Original Research Article

A retrospective comparison of various stress urinary incontinence surgery with there outcome in a tertiary care teaching institute

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ABSTRACT

Introduction: Stress urinary incontinence is defined as the involuntary loss of urine through the intact urethra caused by a sudden increase in intraabdominal pressure on coughing, walking and in some cases during turning in bed. It is the most common type of urinary incontinence in woman and when it is of sufficient quantity causes a great embarrassment which was frequently underreported UI impairs quality of life, affecting the older person’s emotional well-being, social function, and general health. Incontinent persons often manage to maintain their activities, but with an increased burden of coping, embarrassment, and poor self-perception. Caregiver burden is higher with incontinent older persons.

Study Design: This was a hospital based retrospective study in the department of Gynecology at k. e. m. hospital mumbai India. Total duration of study from enrollment to completion was 2 years. Each patient was followed for 6 months.

Materials and Methods: In the present study the patient presenting to gynecology OPD of k. e. m. hospital with complaint of urinary incontinence were studied. A total 50 patients were included in following study. Working definition was used for classification. History was documented including Age, occupation, severity, duration and frequency of SUI, other menstrual history, urinary symptoms, detail obstetric history, parity, gynecological procedure, pelvic floor trauma, previous urinary tract infection, previous surgeries, trauma in childhood, any spinal surgery, or drugs. A focused physical examination was performed. Lastly stress incontinence was clinically confirmed by “ Bonneys test “. Anal sphincter tone ad sensation at S 2; 3; 4 dermatomes are checked to rule out any neurological lesion. The data were analyzed using appropriate statistical tool.

Results: A total no patient enrolled was 50 during the study period. Majority of the patients fall in the range of 30-50 year of age. Most of the patient having duration of symptoms less than 2 year with more common SUI in multiparty patient, about 60% of patient were having SUI without any previous surgery, 62% of SUI was associated with prolapsed with cystoectocele. In intraoperative complication only one patient having bladder perforation in TVT procedure. In post operative complication urinary retention was found 30% in Kellys placation, 20% in stameys, 20% in TVT, 00% in TOT. However only Kellys plication has more recurrence of SUI in about 33%, 12.5% of recurrence in TVT and 8.3% in TOT of patient. As in stameys the number of follow up patient was only two and none of them had recurrence of sui.

Conclusion: This study is concluded that, since the symptoms of SUI are not life threatening and most of the female are less health conscious the medical help is not sought for longer duration. In the study TOT procedure was found superior with respect long term failure rate and also intra and post operative complication.

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1. Introduction

Stress urinary incontinence is defined as the involuntary loss of urine through the intact urethra caused by a sudden increase in intraabdominal pressure on coughing, walking...
and in some cases during turning in bed. It is the most common type of urinary incontinence in woman and when it is of sufficient quantity causes a great embarrassment which was frequently underreported.

UI is a multifactorial syndrome produced by a combination of genitourinary pathology, age-related changes, and co morbid conditions that impair normal micturation or the functional ability to toilet oneself, or both.

Stress incontinence was first introduced by sir Eardlye Holland in 1928. However, the condition was first recognized in the 19th century, when special procedure for its cure first came to force.

Until more than 2 to 3 decades ago, the diagnosis of urinary incontinence in the female was for the most part made casually, primarily on the basis of history given by the patient. The underlying anatomic abnormality was not precisely understood. Jeffcoate & Roberts [1952] were the first to call attention to the importance of the anatomic configuration of the urethrovesical junction and proximal urethra to the continence mechanism on the basis of their extensive studies using urethrocytography.

UI is not associated with increased mortality. UI impairs quality of life, affecting the older person’s emotional well-being, social function, and general health. Incontinent persons often manage to maintain their activities, but with an increased burden of coping, embarrassment, and poor self-perception. Caregiver burden is higher with incontinent older persons.

Surgical procedures to remedy stress incontinence generally aims to lift and support the urethra-vesical junction, although there is disagreement about the precise mechanism by which continence is achieved.

More than 100 surgical procedures have been described for correction of stress incontinence - vaginal, abdominal, combined, Endoscopic, laproscopic and prosthetic; just to name a few approaches and this abundance of approaches. Signifies the fact that no single approach can claim to benefit all cases of SUI and an accurate selection of cases combined with a meticulous surgical technique and attention to the lower tract female pubic anatomy is a must to ensure success both technical and symptomatic.

2. Aims & Objective

To compare the various procedures in relation to complications and failure rate.

3. Materials and Methods

This was a hospital Based retrospective study conducted in In the gynecology department k. e. m. hospital Mumbai with complaint of urinary incontinence were studied. A total 50 patient were included in following study.

3.1. The study design

This was a hospital based retrospective study

3.2. Study setting & duration

Study was conducted in the department of gynecolog, KEM Hospital Mumbai India.

Total duration of study from enrollment to completion was 2 yeas Each patient was followed for 6 month

3.3. Working Definitions

Case: Women with complaint of involuntary loss of urine on coughing or on increase in abdominal pressure.

Failure: was defined as presence of urinary incontinence after a period of 6 months following SUI surgery.

Post operative urinary retention: It was defined as a persistence of high more than 100 ml post –void residual urine or 20% of voided volume.

3.4. Complications

Intra operative complication: Bladder perforation, urethral injury, bowel injury

Post operative complication: Urinary retention, erosion, infection, hematoma.

3.5. History

Age, occupation, severity, duration and frequency of SUI, other menstrual history, urinary symptoms, detail obstetric history, parity, gynecological procedure, pelvic floor trauma, previous urinary tract infection, previous surgeries. trauma in childhood, any spinal surgery, or drugs

3.6. Examination

A focused physical examination should be performed. The examination is tailored somewhat in each case, based on the specifics of the patient’s incontinence complaint and pertinent medical and surgical history, local and per vaginal examination Each patient should have height, weight, blood pressure, and pulse recorded. Obesity is an important contributor to stress incontinence, and the presence of obesity may influence management decisions. Lastly stress incontinence was clinically confirmed by “ Bonneys test “

Also there are certain urinary symptoms that can mimic stress incontinence and there are certain neurological causes of stress incontinence which need to be distinguished from the true anatomical stress incontinence. The clinical evaluation is therefore aimed at.

1. Establishing the diagnosis of stress incontinence.

2. Establishing the etiology of stress incontinence and once the diagnosis of anatomical stress incontinence is established
3. The degree of anatomical change producing stress incontinence

**Bonneys test**⁶: Patient is examined in lithotomy position with full bladder, stress incontinence is demonstrated by asking the patient to cough. The severity of the problem is assessed, if patient doesn’t lose urine in lithotomy position she is then tilted to 45 degree upright position and asked to cough. This raised the resting bladder pressure by adding the weight of some of the abdominal content. About 80% of patient with surgically curable incontinence lose urine in lithotomy position with coughing. Another 10% required tilting to 45 degree position. The rest 10% demonstrated loss of urine related to coughing only when examined in the standing position.

After stress urinary incontinence is demonstrated bonneys test is carried out by elevating the paraurethral tissue near the bladder neck with two finger and asking the patient to cough. The ability to control the stress incontinence is studied which usually indicate that bladder neck elevation is going to cure the patient. Care is taken not to compress the urethra directly. Next, voided volume and residual urine are checked this may give a clue to neurogenic bladder. Presence of cystocele or rectocele is determined. Anal sphincter tone ad sensation at S2,3,4 dermatomes are checked to rule out any neurological lesion.

3.7. Investigation

Following investigation are helpful in evaluating patient of SUI

1. Urinary microscopy and culture sensitivity: Although urinary tract infection is mentioned in literature as a cause of urinary incontinence, a patient with acute cystitis often have urge incontinence. A patient of urinary incontinence was not helped by clearing the bacteria
2. All routine hematological and other investigation required for anaesthesia fitness were done.

3.8. Treatment of stress urinary incontinence

Before discussing different option in the treatment of SUI an important question should be addressed –who should be treated and why?

After underlying causes are ruled out or treated, most women with incontinence will have symptoms suggesting the stress or the mixed type. Management falls into these general categories:

1. Behavioral
2. Mechanical
3. Pharmacologic
4. Surgical

3.9. Pharmacologic

| Table 1:                  | Topical or vaginal estrogen | Conjugated estrogen | Vaginal atrophy |
|--------------------------|-----------------------------|---------------------|-----------------|
| Anticholinergic agents   | Tolerodine                  | Oxybutynin          | Urgine incontinence (overactive bladder) |
|                          |                             | Propantheline       |                 |
|                          |                             | Darifenacin         |                 |
|                          |                             | Solifenacin         |                 |
| Tricyclic antidepressants|                             | Imipramine *        | Mixed and stress urinary incontinence |
| Alpha-adrenergic agonists|                             | Pseudoephedrine *   | Stress urinary incontinence |
| Selective serotonin and norepinephrine reuptake inhibitor | | | |

4. Results

The result of the current study with respect to various criteria are presented as far as possible in a table form for easy and simplicity. the total number of patient with SUI in this study is 50

| Table 2: Agewisw classification |
|---------------------------------|
| S. No | Age grouping year | No. of patient | Percentage |
| 1     | Less than 30      | 0              | 00         |
| 2     | 30-39             | 15             | 30         |
| 3     | 40-49             | 16             | 32         |
| 4     | 50-59             | 10             | 20         |
| 5     | 60-69             | 09             | 18         |

Thus majority of the patients fall in the range of 30-50 yrs.

The following table depict the duration of symptomatology of these patients

| Table 3: Duration of symptoms |
|-------------------------------|
| S. No | Duration of symptoms | No. of patient | Percentage |
| 1     | Less than 6 mths     | 22             | 44         |
| 2     | 6-12mths             | 10             | 20         |
| 3     | 1-2 yrs              | 15             | 30         |
| 4     | 3-5yrs               | 02             | 04         |
| 5     | More than 5 yrs      | 01             | 02         |

Among various associated factors responsible for SUI, the following were evaluated in details.

The above table depict the parity of the patient majority of patient have more than two parity.
Table 4: Parity of the patient

| S. No | Parity     | No. of patient | Percentage |
|-------|------------|----------------|------------|
| 1     | Nulliparous| 0              | 00         |
| 2     | P1         | 02             | 04         |
| 3     | P2         | 15             | 30         |
| 4     | P3         | 07             | 14         |
| 5     | P4         | 12             | 24         |
| 6     | P5 or more | 14             | 28         |

Table 5: Depict menstrual history

| S. No | Menstrual history | No. of patient | Percentage |
|-------|-------------------|----------------|------------|
| 1     | Normal menses     | 20             | 40         |
| 2     | Menorrhagia       | 10             | 20         |
| 3     | Menopausal        | 20             | 40         |

Table 6: Depict accidental associated disease

| S. No | Associated disease      | No. of patient | Percentage |
|-------|-------------------------|----------------|------------|
| 1     | Hypertension            | 11             | 22         |
| 2     | Bronchial asthma        | 05             | 10         |
| 3     | Diabetes mellitus       | 03             | 06         |
| 4     | Epilepsy                | 01             | 02         |
| 5     | Heart disease           | 01             | 02         |
| 6     | Hypothyroidism          | 02             | 04         |
| 7     | No disease              | 27             | 54         |

Table 7: Depict history of previous surgery

| S. No | Previous surgery     | No. of patient | Percentage |
|-------|----------------------|----------------|------------|
| 1     | Tubal ligation       | 12             | 24         |
| 2     | LSCS                 | 03             | 06         |
| 3     | Vaginal hysterectomy | 05             | 10         |
| 4     | Abdominal hysterectomy| 00             | 00         |
| 5     | No previous surgery  | 30             | 60         |

Table 8: Depict report of urine culture

| S. No | Associated disease  | No. of patient | Percentage |
|-------|---------------------|----------------|------------|
| 1     | No growth           | 40             | 80         |
| 2     | Growth of organisms | 10             | 20         |

Bonney’s test was performed in all cases and positive bonney’s test was considered to be a prime requisite for patient under go sui surgery

Table 9: Depict sui associated disease

| S. No | Associated disease | No. of patient | Percentage |
|-------|--------------------|----------------|------------|
| 1     | Fibroid            | 03             | 06         |
| 2     | Prolapse           | 02             | 04         |
| 3     | Adenomyosis        | 04             | 08         |
| 4     | DUB                | 03             | 06         |
| 5     | Cystocele          | 04             | 08         |
| 6     | SUI                | 03             | 06         |
| 7     | Prolapse with CR   | 31             | 62         |

Table 10: Depict sui repair along with other procedure

| S. No | Surgery                      | No. of patient | Percentage |
|-------|------------------------------|----------------|------------|
| 1     | Vaginal hyst with AP with SUI repair | 31             | 62         |
| 2     | Vaginal hyst with SUI repair  | 12             | 24         |
| 3     | AP repair with SUI repair    | 04             | 08         |
| 4     | SUI repair                   | 03             | 06         |

Table 11: Depict the intraoperative complication

| S. No | Complication | No. of patient | Percentage |
|-------|--------------|----------------|------------|
| 1     | Bladder perforation | 01             | 02         |
| 2     | Bowel injury  | 00             | 00         |
| 3     | Urethral injury| 00             | 00         |
| 4     | Hematoma      | 00             | 00         |
| 5     | No complication| 49             | 98         |

Table 12: Depict the post operative complication

| S. No | Complication | No. of patient | Percentage |
|-------|--------------|----------------|------------|
| 1     | Urinary retention | 09             | 18         |
| 2     | Infection    | 00             | 00         |
| 3     | Erosion      | 00             | 00         |
| 4     | No complication| 41             | 82         |

Table 13: Intra operative complication of individual procedure

| S. No | Procedure   | Bladder perforation | No of patient |
|-------|-------------|---------------------|---------------|
| 1     | Kellys placation | 00                 | 20            |
| 2     | Stameys repair    | 00                 | 05            |
| 3     | TVT           | 01                 | 10            |
| 4     | TOT           | 00                 | 15            |

The above table depict the intra operative complication of individual procedure only TVT has single bladder perforation

The above table depict the post operative Urinary retention majority of patient belong to kellys AP repair and no retention in TOT

The following table depict total number of patient who come for follow up out of 50 patient only 40 came for follow up
The above table depict recurrence of SUI in follow up patient. However only Kelly’s plication has more recurrence of SUI in about 33% of patient. As in stameys the number of follow up patient was only two and none of them had recurrence of SUI.

5. Discussion

Stress urinary incontinence is a major problem among women unfortunately it is frequently ignored in spite of it being a treatable condition. SUI is classified in two group 2,3,7

1. Anatomical incontinence 2,3,7 caused by malposition or hyper mobility of intact urethra secondary to poor support
2. Intrinsic sphincteric dysfunction – when with or without an accompanying anatomical abnormality, the urethra and bladder neck does not adequately function as a sphincteric unit.

The age group commonly affected by this disorder is usually between 40-60 yrs of age. In our study too, 62% of cases of SUI fall in age group of 30-50 with 20% of cases between the age of 50-59 yrs of age also affected.

The incidence of stress urinary incontinence is believed to increase directly with parity 3,7,10 in our study not a single patient was nulliparous 100% of the patient were multiparous who delivers one or more time.

According to various studies parity varies from 0-5 and average is two.

In this study, 40% patient had normal menses, 20% had menorrhagia and 40% had menopause.

Out of fifty patient, three patient had only SUI complaints and forty seven patient were along with fibroid, adenomyosis, prolapse with cystocele, DUB, prolapse, cystocele. In our study 62% of patient had SUI along with prolapse cystocele, 3% with fibroid, 3% with DUB, 2.5% prolapse, 4% with adenomyosis, 4% with cystocele. The majority of patient had SUI along with prolapse cystocele.

In this study not only SUI repair but also SUI repair along with other surgeries included. Out of fifty SUI surgeries thirty one patient had vaginal hysterectomy with anterior colporrhaphy and posterior colpoperineorrhaphy with SUI repair, twelve with vaginal hysterectomy with SUI repair, four with AP with SUI repair, only three patient had SUI surgeries.

Out of fifty, eighty percent patients urine culture was suggestive of no growth and twenty percent had growth of organisms, were treated with sensitive antibiotics.

Intra operative complication like bladder perforation, bowel and urethral injury, hemorrhage has been included in this study. Only single case had complication of bladder perforation, that was in TVT, In this study bladder perforation was seen in 10% with TVT procedure as compared to 5%, and 9.7% in Barber et al and de Tayarac et al 2004 studies respectively in TVT procedure. No bladder perforation seen in TOT in both above mentioned studies.

### Table 14: Post operative complication of individual procedure

| S. No | Procedure        | Urinary retaration | No of patient | Percentage |
|-------|------------------|--------------------|---------------|------------|
| 1     | Kellys placation | 06                 | 20            | 30         |
| 2     | Stameys repair   | 01                 | 05            | 20         |
| 3     | TVT              | 02                 | 10            | 20         |
| 4     | TOT              | 00                 | 15            | 00         |

### Table 15: No of patient who come for follow up at 6 month

| S. No | Procedure        | No of patient n=40 | Percentage |
|-------|------------------|--------------------|------------|
| 1     | Kellys placation | 18                 |            |
| 2     | Stameys repair   | 02                 |            |
| 3     | TVT              | 08                 |            |
| 4     | TOT              | 12                 |            |

### Table 16: Recurrence of SUI in follow up cases

| S. No | Procedure        | No of patient n=40 | Recurrence of SUI | Percentage |
|-------|------------------|--------------------|-------------------|------------|
| 1     | Kellys placation | 18                 | 06                | 33         |
| 2     | Stameys repair   | 02                 | 00                | 00         |
| 3     | TVT              | 08                 | 01                | 12.5       |
| 4     | TOT              | 12                 | 01                | 8.3        |

### Table 17:

| S. No | No of patient | Mean age |
|-------|---------------|----------|
| 1     | Ulmsten et al 8 | 131      | 53(35-88)  |
| 2     | Levin et al 9  | 70       | 57(32-65)  |
| 3     | Current studies | 66       | 58(40-80)  |

### Table 18:

| S. No | Parity | Average |
|-------|--------|---------|
| 1     | Ulmsten et al 8 | 0-12    | 2.84     |
| 2     | Porena m 11     | 2-3     | 2        |
| 3     | Current studies | 0-5     | 2        |

### Table 19: Bladder perforation

| S. No | TOT | TVT |
|-------|-----|-----|
| 1     | 0%  | 5%  |
| 2     | 0%  | 9.7%|
| 3     | 0%  | 6%  |
Table 23: Failure rate

| S. No | Author(s)          | Year | Failure Rate |
|-------|--------------------|------|--------------|
| 1     | Beck et al 1991    |      | 35%          |
| 2     | Harris et al 1995  |      | 46%          |
| 3     | de Tayarac et al 2004 |    | 47%          |
| 4     | Current studies    |      | 31%          |

Table 24: Stameys operation

| S. No | Author(s)          | Year | Failure Rate |
|-------|--------------------|------|--------------|
| 1     | Hilton et al 1991  |      | 26%          |
| 2     | Ashken et al 1993  |      | 18%          |
| 3     | Current studies    |      | 22%          |

Post operative complication like urinary retention, infection, vaginal erosion, and hematoma has been included in this study. Out of fifty, nine patients had urinary retention, of that six patients were of Kellys plication and two patient of TVT and one patient of stameys. No urinary retention seen in TOT and other complication like infection and erosion was not found in any cases.

In this study urinary retention of 30% was seen in Kellys plication, 20% with stameys, 10% with TVT, 0% with TOT.

de Tayarac et al 2004 reported risk of urinary retention in 13.3% patient with TOT and 25.8% patient with TVT surgery

Hilton et al 1991 reported risk of urinary retention in 17.3% patient with stameys repair,

Harris et al 1995 reported risk of urinary retention in 38% patient with Kellys plication.

Table 20: Urinary retention

| S. No | Author(s)          | Year | TOT | TVT |
|-------|--------------------|------|-----|-----|
| 1     | Laurence M D et al 2004 |      | 10% | 22.8% |
| 2     | de Tayarac et al 2004 |      | 13.3% | 25.8% |
| 3     | Current studies    |      | 8% | 18% |

Table 21: Urinary retention

| S. No | Author(s)          | Year | Failure Rate |
|-------|--------------------|------|--------------|
| 1     | Beck et al 1991    |      | 40%          |
| 2     | Harris et al 1995  |      | 38%          |
| 3     | Current studies    |      | 38%          |

According to this study failure rate of 33.3% was seen with Kellys plication, 12.5% with TVT, 8.3% with TOT and failure rate was not reported in stameys operation.

According to various studies done failure rate varies from 5.7-10.6 % in case of TVT operation and 4.8-6.6% with TOT operation.

Failure rate with Kelly’s plication varies from 31 – 48 % in various studies

Failure rate with stameys operation varies from 18-26 % in various studies

A comprehensive analysis of all studies done. Comparing various SUI surgeries suggest that there is less chances of complication like bladder perforation, urinary retention and failure rate with TOT operation as compared to other SUI surgeries.

6. Conclusion

In the general hospital major bulk of patient come with other complaint in gynaecology OPD. From detail history of every patient, it is concluded since the symptoms of SUI are not life threatening and most of the female are less health conscious the medical help is not sought for longer duration.

In the study TOT procedure was found superior with respect long term failure rate and also intra and post operative complication.

7. Source of funding

None.

8. Conflict of interest

None.

References

1. Sir NJ. Principles of gynecology ; 1975.
2. Kelly. Dumm stress urinary incontinence in women without manifest injury to the bladder. Surg Gyn Obst. 1914;p. 136–444.
3. Raj S. Female Urology ; 1982.
4. Raj S. Female Urology ; 1996.
5. Telinde’s Text book of operative gynecology .
6. Stamey T. A: urinary incontinence in the female :the stamey Endoscopic suspension of vesical neck for stress incontinence Combell’s urology, vol I philadelphia. W.B. suunders C.O ; 1992. p. 2829–2850.
7. Camp bells text book of urology. 1998.p. 341–349.
8. Ulmsten U, Henriksson L, Johnson P, Varhos G. An ambulatory surgical procedure under local anesthesia for treatment of female urinary incontinence. Int Urogynecol J Pelvic Floor Dysfunct. 1996;7:81–86.
9. Levin I, Grouz A, Gold R, Pauzen D, Lessing JB, et al. Surgical complications and medium-term outcome results of tension-free vaginal tape: a prospective study of 313 consecutive patients. Neurourol Urodyn. 2004;23:7–9.
10. Pereyra AJ, Lebherz TB, Growdon WA, Powan J. Pubourethral support in perspective modified pereyra procedure for stress urinary incontinence. Gyn Obst. 1982;59:643–648.
11. Bader AA, Zivkovic F, Moser F, Tamussino K. The tension-free vaginal tape operation for the treatment of stress incontinence. Gynaikol Geburtshilfliche Rundsch. 2002;42(3):141–145.
12. Tayrac RD, Deffieux X, Droupy S, Chauveaud-Lambling A, Calvanese-Benamour L, et al. A prospective randomized trial comparing tension-free vaginal and transobturator suburethral tape for surgical treatment of stress urinary incontinence. *Am J Obstet Gynecol*. 2004;190:602–608.

13. Tayrac LMD, Renaud MD, B SM. Chauveaud-Lambling. *Am J Obstet Gynecol*. 2004;190(3):602–608.

14. Zubeka DBWG, Retzlow E. Diethlm wallwineer Long term result of SUI urinary and Fecal Incontinence: An Interdisciplinary Approach - Google Books Result ; 2005,.

15. Mayne CJH. stameys Endoscopic bladder neck suspension. *Br J Obstet Gynecol*. 1991,.

16. Ashken H. Follow up result with stameys operation for Sui. *Br J Urol*. 2002,.

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**Cite this article:** Thakkarwad S, Mundlod S. A retrospective comparison of various stress urinary incontinence surgery with their outcome in a tertiary care teaching institute. *Indian J Obstet Gynecol Res* 2020;7(1):81-87.