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Autologous Transobturator Rectus Fascia Sling for Treatment of Stress Urinary Incontinence in Women: Long-term Outcomes

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Abstract

Background: Treatment of stress urinary incontinence (SUI) via autologous transobturator rectus fascia sling was first described by Linder and Elliott in 2014. However, the long-term efficacy of the thesis technique have been rarely addressed.

The aim of the study: To assess the long-term results of the therapy of female SUI using an autologous transobturator (ATO) rectus fascia sling.

Patients and methods: The study included all female patients who underwent ATO rectus fascia sling for SUI treatment at Al-Azhar University Hospitals, Cairo, Egypt between 2017 and 2021. Patients with complete medical records and at least one year postoperative follow-up were included.

Results: Only 48 patients out of 57 who completed follow-up were included, with a mean age of $47 \pm (9.81)$, with a mean BMI of $27.86 \pm (3.09)$. The mean follow-up period is $36 \pm (3.04)$ months. The International Consultation Incontinence Questionnaire Female Lower Urinary Tract Symptoms Score (ICIQ-FLUTS), bother scale, and filling and incontinence subscales improved significantly at 1 and 5 years, with a *P* value of <0.001 . The overall success rate of 93.7% at 5 years. Notably, none of our patients suffered from complications such as erosion, exposure or failure.

Conclusion: The 5 years follow-up of patients with SUI who underwent ATO fascia sling fixation show significant improvement in the subjective and objective criteria. The durability of the success and the absence of bothersome complication put this procedure on the frontline of treating such patients.

Keywords: Autologous, Sling, Transobturator

1. Introduction

Stress urinary incontinence (SUI) is a prevalent issue that affects 18–26.4% of women.¹ SUI therapy has shifted over the last two decades to a mesh-based bladder neck operation or a synthetic mid-urethral sling (MUS). Despite the fact that the procedure has been thought to be generally safe, there has been a sharp increase in the number of instances of erosion into the lower urinary tract that have been recorded. The placement of an autologous pubovaginal sling, biological grafts, or the injection of a urethral bulking agent is a few

alternatives to the synthetic mid-urethral sling. Each has to drawbacks, whether in terms of morbidity or efficacy.²

The fascia lata and rectus fascia, which are positioned at the urethro-vesical junction through the ‘retropubic’ approach, are the autologous slings that are most frequently employed.³ A new procedure for placing an autologous urethral sling using a ‘trans-obturator’ technique was carried out by Linder and Elliott⁴ in an effort to benefit from the advantages of a ‘transobturator’ surgical technique and avoid hazards related to synthetic slings, the placement of an autologous transobturator sling produces excellent short-

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term outcomes in addition to its applicability as an outpatient procedure. It is noteworthy that no patients required the release of the sling due to postsurgical voiding dysfunction, and no serious complications occurred.²

This study aimed to report long-term trans-obturator sling findings using autologous rectus fascia for SUI in women.

2. Patients and methods

The study included all female patients who underwent ATO rectus fascia sling for SUI treatment at Al-Azhar University Hospitals, Cairo, Egypt between 2017 and 2021. Patients with complete medical records and at least one year postoperative follow-up were included.

Among 57 women who were treated by ATO rectus fascia sling 48 women had complete medical records at least one year and were included into this study. The baseline and operative data are summarized in [Tables 1 and 2](#).

All patients were followed regularly post-operatively at 3 months, 6 months, then annually for 5 years. The follow-up schedule included full medical history comprising The International Consultation Incontinence Questionnaire Female Lower Urinary Tract Symptoms Score (ICIQ-FLUTS), clinical examination by stress test and ultrasound assessment of post-voiding residual urine (PVRU).

2.1. Treatment outcome

The procedures' results were assessed using subjective criteria derived from the ICIQ-FLUT questionnaire and objective criteria derived from the cough test assessment. The results were divided into three categories: cured, improved, and failed. Patient who reported no leakage with stress and full satisfaction as well as no leakage on clinical examination were considered cured. Those who reported

Table 2. Operative data distribution among study group.

Operative data	Total (n = 48)
Operative time (min)	
Range	40–5
Mean ± SD	48.65 ± 7.20
Blood loss (ml)	
Range	50–
Mean ± SD	140.83 ± 44.95
Urethral injury	
No	47 (97.9%)
Yes	1 (2.1%)
UB injury	
No	47 (97.9%)
Yes	1 (2.1%)
Catheter (Days)	
Range	1–15
Mean ± SD	1.56 ± 2.73
Hospital stay 'Days'	
Range	1–3
Mean ± SD	1.06 ± 0.32

leakage only with sever exertion with reduction in the daily pad use, were partially satisfaction with the result in addition to negative stress test were considered improved. On the other hand failures were considered if none of the above criteria was fulfilled.

Statistical analysis: Version 20.0 of the statistical package for social sciences (SPSS Inc., Chicago, Illinois, USA) was used to analyze the recorded data. The mean ± standard deviation (SD) was used to express quantitative data. Percentage and frequency were used to express qualitative data.

Comparing related samples, a paired sample *t*-test was employed to determine significance. The Wilcoxon signed-rank sum test was used to compare differences in non-parametric data across time. An independent-samples *t*-test of significance was employed to compare two means. To examine the relationship between pre- and post-program (paired) qualitative variables, McNemar's test from the χ^2 test was used.

3. Results

The follow-up data of the study retrieved from this medical records summarized in [Tables 3 and 4](#) and [Figs. 1 and 2](#).

4. Discussion

Over the past 20 years mesh-based bladder neck procedures or mid-urethral slings (MUS) have become the preferred methods of treating stress urinary incontinence (SUI). Despite the fact that the procedure was thought to be generally safe, there has been a sharp increase in the number of cases with

Table 1. The baseline characteristics of the research groups.

Baseline characteristics	Total (n = 48)
Age (years)	
Range	30–68
Mean ± SD	47.42 ± 9.81
BMI [wt/(ht)²]	
Range	22–36.9
Mean ± SD	27.86 ± 3.09
Menopausal status	
Post	21 (43.8%)
Pre	27 (56.3%)
Parity	
Range	1–7
Mean ± SD	3.83 ± 1.28

Table 3. Comparison between preoperative, 1st and 5th year follow-up ICIQ.

ICIQ-FLUTS	Preoperative n (57)	1 year n (57)	5 year n (48)	P value (preoperative with 5years)
ICIQ-FLUTS scale (main±SD)	18.08 ± 1.69	5.98 ± 4.05	2.15 ± 1.36	<0.001 ^a
ICIQ-FLUTS subscale;				
Filling	5 (3–8)	1 (0–6)	0 (0–2)	<0.001 ^a
Voiding	0 (0–1)	1 (0–2)	1 (1–2)	0.5
Incontinence	14 (12–15)	1 (0–11)	1 (0–11)	<0.001 ^a
ICIQ- FLUTS bother subscale;				
Filling	15 (9–25)	2.5 (0–18)	1 (0–11)	<0.001 ^a
Voiding	0 (0–2)	2 (0–4)	0 (0–2)	0.14
Incontinence	40(33–45)	2 (0–28)	0 (0–12)	<0.001 ^a

^a P value < 0.05 is significant.

Table 4. Comparison between early 1st years and late 5th year according to outcome.

Outcome	Early (1st year)	Late (5th year)	P value
Cured	25 (52.1%)	40 (83.3%)	0.002 ^a
Improved	20 (41.7%)	5 (10.4%)	<0.001 ^b
Failed	3 (6.3%)	3 (6.3%)	1.000

P value > 0.05 is insignificant.

^a P value < 0.05 is significant.

^b P value < 0.001 is highly significant.

erosion into the lower urinary tract. Mesh erosion was originally note in 2001, but it is now understood to be an alarming long-term side effect of MUS surgery, which prompted the creation of the ATO sling.⁵

In the current study, we followed up the patients after 5 years with regard to the ICIQ-FLUTS scale, stress test, and post-voiding residual urine (PVRU) by ultrasound. At 1 and 5 years, we discovered a significant improvement in the ICIQ-FLUTS scale and ICIQ-FLUTS bother scale, where the main±SD of preoperative ICIQ, was 18.08±(1.69) compared to 5.98±(4.05) and 2.15±(1.36) at 1 and 5 years respectively. The objective assessment show a significant drop in the number of patients with +ve stress test at 1 and 5

years. (P value < 0.001). While the main±SD of preoperative PVRU was 12.90±(10.56) compared to 8.13±(7.67) and 8.13±(7.67) at 1 and 5 years respectively with a P value of <0.05. In 18 patients who had an available ICIQ-FLUTS score at least one year post surgically, Linder and Elliott² found that there had been a significant improvement in the subscales measuring voiding, incontinence, and filling (P = 0.007, P = 0.02, and P = 0.004). All patients complete a three-month and one-year follow-up, according to Vasudeva et al.,⁶ The ICIQ-FLUTS score improved significantly at three months (P < 0.001) and one year (P < 0.001), with a preoperative ICIQ score of 11.83±(3.14), a three-month ICIQ score of 2.9±(2.31), and a one-year ICIQ score of 2.53±(2.01) and a statistically significant reduction in PVRU in follow-up compared to preoperative, with a median post-operative PVRU of 0 (0–45). Only 2 patients (6.67%) at the 3-month follow-up experienced straining, poor flow (<10 ml/s), and high PVRU (>100 ml).

The maximum follow-up period in the reported literature was 1 year. All confirmed the statistically significant to preoperative but none could demonstrate long follow-up data.

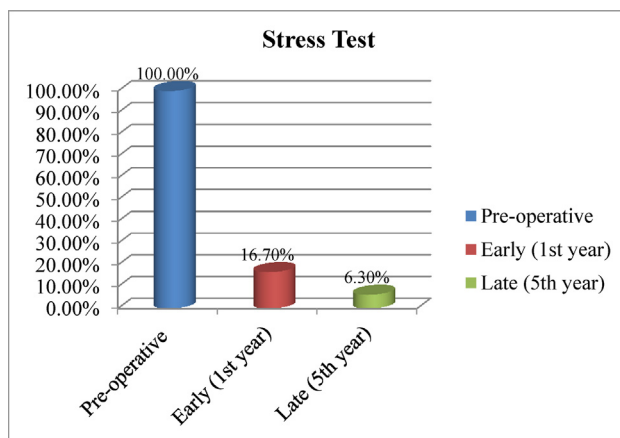


Fig. 1. Comparison between preoperative, 1st and 5th year follow-up stress test.

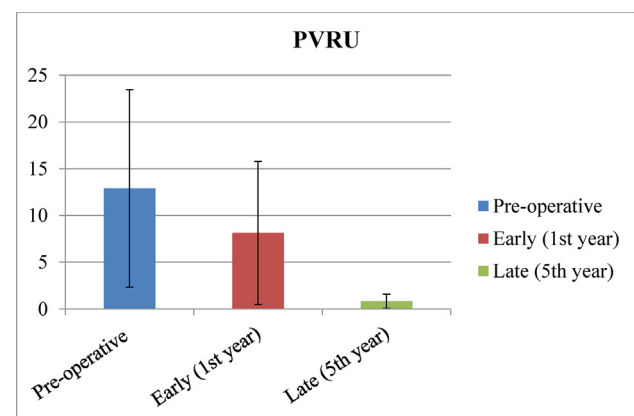


Fig. 2. Comparison between preoperative, 1st and 5th year follow-up PVRU.

Mesh erosion into the vagina, bladder, or urethra is a consequence of the mid-urethral sling (MUS) utilizing synthetic materials.⁷ In contrast, no case of erosion or exposure in ATO over the long-term (5years) was reported. There were 2 women suffering from dyspareunia (2.1%) after the operation and persistent for 5 year with no other obvious local cause and no exposure e.

The subjective cure rate was 100% (22/22) in the study conducted in 2020 by Cubuk et al.⁸ In 2016, Linder and Elliott² observed an 85% (28/33) rate of success, with just 5 patients requiring retreatment after one year. Laufer et al.,⁹ found a total rate of success of 94.5% (17/18) after 1 year follow-up. While, our initial result the success rate was 93.8% after 1 year follow-up. And after long-term (5 year) follow-up the overall success rate was 93.7%. To our knowledge this is the longest period of follow-up of ATO rectus sling and these results after 5 years follow-up denotes that ATO has a durable cure rates with no long-term complication.

4.1. Conclusion

The 5 years follow-up of patients with SUI who underwent ATO fascia sling fixation show significant improvement in the subjective and objective criteria. The durability of the success and the absence of bothersome complication put this procedure on the frontline of treating such patients.

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All authors have a substantial contribution to the article.

Conflicts of interest

The authors declared that there were NO conflicts of Interest.

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