

Original Article

Comparison of Trans-Viginal Tape (TVT) and Trans-Obturator (TOT) Tape Methods for Management of Stress Urinary Incontinence among Women with Post-Menopausal Condition

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Abstract

Objective: To compare the frequency of success of TVT versus TOT for SUI in postmenopausal women.

Methodology: A randomized control trial study was conducted at department of Urology, Sharif Institute of Urology and Renal Transplant, Lahore from 11-07-2019 to 10-01-2020. Females of postmenopausal age presenting with stress urinary were included in the study however, the patients with bleeding diathesis, untreated urinary tract infection. Diabetes and chronic kidney diseases were excluded from study. Patients were divided into two groups (A & B) after taken an informed consent. In group A, patients underwent TVT and in group B, patients underwent TOT. After 3 months, patients were evaluated for symptoms of stress urinary incontinence and stress test. Both groups were compared by using chi-square test for desired outcome with p value ≤ 0.05 as significant.

Results: Mean durations of menopause were 10.94 ± 3.91 and 6.75 ± 1.05 years and mean duration of symptoms were 6.42 ± 2.94 and 7.39 ± 1.82 years in groups A and B, respectively. Majority of patients were married i.e. 66.0% and 74.0% and sexually inactive i.e. 88.0% and 94.0%, in groups A and B, respectively. Successful treatment was observed in 70.0% patients after TVT procedure and 94.0% patients after TOT procedure (p-value= 0.002).

Conclusion: Higher success rates were observed in postmenopausal women of < 50 and > 70 years of age, underweight and normal weight women, unmarried, sexually inactive, women with less than 5 years of Duration of menopause and less than 5 years of duration of symptoms of urinary stress incontinence. Objective: To determine the impact of midlife on professional life by exploring the workplace challenges faced by women.

Keywords: Transvaginal vaginal tape; transobturator tape; stress urinary incontinence.

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Introduction

World health organization (WHO) reported that older adults with more than the age of 65 years old often suffers from urinary incontinence, as united nation estimated that the world's population is aging rapidly.¹ According to an estimation the 703 million people of the world are over the age of 65 years, whereas the prediction says that number will reach 1.5 billion by the year 2050.² The "International association of urinary incontinence (ICS)" defines the disease as uncontrolled leakage of urine from bladder is said to be the urinary incontinence.³

Stress urinary incontinence (SUI) is one of the common diseases among the females which is often associated

with obesity and age factors. SUI is highly prevalent among women and effects almost 10%-55% of women considerably effects the quality of life of women with increasing age.⁴ Urinary incontinence can be well explained with the symptoms of losing control on urine, unwanted leakage of urine upon exertions, coughing, sneezing. Considering the not life threatening nature of SUI disease it effects the multiple complications, physical and psychological suffering among elderly population.⁵

The SUI is a disorder of pelvic region of women body, the prevalence peak is around 30-40% in midlife of women.^{1,4} The urinary incontinence also effects the

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self-esteem of women reportedly 10% of women expressed the leakage per week, where the pathogenic factor includes age, hormone levels, menopause, body mass index (BMI), and closely related to child births, pregnancies, pelvic pains, history with pelvic surgeries, diet and life style. Few epidemiological studies conducted in Pakistan showed that the 11.5% (581/5064; CI 10.6-12.3) prevalence in the Common type of SUI 4.7% (95% CI 4.1-5.3).⁶

The disease requires the long term consistent management and variety of surgical treatments. The introduction of mid-urethral sling procedure in the management of urinary incontinence has brought a change in the decision processes and likely to be more adoptable procedure with greater rates of acceptance.⁷ One study showed the success rate was 93.2% with Transobturator tape in post-menopausal females presenting with stress urinary incontinence⁸ Another study reported the frequency of success was 84.1% with Transvaginal tape in post-menopausal females presenting with stress urinary incontinence. One study found that percentage of success i.e. 77.3% with Trans obturator tape and 71.4% with Trans-vaginal tape in post-menopausal females presenting with stress urinary incontinence ($p > 0.05$).⁸ In a Pakistani study, with TVT, success rate was 98% in Pakistani women with SUI.⁹

Literature showed that Trans-vaginal tape is more successful in resolution of stress urinary incontinence as compared to Trans-obturator tape. But controversial result has been noticed in literature¹⁰. We are unable to implement the method because of paucity of local data regarding success of Trans-vaginal tape and Trans-obturator tape. The Trans Obturator Tape (TOT) is a surgical procedure that replaces narrow ribbon of polypropylene below the urethra, the ribbon mesh supports to pass the urine out of the body and holds the urine and prevent the involuntary urine leakage.¹¹

Given in the different prevalence studies the need of consistent interventions to control the disease condition, complication and risk factors associated with UI¹². There is a difference in frequency of success of trans-vaginal tape versus trans-obturator tape for stress urinary incontinence in postmenopausal women due to lack of sufficient reports this study reports to compare the frequency of success of trans-vaginal tape versus trans-obturator tape for stress urinary incontinence in postmenopausal women in terms of achievement of continence. The rationale of this study was to compare

the outcome of trans-vaginal tape versus trans-obturator tape for stress urinary incontinence in postmenopausal women.

Methodology

A Randomized control trial was conducted at Department of Urology, Sharif Institute of Urology and Renal Transplant, Lahore from 11-07-2019 to 10-01-2020 after taking project approval (CPSP/REU/URO-2018-082-951). A sample size of 100 cases; 50 cases in each group was calculated with 80% power of study, 5% level of significance and taking expected percentage of success i.e. 93.2% with TOT¹³ and 71.4% with TVT⁷ in post-menopausal females presenting with stress urinary incontinence. In post-menopausal females presenting with stress urinary incontinence as per operation definition i.e., "the unintentional loss of urine even during the normal routine like coughing, sneezing, walking, heavy lifting and any pressure on bladder". Females of postmenopausal age presenting with stress urinary were included in the study however, the patients with bleeding diathesis, untreated urinary tract infection, diabetes and chronic kidney diseases were excluded from study. Non-probability consecutive sampling technique was used to collect the data from females of postmenopausal age presenting with stress urinary incontinence. Patients were divided into 2 groups of 100 patients (50 in each group) in the study from Department of Urology, (Sharif Institute of Urology and Renal Transplant, Lahore). Informed consent was obtained. Patient's data including name, age, BMI, marital status, sexual activity and vaginal births) were taken. Duration of menopause and duration of symptoms were also be noted. In group A, patients were undergone TVT however the in-group B, patients were undergo TOT. All procedures were done by consultant urologist with assistance of researcher. All procedure were done under spinal anesthesia. After procedure patients were shifted in post-surgical wards and then were discharged from there. All patients were followed-up in OPD for 3 months. First follow-up was done after one week of surgery, second visit was after fifteen days and then monthly visit till 3 months. After 3 months, patients were evaluated for symptoms of SUI and stress test.

Patients, who still showed symptoms and positive stress test (leakage of urine on cough impulse) was managed with pharmacological therapy. All this information was recorded on performa. Statistical

analyses were performed on SPSS version 21. Mean±SD was calculated for age, BMI, duration of menopause and duration of symptoms. Frequency and percentage were calculated for marital status, sexual activity, vaginal births and outcome. Both groups were compared by using chi-square test for desired outcome. P-value≤0.05 was taken as significant.

Results

There were total one hundred patients included in this study. Distribution of patients by Age: In Group A, the mean age of the postmenopausal women with Stress Urinary Incontinence was 58.96 ± 1.64 years. Out of 50 postmenopausal patients with urinary stress incontinence, there were 1 (2.0%) patients of age range of <50 years, 38 (76.0%) patients of age range of 51 – 60 years, 10 (20.0%) patients of age range of 61 – 70 years and 1 (2.0%) patient of age range of >70 years. (Table I)

In Group B, mean was calculated for ages of the postmenopausal status of women with Stress Urinary Incontinence was 56.41±2.09 years. Out of 50 postmenopausal patients with urinary stress incontinence, there were 2 (4.0%) patients of age range of <50 years, 42 (84.0%) patient of ages 51 – 60 years range 5 (10.0%) patients of age range of 61 – 70 years and 1 (2.0%) patient of age range of >70 years.

Table I: Demographic details of the patients. (n=100)

Age of patients in years	Group-A (n=50)		Group-B (n=50)	
	N	%	N	%
<50	1	2.0%	2	4.0%
51 – 60	38	76.0%	42	84.0%
61 – 70	10	20.0%	5	10.0%
>70	1	2.0%	1	2.0%
Mean ±SD	58.96 ± 1.64 years		56.41 ± 2.09 years	
P-value	0.531**			
BMI				
<18.5	1	2.0%	2	4.0%
18.5-24.9	9	18.0%	6	12.0%
25-29.9	27	54.0%	23	46.0%
≥30	13	26.0%	19	38.0%
Mean ± SD	28.98 ± 2.46 Kg/m ²		32.61 ± 1.98 Kg/m ²	
P-Value*	0.623**			

In group A, the mean BMI of postmenopausal women with Stress Urinary Incontinence was 28.98 ± 2.46 Kg/m². Out of 50 patients, there were 1 (2.0%) postmenopausal women with Stress Urinary

Incontinence of BMI range of <18.5 Kg/m², there were 9 (18.0%) patients of BMI range of 18.5 – 24.9 Kg/m², 27 (54.0%) patients of BMI range of 25 – 29.9 Kg/m², and 13 (26.0%) patients of BMI range of ≥30 Kg/m². In the group-B, The mean of BMI among women with SUI showed the value of 32.61±1.98 Kg/m². 4.0% (n=2) of postmenopausal women SUI had BMI value <18.5 Kg/m² shown in table II.

Table II: Duration of Menopause and symptoms

Duration of menopause (Years)	Group A (n=50)		Group B (n=50)	
	N	(%)	N	(%)
<5	18	36.0%	21	42.0%
≥5	32	64.0%	29	58.0%
Mean ± SD	10.94 ± 3.91 years		6.75 ± 1.05 years	
P-Value	0.3**			
Duration of menopause Symptoms				
<5	20	40.0%	14	28.0%
≥5	30	60.0%	36	72.0%
Mean ± SD	6.42 ± 2.94 years		7.39 ± 1.82 years	
P-Value	0.487*			
Chi-square Mean ± SD test *significant **statistically not significant				

In group A, the mean duration of menopause of postmenopausal women with Stress Urinary Incontinence was 10.94 ± 3.91 years. Out of 50 patients, there were 18 (36.0%) postmenopausal women with less than 5 years of duration of menopause and 32 (64.0%) patients with more than 5 years of duration of menopause.

In group B, the mean duration of menopause of postmenopausal women with Stress Urinary Incontinence was 6.75 ± 1.05 years. Out of 50 patients, there were 21 (42.0%) postmenopausal women with less than 5 years of duration of menopause and 29 (58.0%) patients with more than 5 years of duration of menopause.

The 12.0% (n=6) patients showed BMI value of range 18.5-24.9 Kg/m². however 38.0% (n=19) patients showed BMI range of 25-29.9Kg/m² whereas majority of patients i.e., 38.0% (n=19) showed the BMI value ≥30 Kg/m² showing P-value of 0.623, whereas the marital status was assessing among both groups shown in Figure no. 1.

Table III showed the success rates by age group for two groups A and B. Group B demonstrated higher success rates across all age categories with an overall success rate of 94.0% compared to 70.0% for group A. The table also highlighted significant differences in

success across age groups with p values of 0.005 for group A and <0.001 for group B, indication statistical significance in the outcomes.

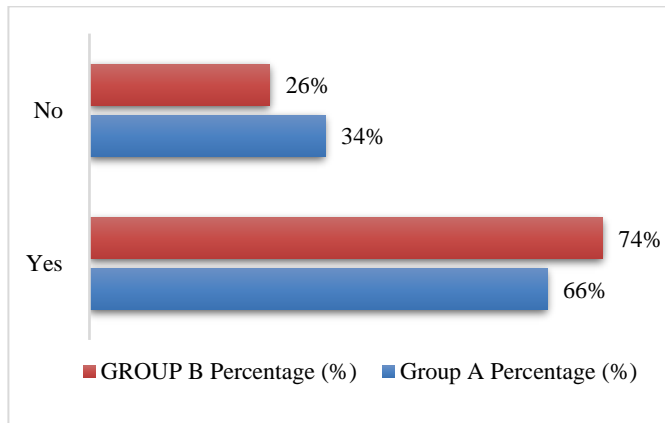


Figure 1. Marital status among both groups.

Table III: Data Stratification (Success) by effect modifier

Age Groups (Years)	Success			
	Group A (n=50)		Group B (n=50)	
	Yes n (%)	No n (%)	Yes n (%)	No n (%)
< 50	1 (100.0)	0(0.0)	2 (100.0)	0(0.0)
51 – 60	28(73.6)	10(26.31)	40(95.23)	2(4.76)
61 – 70	5(50.0)	5(50.0)	4(80.0)	1(20.0)
>70	1(100.0)	0(0.0)	1(100.0)	0(0.0)
Total	35(70.0)	15 (30.0)	47 (94.0)	3 (6.0)
P value*	0.005		<0.001	

Discussion

Stress urinary incontinence is one of the common diseases among the females which is often associated with multiple factors. The study heightened the numerous dependent factors and association of factors on the disease condition. In our study, the majority of patients i.e. 54.0% and 46.0% were overweight in groups A and B, respectively. In a study¹⁴, the mean body mass index of patients was 26.4±3.2 Kg/m². The Body mass index was also compared to the retrospective study conducted¹⁵ in west China showed a value 1.273 (P=0.1862) in comparison to our study. The mean durations of menopause of postmenopausal women with Stress Urinary Incontinence were 10.94±3.91 years and 6.75±1.05 years in groups A and B, respectively. In our study, the majority of patients i.e. 64.0% and 58.0% had more than 5 years of duration of menopause in groups A and B, respectively.

Our study also assessed the mean duration of symptoms of Stress Urinary Incontinence in postmenopausal women, the results showed the

duration of symptoms for 6.42±2.94 years and 7.39 ± 1.82 years in groups A and B, respectively, the results were compared with the study conducted on the symptoms and associated duration of symptoms showed the similar findings¹⁶ In our study, the majority of patients i.e. 60.0% and 72.0% had more than 5 years of duration of symptoms of Stress Urinary Incontinence in groups A and B, respectively. In our study, the majority of patients i.e. 66.0% and 74.0% were married in groups A and B, respectively and majority of patients i.e. 88.0% and 94.0% were sexually inactive in groups A and B, respectively the results found in the study are in agreement with the literature, the Female Sexual Function Index was assessed in a study showed that majority of females were sexually inactive, and married females seems to have UI more compared with unmarried females.¹⁷⁻¹⁸ In our study, the majority of married patients i.e. 87.87% had experienced vaginal births in groups A and B, respectively similarly found in a study conducted on the numbers of cases of UI post one year of delivery showed the greater number of females suffers from UI after vaginal birth.¹⁹

Cross tabulated the data (success) with marital status found that the success after Trans-vaginal Tape and Trans obturator Tape procedures was more in unmarried postmenopausal women i.e. 82.35% and 100.0%, respectively the similar finding was seen in a study²⁰ as compared to married postmenopausal women i.e. 63.63% and 91.89%, respectively. We also cross tabulated the data (success) with sexual activity and found that the success after Trans-vaginal Tape and Trans obturator Tape procedures was more in sexually inactive postmenopausal women i.e. 72.72% and 95.74%, respectively as compared to sexually active females i.e. 50.0% and 66.67%, when compared.²¹⁻²²

We also cross tabulated the data (success) with Duration of symptoms of urinary stress incontinence and found that the success after Trans-vaginal Tape and Trans obturator Tape procedures was more in postmenopausal women with less than 5 years of Duration of symptoms of urinary stress incontinence i.e. 90.0% and 100.0%, respectively as compared to females with more than 5 years of stress incontinence symptoms i.e. 56.67% and 91.67%, respectively the more pronounced explanation of symptoms have been seen in the literature²³⁻²⁵ showing the postmenopausal women with duration less than 5 years of total span. Further studies should be conducted to evaluate the

outcome of Trans-vaginal Tape and Trans obturator Tape procedures for management of urinary stress incontinence in postmenopausal women.

Conclusion

With the raising numbers of patients with stress urinary incontinence among women with the menopausal age effecting the quality of life, which requires the management however the study suggest that the Successful treatment was observed in more numbers of patients after trans obturator tape procedure. Higher success rate was observed in postmenopausal women of < 50 and > 70 years of age, underweight and normal weight women, unmarried, sexually inactive, women with less than 5 years of Duration of menopause and less than 5 years of Duration of symptoms of urinary stress incontinence.

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