0.520
ICIQ Voiding QoL*	9.3 ± 3.9	9.9 ± 2.5	0.720	10.4 ± 3.4	11.1 ± 9.9	0.102	0.448
ICIQ İncontinance*	16.0 ± 2.5	6.6 ± 2.3	**0.001**	16.1 ± 3.4	4.1 ± 1.8	**0.001**	**0.048**
ICIQ İncontinance QoL*	40.0 ± 3.4	13.6 ± 4.9	**0.001**	41.7 ± 5.6	13.3 ± 3.8	**0.001**	0.709
ICIQ Total Score*	28.6 ± 5.1	20.5 ± 5.2	**0.001**	29.9 ± 5.4	18.1 ± 3.4	**0.001**	0.189
ICIQ Total QoL Score*	68.7 ± 10.1	39.5 ± 10.3	**0.001**	80.3 ± 9.0	50.2 ± 5.8	**0.001**	0.980
Pad Test [gr/h]*	74.7 ± 5.9	7.4 ± 2.9	**0.001**	75.0 ± 24.2	8.7 ± 7.9	**0.001**	0.804

*Mean + standard deviation; **Comparison of the 2 groups according to changes in domains

Incontinence cure rates indicate whether a surgical treatment for SUI is successful. They evaluate the objective cure and/or the subjective cure using many tools, such as the CST, pad test, voiding diary, and invasive urodynamic studies. Several studies have independently used these methods. A recent review by Moggiore et al. concluded an objective improvement rate of 61–70% for the TVT technique and 64–57% for the TOT technique after long-term follow-up [15]. Despite this, a review using the Cochrane database also concluded an objective improvement rate of 85–90% for the TOT technique at one year postoperatively [2]. According to Ford et al., the objective cure rates for TOT were 82% and 85%, respectively, in the first and fifth postoperative years, and for TVT were 87% and 85%, respectively [16]. In addition, the objective cure rate for the A-TOT technique varied between 80% and 95% [6–10]. In our study, the objective cure rate for the A-TOT technique was 97%, whereas the A-TVT objective cure rate was 100%.

Similar to TVT, retropubic operations with autologous tissue are called autologous facial sling (AFS) or PVS. The aim of they was to support the urethra upward with autologous tissue. Traditionally PVS is performed in case of intrinsic sphincter deficiency cases or fallowing failed midürethral sling surgeries, the autologous fascia is positioned to the level of bladder neck with a tension. In our study, we applied A-TOT and A-TVT by placing them in the midurethra without tension in patients with primary stress urinary incontinence. Brubaker et al. reported the that patients' satisfaction rates after PVS between the second and fifth postoperative years, with a decreased from 87% to 83% for PVS [17]. Long-term AFS success rates reached 75% in the literature [18, 19]. In our study, the autologous fascia was placed and fixed in the midurethra and and permanently fixed with Ethibond sutures in either the suprapubic region or the obturator region. Importantly, the entire surface (1.5 cm) of the autologous fascia, similar to synthetic meshes, provided support to the midurethra. The high rates of objective and subjective cure rates were probably related to non-absorbable suture material and the appropriate and permanent tension provided by its use in the short follow-up period (an average of one years). Additionally, in accordance with Alkan et al. [10], we believe that fixing the fascia to the periurethral tissue raises cure rates.

There are intraoperative and postoperative risks associated with MUS surgery; blood loss (less than 1%) and injury to the adjacent organs (bowel, bladder, or urethra; 1–3%) are reported in the literature [20–22]. While few rate urethral and bladder injuries are seen in TOT operations, a high rate of bladder, bowel, and vascular injuries are seen in TVT [23]. In the present study, no organ injury or significant blood loss was observed in any patient. Only one patient (3%) in the A-TOT group underwent surgical intervention due to wound infection. Wound infection was associated with a body mass index (BMI) > 30 and excess suprapubic adipose tissue. Women undergoing the TOT procedure had significantly lower suprapubic pain than those undergoing the TVT procedure. In the most cases, groin and suprapubic discomfort resolved within the first six months [2]; in the same study, chronic pelvic pain was observed in 0.6% of the patients. In our study, the the average VAS score washigh in the A-TOT group during the first 8 hours. However, the pain scores decreased at the end of the 24th hour. It has been observed that a decrease in pain takes up to 6 months for standard TOT and TVT. We believe that using autologous tissue is advantageous in terms of avoiding pain that lasts for several months. In addition, we think that the high level of pain during the first eight hours in the A-TOT group was due to the use of both the suprapubic and obturator regions.

The most remarkable expectation of autologous slings is the avoidance of mesh-related complications. Mesh-related complications, such as erosion and migration occur after the use of synthetic mesh [3]. No difference was observed between the retropubic and transobturator methods [23]. Although mesh itself is the main cause of mesh-related complications, early sexual activity, wound infection, and the inability to properly close the vagina increase the current complication rates. In our study, no erosion was observed in the two groups, except for one patient in the A-TOT group who had minimal vaginal exposure of the fascial graft, was successfully treated with topical estradiol. We believe that using autologous fascia in both methods is safe and has the benefits of avoiding mesh-related complications, complication management surgeries, and mesh-related medicolegal concerns.

Validated questionnaires have been proposed to evaluate the treatment efficacy and quality of life after SUI surgery. In our study, we evaluated the PGI-I and ICIQ-FLUTS scores [19]. In accordance with the literature, both groups in our study showed significant improvements in PGI-I scores, incontinence ratio, and total QoL scores on the ICIQ-FLUTS. This can be explained by the high objective cure rates and low complication rates of surgeries. However, a significant difference was observed in the A-TVT group during the postoperative voiding phase. In Fusco et al.'s [23] comparison between standard TOT and TVT, a significantly higher voiding LUTS was observed in the TVT group. Alkan et al. [10] stated that although tension-free mesh is used in MUSS, the fibrosis around the mesh may cause obstruction in the urethra and the concern of not being able to treat it will cause tension between the urethra and the mesh, and this tension may cause postoperative voiding symptoms. Although autologous tissue has advantages such as avoidance of postoperative voiding dysfunction and de novo filling phase symptoms, we think that hanging from above in

the A-TVT may cause secondary urethral obstruction and voiding symptoms. Similarly, Blavias et al. [20] reported that voiding symptoms secondary to urethral obstruction secondary to PVS surgery were also seen.

In addition, although the successes in standard TOT and TVTs are similar in many studies, it has been observed that it contributes more to incontinence in the TVT group than TVT, in some studies [2]. A meta-analysis showed that a twelve-month retropubic MUS was more effective than transobturator MUS [24]. In another study, women undergoing a retropubic sling had 7.9% greater success five years after surgical treatment compared with the transobturator sling (43.4% vs 51.3%) [25]. However, the difference was not significant. In our study, there were significant improvements in ICIQ-FLUTS incontinence scores in both the A-TOT and A-TVT groups. We found that the A-TVT group contributed significantly more to incontinence than the A-TOT group. We think that hanging from the top is more beneficial in urinary incontinence.

The rectus fascia, which is more surgical, was chosen for use as the autologous fascia. A suprapubic incision was made and the rectus fascia was removed. According to MUSS, the suprapubic incision can be seen as a disadvantage. However, we see it as advantageous due to the fact that it is a safe surgery in long-term complications. In our study, wound site infection developed in only one patient with A-TOT, and the VAS pain scores decreased at the 24th hour. In addition, the surgical time was slightly longer in the A-TOT group than that in the A-TVT group. The reason for this was the use of the obturator region, which is the second surgical site after suprapubic incision.

Our study has some limitations. First, the sample size is small. Second, the follow-up period was short, in terms of complications and long term success. Finally, randomization was not performed because it was only performed in patients who were desired for midurethral sling surgeries with autologous tissue. However, one of the strongest aspects of this study is that it is the first study to compare the two techniques using autologous tissue.

CONCLUSIONS

The A-TOT technique has objective, subjective cure, and overall complication rates comparable to those of the A-TVT technique. The use of autologous fascia provides an opportunity to avoid mesh-related complications.

Article information and declarations

Data availability statement

The data presented in this study are available on request from the corresponding author.

Ethics statement

Ethics committee approval: 2023.06.283.

Author contributions

Harun Ozdemir Corresponding author. Concept, manuscript writing, study design.
Yunus Colakoğlu Revised article critically, study design.
Kemal Topaloğlu Acquisition of data, analysis and interpretation of data.
Emin Taha Keskin Acquisition of data, analysis and interpretation of data.
Metin Savun Article draft, concept.
Ali Ayten Revised article critically.
Alkan Çubuk Study design, revised article critically.
Abdulmuttalip Şimşek Revised article critically.

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Conflict of interest

The authors declare that they have no conflict of interest.

REFERENCES

1. Muller-Arteaga C, Martin Ma, Padilla-Fernandez B, et al. Position of the Ibero-American Society of Neurourology and Urogynecology in relation to the use of synthetic suburethral meshes for the surgical treatment of female stress incontinence. Neurourol Urodyn. 2020; 39(1): 464–469, doi: 10.1002/nau.24178, indexed in Pubmed: 31588610.
2. Ford AA, Rogerson L, Cody JD, et al. Mid-urethral sling operations for stress urinary incontinence in women. Cochrane Database Syst Rev. 2015; 7(7): CD006375, doi: 10.1002/14651858.CD006375.pub3, indexed in Pubmed: 26130017.
3. Gomes CM, Carvalho FL, Bellucci CH, et al. Update on complications of synthetic suburethral slings. Int Braz J Urol. 2017; 43(5): 822–834, doi: 10.1590/S1677-5538.IBJU.2016.0250, indexed in Pubmed: 28266818.
4. Shah HN, Badlani GH. Mesh complications in female pelvic floor reconstructive surgery and their management: a systematic review. Indian J Urol. 2012; 28(2): 129–153, doi: 10.4103/0970-1591.98453, indexed in Pubmed: 22919127.
5. Khan AA, Rosenblum N, Brucker B, et al. Changes in management of stress urinary incontinence following the 2011 FDA Health Notification. Journal of Clinical Urology. 2017; 10(5): 440–448, doi: 10.1177/2051415817691662.
6. Linder BJ, Elliott DS. Autologous transobturator urethral sling placement for female stress urinary incontinence: short-term outcomes. Urology. 2016; 93: 55–59, doi: 10.1016/j.urology.2016.03.025, indexed in Pubmed: 27036519.
7. Çubuk A, Erbin A, Savun M, et al. Autologous transobturator midurethral sling. Turk J Urol. 2019; 45(3): 230–232, doi: 10.5152/tud.2018.83797, indexed in Pubmed: 31846421.
8. Vasudeva P, Tyagi V, Kumar N, et al. "Mesh free" autologous transobturator mid urethral sling placement for predominant stress urinary incontinence: A pilot study. Neurourol Urodyn. 2021; 40(2): 659–665, doi: 10.1002/nau.24599, indexed in Pubmed: 33348447.
9. Cubuk A, Yanaral F, Savun M, et al. Modified autologous transobturator tape surgery — evaluation of short term results. Ginekol Pol. 2020; 91(2): 51–56, doi: 10.5603/GP.2020.0016, indexed in Pubmed: 32141048.
10. Cubuk A, Yanaral F, Sahan A, et al. Modified autologous transobturator tape surgery — a prospective comparison with transobturator tape surgery. Urology. 2020; 146: 72–78, doi: 10.1016/j.urology.2020.09.018, indexed in Pubmed: 32979380.
11. Haylen BT, de Ridder D, Freeman RM, et al. International Urogynecological Association, International Continence Society. An International Urogynecological Association (IUGA)/International Continence Society

(ICS) joint report on the terminology for female pelvic floor dysfunction. Int Urogynecol J. 2010; 21(1): 5–26, doi: 10.1007/s00192-009-0976-9, indexed in Pubmed: 19937315.
12. Osman NI, Hillary CJ, Mangera A, et al. The midurethral fascial "sling on a string": an alternative to midurethral synthetic tapes in the era of mesh complications. Eur Urol. 2018; 74(2): 191–196, doi: 10.1016/j.eururo.2018.04.031, indexed in Pubmed: 29803585.
13. Clavien PA, Barkun J, de Oliveira ML, et al. The Clavien-Dindo classification of surgical complications: five-year experience. Ann Surg. 2009; 250(2): 187–196, doi: 10.1097/SLA.0b013e3181b13ca2, indexed in Pubmed: 19638912.
14. Braga A, Caccia G, Sorice P, et al. Tension-free vaginal tape for treatment of pure urodynamic stress urinary incontinence: efficacy and adverse effects at 17-year follow-up. BJU Int. 2018; 122(1): 113–117, doi: 10.1111/bju.14136, indexed in Pubmed: 29468798.
15. Leone Roberti Maggiore U, Finazzi Agrò E, Soligo M, et al. Long-term outcomes of TOT and TVT procedures for the treatment of female stress urinary incontinence: a systematic review and meta-analysis. Int Urogynecol J. 2017; 28(8): 1119–1130, doi: 10.1007/s00192-017-3275-x, indexed in Pubmed: 28213797.
16. Ford AA, Rogerson L, Cody JD, et al. Mid-urethral sling operations for stress urinary incontinence in women. Cochrane Database Syst Rev. 2015; 7(7): CD006375, doi: 10.1002/14651858.CD006375.pub3, indexed in Pubmed: 26130017.
17. Brubaker L, Richter HE, Norton PA, et al. Urinary Incontinence Treatment Network. 5-year continence rates, satisfaction and adverse events of burch urethropexy and fascial sling surgery for urinary incontinence. J Urol. 2012; 187(4): 1324–1330, doi: 10.1016/j.juro.2011.11.087, indexed in Pubmed: 22341290.
18. Rehman H, Bezerra CA, Bruschini H, et al. Traditional suburethral sling operations for urinary incontinence in women. Cochrane Database Syst Rev. 2017; 7(7): CD001754, doi: 10.1002/14651858.CD001754.pub4, indexed in Pubmed: 28743177.
19. Khan ZA, Nambiar A, Morley R, et al. Long-term follow-up of a multicentre randomised controlled trial comparing tension-free vaginal tape, xenograft and autologous fascial slings for the treatment of stress urinary incontinence in women. BJU Int. 2015; 115(6): 968–977, doi: 10.1111/bju.12851, indexed in Pubmed: 24961647.
20. Blaivas JG, Simma-Chiang V, Gul Z, et al. Surgery for stress urinary incontinence: autologous fascial sling. Urol Clin North Am. 2019; 46(1): 41–52, doi: 10.1016/j.ucl.2018.08.014, indexed in Pubmed: 30466701.
21. Palos CC, Maturana AP, Ghersel FR, et al. Prospective and randomized clinical trial comparing transobturator versus retropubic sling in terms of efficacy and safety. Int Urogynecol J. 2018; 29(1): 29–35, doi: 10.1007/s00192-017-3495-0, indexed in Pubmed: 28971224.
22. Mahdy A, Ghoniem GM. Autologous rectus fascia sling for treatment of stress urinary incontinence in women: A review of the literature. Neurourol Urodyn. 2019; 38 Suppl 4: S51–S58, doi: 10.1002/nau.23878, indexed in Pubmed: 30525246.
23. Fusco F, Abdel-Fattah M, Chapple CR, et al. Updated systematic review and meta-analysis of the comparative data on colposuspensions, pubovaginal slings, and midurethral tapes in the surgical treatment of female stress urinary incontinence. Eur Urol. 2017; 72(4): 567–591, doi: 10.1016/j.eururo.2017.04.026, indexed in Pubmed: 28479203.
24. Brazzelli M, Javanbakht M, Imamura M, et al. Surgical treatments for women with stress urinary incontinence: the ESTER systematic review and economic evaluation. Health Technol Assess. 2019; 23(14): 1–306, doi: 10.3310/hta23140, indexed in Pubmed: 30929658.
25. Kenton K, Stoddard AM, Zyczynski H, et al. 5-year longitudinal follow up after retropubic and transobturator mid urethral slings. J Urol. 2015; 193(1): 203–210, doi: 10.1016/j.juro.2014.08.089, indexed in Pubmed: 25158274.