



Research Article

## UROLOGICAL MANAGEMENT OF STRESS URINARY INCONTINENCE - OUR INSTITUTIONAL EXPERIENCE

Vasanthamani P<sup>1</sup>., Govindarajan R<sup>2</sup>., Periyasamy<sup>3</sup>., Senthilvel<sup>4</sup> and Asha Valantine L<sup>5\*</sup>

<sup>1</sup>Govt. Kilpauk Medical College & Hospital, Kilpauk

<sup>2,3,4,5</sup>Department of Urology, Govt. Kilpauk Medical College & Hospital, Kilpauk

### ARTICLE INFO

#### Article History:

Received 9<sup>th</sup> March, 2018

Received in revised form 16<sup>th</sup>

April, 2018 Accepted 26<sup>th</sup> May, 2018

Published online 28<sup>th</sup> June, 2018

#### Key words:

Stress urinary incontinence, sling procedures, TOT, Needle suspension procedures, Stammey's Procedure, Sacrocolpopexy

### ABSTRACT

**Background:** Urinary incontinence (UI) is a common condition that affects approximately 27% (9-57%) of women worldwide. It has a negative impact on quality of life, especially in the domains of social, physiological, physical and sexual well-being. The majority of the patients with UI have either stress or mixed incontinence. Stress urinary incontinence (SUI) has an observed prevalence of between 4% and 35%. Initial management of SUI includes behavioral therapy with or without pharmacotherapy. Then many types of surgery that have been performed to treat women with SUI. In this article we review our institutional experience on urological management of stress urinary incontinence, various procedures done and their outcomes.

**Methods:** This is a prospective analysis of case series of patients who presented with stress urinary incontinence to the Urology Department, in Government Kilpauk Medical College Hospital during the period of May 2017 to May 2018. Patients were thoroughly evaluated clinically & with all relevant investigations depending upon the individual clinical scenario. Patients were explained in their own language the nature of treatment and the principle behind it. Patients planned to treat SUI surgically were chosen carefully as indicated. Any complications of the procedure and patient acceptance were evaluated at each follow-up. The outcome of the treatment given were evaluated in the overall improvement in patient's quality of life.

**Results:** In our study a total of 38 patients within the age range of 35 - 55 years with stress urinary incontinence were evaluated. All the patients included in this study were married with children. The distribution of parity noted were <2 in 6 (16%), >4 in 2 (5%) with the majority being with parity of 2-4 which is 30 (79%). In our study 37 patients were initially tried with behavioral therapy with pelvic floor exercises and dietary modifications. One patient with vault prolapse was planned for surgical correction by abdominosacro-colpopexy and proceeded. Patients who failed behavioral therapy were attempted pharmacological management. Patients who failed to respond to both behavioral and medical management, were selected for surgical correction after thoroughly evaluating. Behavioral therapy was opted in 37 patients with a success rate of 67.57%, medical management was given for 17 patients, including those who failed behavioral therapy. Of these 10 patients has significant improvement in symptoms with success rate of 58.82%. Seven patients who failed conservative measures and one patient with associated vault prolapse was treated with surgery with success rate of 100%. Of this, Transobturator sling procedure with prolene mesh (TOT) was proceeded in 4 patients, Stammey's needle suspension was carried out in 3 patients and Abdomino sacrocolpopexy was done in one patient. In our study none of the patients had significant intraoperative/ postoperative complications. Postoperative results showed all patients were fully continent, with mild lower urinary tract symptoms reported in 2 patients. Incontinence was not reported in any of the patients postoperatively.

**Conclusion:** Urological management of SUI involves multimodality therapy including behavioral, pharmacologic and surgical therapy. Treatment modality should be individualized to each patient taking into account various factors affecting urethral continence. Surgical therapy provides 100% success rate in terms of continence with minimal complications.

Copyright©2018 Vasanthamani P et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

### INTRODUCTION

Stress urinary incontinence (SUI) is defined as involuntary leakage on effort or exertion or on sneezing or coughing. It has an observed prevalence of between 4% and 35%. Effective nonsurgical therapies include conservative, pelvic floor muscle training (PFMT), pharmacologic treatment

(Imipramine, Duloxetine, Estrogens). Surgical therapy for this condition has existed for well over 100 years. Currently, approximately 200 different surgical procedures have been described. No single procedure or intervention is optimal for all patients. Having a variety of treatment options offers the possibility of tailoring therapy to the desires and needs of the individual patient. The key to an optimal therapeutic outcome is an accurate diagnosis combined with the selection of an appropriate intervention that is acceptable to the patient after balancing multiple factors.

\*Corresponding author: Asha Valantine L

Department of Urology, Govt. Kilpauk Medical College & Hospital, Kilpauk

In this article we review our institutional experience on the urological management of Stress Urinary Incontinence.

**Aim of the Study**

The objective our study is to assess the role of various treatment options in the management of female stress urinary incontinence in terms of results, patient acceptance and complications.

**MATERIALS AND METHODS**

This is a prospective analysis of case series of 38 patients who presented with stress urinary incontinence to the Urology Department, in Government Kilpauk Medical College Hospital during the period of May 2017 to May 2018.

Patients within the age range of 35 - 55 years and with documented SUI symptoms of grade 2 and grade 3 as per the Stamey incontinence scale after demonstrating SUI by the cough stress test were included in this study. Grades on the Stamey scale were defined as follows: 0 = dry; 1 = urine leakage with vigorous activity; 2 = urine leakage with minor activities; and 3 = urine leakage all the time regardless of the activity or position.

All patients underwent a thorough history taking, general physical examination, systemic and local examination. All baseline and special/specific investigations (urodynamic study, cystogram and cystoscopy), were conducted on the patients depending upon each patients clinical scenario and the need for the specific investigation. All patients were evaluated regarding the onset of SUI, its impact on quality of life, parity and previous pelvic surgeries if any. Any chronic illnesses that affect fluid balance like CHF, DM, Renal insufficiency and medication intake that have adverse urinary effects like diuretics, antidepressants, antipsychotics, anticholinergics, sympathomimetics were asked for.

Physical examination included both systemic and local examination. Presence of vaginal prolapse, assessment of vaginal turgor, evaluation for occult neurological conditions and objective demonstration of SUI on cough stress test were evaluated.

Patients were explained in their own language the nature of treatment and the principle behind it. Patients planned to treat SUI surgically were chosen carefully as indicated. Urine culture was obtained in all patients pre-operatively and any infection if present was treated.

Patients with mixed incontinence with predominant urge urinary incontinence (UUI), history of previous pelvic floor surgery, prolapse of uterus and uncontrolled urinary tract infections were excluded. Patients with significant co-morbid illnesses like chronic obstructive pulmonary disease and coronary artery disease, were excluded from the study.

All patients were initially managed with conservative measures like behavioral and pharmacological therapy except for one patient who presented with associated vault prolapse, in whom surgical correction was done. Behavioral therapy consists of patient education, fluid restriction, bladder training, timed voiding and pelvic floor muscle training, with or without biofeedback. Patients who remained symptomatic after an initial trial of conservative management were chosen for surgical correction after ruling out associated intrinsic sphincter deficiency. The modality of surgical correction was

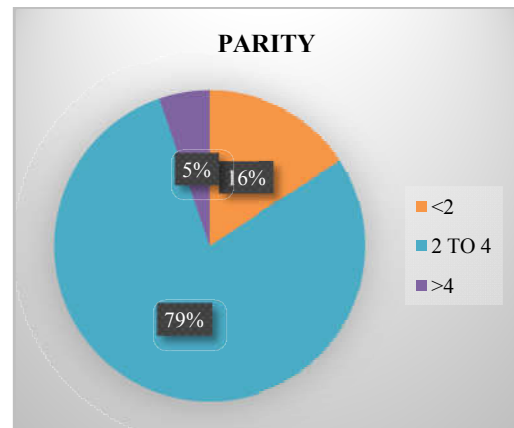
individualized according to each patient. In our study period totally 8 patients were chosen for surgical correction. Of these TOT was done in four patients, Stamey’s in 3 patients and abdominosacrocolpopexy was done in one patient with associated vault prolapse. Any complication(s) (intra/postoperative) were noted. After discharging, the patients were followed up and any complications of the procedure and patient acceptance were evaluated at each follow-up. The outcome of the treatment given were evaluated in the overall improvement in patient’s quality of life.

**RESULTS AND ANALYSIS**

In our study a total of 38 patients within the age range of 35 - 55 years with stress urinary incontinence were evaluated. All the patients included in this study were married with children. The distribution of parity noted were <2 in 6 (16%), >4 in 2 (5%) with the majority being with parity of 2-4 which is 30 (79%). All patients included in our study had vaginal delivery. There has been an associated increase in incidence of SUI with increasing parity and vaginal delivery.(Table-1& Fig-1)

**Table 1** Distribution of Parity

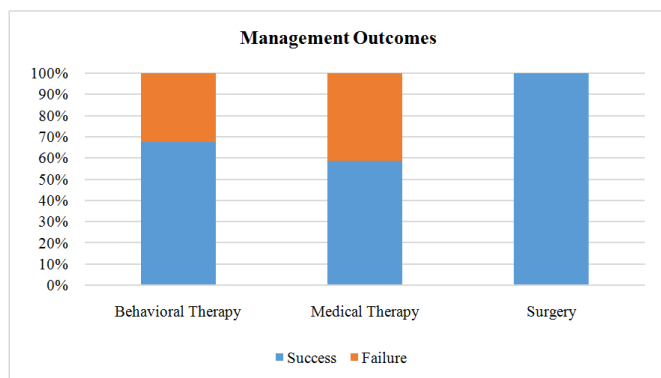
Parity	Number of patients	Percentage of distribution
<2	6	16%
2-4	30	79%
>4	2	5%



In our study 37 patients were initially tried with behavioral therapy with pelvic floor exercises and dietary modifications. One patient with vault prolapse was planned for surgical correction by abdominosacro-colpopexy and proceeded. Patients who failed behavioral therapy were attempted pharmacological management. Patients chosen for pharmacological treatment were given T.Imipramine 75mg OD for 4 week and assessed for improvement in their symptoms. Patients who failed to respond to both behavioral and medical management, were selected for surgical correction after thoroughly evaluating.

**Table 2** Management of SUI & Outcome In Terms of Continence

Management	No. of Patients	Success	Failure
Behavioral Therapy	37	25 (67.57%)	12
Medical Therapy	17	10 (58.82%)	7
Surgical Correction	8	8 (100%)	-



Behavioral therapy was opted in 37 patients with a success rate of 67.57%, medical management was given for 17 patients, including those who failed behavioral therapy. Of these 10 patients has significant improvement in symptoms with success rate of 58.82%. Seven patients who failed conservative measures and one patient with associated vault prolapse was treated with surgery with success rate of 100%.

Surgical correction was done in 8 patients during the study period. Of this, Transobturator sling procedure with prolene mesh (TOT) was proceeded in 4 patients, Stamey’s needle suspension was carried out in 3 patients and Abdominal sacrocolpopexy was done in one patient.

SURGERY DONE	Patients
Tot	4
Stamey’s procedure	3
Abdominal sacrocolpopexy	1

In our study none of the patients had intraoperative complications. In the immediate postoperative period, mild complications line urgency (2), dysuria (2), fever (1), hematuria (1) were reported. No major complications were noted in the immediate postoperative period. In follow up one patient with TOT mesh had infection which required mesh removal.

**Postoperative Complications**

Complications	Incidence
Urgency	2
Dysuria	2
Fever	1
Hematuria	1
Persistent Incontinence	0
Obstructive LUTs	0
Infection	1

None of the patients in our study had obstructive LUTs or persistent incontinence following surgical correction.

Postoperative results showed all patients were fully continent, with mild lower urinary tract symptoms reported in 2 patients. Incontinence was not reported in any of the patients postoperatively. Even the patient who required mesh removal following infection, had not reported incontinence. This may be due to the fibrosis surrounding the periurethral tissues which would have improved the urethral coaptation.

**DISCUSSION**

Urinary incontinence that occurs as the result of a poorly functioning urethra is designated as SUI. As its name implies, this condition occurs when a compromised urethral sphincter is no longer able to resist the flow of urine from the bladder during periods of increased intraabdominal pressure. The

following factors contribute to the maintenance of urethral continence: passive urethral closure and coaptation (mucosal “seal,” smooth and striated muscle, submucosal connective tissue, neurologic integrity), a critical urethral length, maintenance of the normal anatomic position of the bladder neck and proximal urethra, and adaptive changes to the urethra that occur at periods of increased intraabdominal pressure.

Although the etiology of poor urethral function in the stress-incontinent woman is not completely understood, identifiable risk factors for the condition include pregnancy, childbirth, menopause, cognitive impairment, obesity, and advanced age. For example, women who have had vaginal deliveries are at much greater risk for developing SUI than age-matched nulliparous controls or women having delivered by Cesarean section. Furthermore, some studies have shown that the peak prevalence of SUI occurs during or after menopause, implying that hormonal factors, including estrogen levels, are important in maintaining continence. It is well established that the urethra and bladder neck in women have an abundance of both estrogen and  $\alpha$ -adrenergic receptors.

Many factors should be considered when determining the optimal therapy for a patient with SUI. These include the etiology and type of SUI; bladder capacity; renal function; sexual function; severity of the leakage and degree of bother to the patient; the presence of associated conditions, such as vaginal prolapse, or concurrent abdominal or pelvic pathology requiring surgical correction; prior abdominal and/or pelvic surgery; and, finally, the patient’s suitability for, and willingness to accept, the costs, risks, morbidity, and success (and failure) rates associated with each intervention. The decision to treat symptomatic SUI with surgery should be made when the patient’s degree of inconvenience and/or compromised lifestyle are great enough to warrant an elective operation and nonsurgical therapy is either not desired or has been previously ineffective.

For most patients with SUI, however, it is reasonable to discuss first the most reversible, simplest, least invasive, and least expensive intervention (usually behavioral modification). More invasive or expensive interventions, such as surgery, are pursued if the patient decides that the current (presumably nonsurgical) therapy is either ineffective or otherwise undesirable.

**Behavioral Therapy:** A behavioral modification program for SUI consists of the following: 1) patient education regarding the function of the lower urinary tract, 2) fluid and dietary management, 3) timed voiding, prompted voiding, or bladder training, and 4) a voiding log or diary, usually combined with 5) PFEs or Kegel exercises. For most patients, the aim of behavioral therapy is to help regain bladder control by increasing the effective capacity of the bladder, thereby reducing the symptoms of urinary incontinence. The use of a frequency/volume chart or voiding log plays a central role in bladder training. Outcomes with behavioral therapy are quite good. Fantl and colleagues recorded a 57% reduction in incontinence episodes and a 54% reduction in the quantity of urine loss in older women performing bladder training. The reduction in episodes of incontinence was similar in patients with urge incontinence and stress incontinence.

**Pharmacologic Therapy:** Pharmacologic therapy has been widely used, with varying success rates, for the treatment of SUI in women. Various pharmacological agents used in

management of SUI are alpha adrenergic agonists, Imipramine, Duloxetine, beta adrenergic agonists and antagonists. Various studies have showed varying success rates. There is lack of consensus on effective pharmacological therapy in the management of SUI.

**Surgery:** Many patients may choose to discontinue an initial trial of conservative therapy or may eventually become dissatisfied or disenchanting with nonsurgical SUI therapies because of cost, discomfort, inconvenience, lack of efficacy, or related complications, such as UTI. For these patients, surgery assumes the primary role in the treatment of SUI. The goal of surgical treatment of urethral incontinence in women is to provide sufficient urethral resistance to prevent urine from leaking from the urethra during increases in intraabdominal pressure, while preserving voluntary, low-pressure, and complete bladder emptying.

When determining the optimal surgical therapy for patients with SUI, many factors should be considered, including the type of SUI, bladder capacity, severity of the leakage, the presence of associated conditions such as vaginal prolapse, and concurrent abdominal or pelvic pathology requiring surgical correction.

In general, surgical correction of female SUI is directed toward one of the 2 following goals:

1. Repositioning the urethra and/or creating a backboard of support or otherwise stabilizing the urethra and bladder neck in a well-supported retropubic (intraabdominal) position that is receptive to changes in intraabdominal pressure
2. Creating coaptation and/or compression or otherwise augmenting the urethral resistance provided by the intrinsic sphincter unit, with (eg, sling) or without (eg, periurethral injectables) affecting urethral and bladder neck support or a combination of both.

Surgery has been associated with impressive cure rates. However, it is also associated with significant potential complications, such as impaired bladder emptying and bladder overactivity. Careful patient selection is essential to reduce the risk of complications and to ensure optimal efficacy of the selected procedure.

Transvaginal "needle suspension" techniques evolved as a minimally invasive procedure for SUI due to urethral hypermobility. The original transvaginal needle suspension was first described by Armand Pereyra, MD, in 1959. Since then, however, many modifications of this procedure have been reported. Each transvaginal urethropexy procedure differs with regard to the method of anchoring, as well as the tissues incorporated on the vaginal side of the procedure (Gittes), whether or not the endopelvic fascia is detached from the tendinous arc of the obturator (Raz), and the use of buttresses or bolsters to hold the suture in the vaginal tissues (Stamey). In our study 3 patients underwent Stamey's procedure with 100% success rate.

Sling procedures provide a "backboard" of support for the vesicourethral junction and in some cases, some degree of urethral coaptation or compression. Nonetheless, it is important that any type of sling be tied with minimal or no tension to prevent bladder outlet obstruction and/or urinary retention. The synthetic slings that consist primarily of polypropylene mesh are placed at the level of the midurethra

and may provide their anti-incontinence effect by reducing urethral mobility or producing a dynamic kink in the urethra during increases in intraabdominal pressure.

Other surgical approaches for SUI management include transabdominal vesicourethropexy (Marchetti-Krantz procedure, Burch colposuspension, paravaginal Richardson repair), periurethral injectable agents, artificial sphincter etc. showing good outcomes in various studies when performed in properly selected patients.

In our study we preferred TOT and Stamey's transvaginal needle suspension surgeries for SUI correction. Careful selection of patients for surgical correction, taking into account of various factors resulted in 100% success rate with no significant complications.

## CONCLUSION

There is no optimal therapy for all patients with SUI. However, the selection of an appropriate intervention for a properly motivated patient will most often result in an adequate improvement in symptoms. The consensus appears to be that the most effective and durable long-term therapies are surgical. The trade-off between nonsurgical and surgical therapies involves factors such as cost, convenience, morbidity, and short- and long-term efficacy. Careful selection of patients after thorough evaluation for surgical correction offers good long term results in the management of SUI.

## References

1. Blaivas JG, Heritz DM. Classification, diagnostic evaluation and treatment overview. In: Blaivas JG, editor. Topics in Clinical Urology-Evaluation and Treatment of Urinary Incontinence. New York: Igaku-Shoin; 1996. pp. 22-45.
2. Groutz A, Gordon D, Keidar R, *et al.* Stress urinary incontinence: prevalence among nulliparous compared with primiparous and grand multiparous premenopausal women. *Neurourol Urodyn.* 1999;18:419-425. [PubMed]
3. Foldspang A, Mommsen S, Djurhuus JC. Prevalent urinary incontinence as a correlate of pregnancy, vaginal childbirth, and obstetric techniques. *Am J Public Health.* 1999; 89:209-212. [PMC free article][PubMed]
4. Cardozo L. Discussion: the effect of estrogens. *Urology.* 1997;50(6A suppl):85.
5. Wein AJ, Rovner ES. Pharmacologic management of urinary incontinence in women. *Urol Clin North Am.* 2002;29:537-550. [PubMed]
6. Fantl JA, Wyman JF, McClish DK, *et al.* Efficacy of bladder training in older women with urinary incontinence. *JAMA.* 1991;265:609-613. [PubMed]
7. Lin HH, Sheu BC, Lo MC, Huang SC. Comparison of treatment outcomes for imipramine for female genuine stress incontinence. *Br J Obstet Gynaecol.* 1999; 106:1089-1092. [PubMed]
8. Richelson E. Pharmacology of antidepressants-characteristics of the ideal drug. *Mayo Clinic Proc.* 1994; 69:1069-1081. [PubMed]
9. Gilja I, Radej M, Kovacic M, *et al.* Conservative treatment of female stress incontinence with imipramine. *J Urol.* 1984; 132:909-914. [PubMed]
10. Thor KB, Katofiasc MA. Effects of duloxetine, a combined serotonin and norepinephrine reuptake inhibitor, on central neural control of lower urinary tract

- function in the chloralose-anesthetized female cat. *J PharmacolExpTher.* 1995; 274:1024. [PubMed]
11. Yasuda K, Kawabe K, Takimoto Y, *et al.* and the Clenbuterol Clinical Research Group, authors. A doubleblind clinical trial of a  $\beta$ 2-adrenergic agonist in stress incontinence. *IntUrogynecol J.* 1993; 4:146-151.
  12. Cardozo L. Role of estrogens in the treatment of female urinary incontinence. *J Am Geriatr Soc.* 1990; 38:326-328. [PubMed]
  13. Marshall VF, Marchetti AA, Krantz KE. The correction of stress incontinence by simple vesicourethral suspension. *SurgGynecol Obstet.* 1949;88:509-518. [PubMed]
  14. Leach GE, Sirls L. Pubovaginal sling procedures. *Atlas UrolClin North Am.* 1994;2:61-71.
  15. Chaikin DC, Rosenthal J, Blaivas JG. Pubovaginal fascial sling for all types of stress urinary incontinence: long-term analysis. *J Urol.* 1998;160:1312-1316. [PubMed]
  16. Cross CA, Cespedes RD, McGuire EJ. Our experience with pubovaginal slings in patients with stress urinary incontinence. *J Urol.* 1998;159:1195-1198. [PubMed]
  17. Wright EJ, Iselin CE, Carr LK, *et al.* Pubovaginal sling using cadaveric allograft fascia for the treatment of intrinsic sphincter deficiency. *J Urol.* 1998;160:759-762. [PubMed]
  18. Dmochowski RR, Appell RA. Injectable agents in the treatment of stress urinary incontinence in women: where are we now? *Urology.* 2000;56:32-40. [PubMed]

**How to cite this article:**

Vasanthamani P *et al* (2018) 'Urological Management of Stress Urinary Incontinence - Our Institutional Experience', *International Journal of Current Advanced Research*, 07(6), pp. 13556-13560.  
DOI: <http://dx.doi.org/10.24327/ijcar.2018.13560.2427>

\*\*\*\*\*