



Original Research Article

A retrospective comparison of various stress urinary incontinence surgery with their 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 KEM 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 "Bonney's test". Anal sphincter tone and 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 multiparity patient, about 60% of patient were having SUI without any previous surgery, 62% of SUI was associated with prolapsed with cystocele. In Intraoperative complication only one patient having bladder perforation in TVT procedure. In post operative complication urinary retention was found 30% in Kelly's plication, 20% in Stameys, 20% in TVT, 00% in TOT. However only Kelly's 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

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and in some cases during turning in bed.¹ 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 micturition 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 come 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]¹ 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 urethrocystography.¹

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 procedures² have been described for correction of stress incontinence - vaginal, abdominal, combined, Endoscopic, laproscopic³ and prosthetic;³ 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.⁴

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.⁵

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 test⁶ : 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 than 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 s_{2,3,4} 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 and 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 incontinnce

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	Tolterodine	Urge incontinence (overactive bladder)
	Oxybutynin	
	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 mences	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

Bonneys test was performed in all cases and positive bonneys test was considered to be a prime requisite for patient under go sui surgery

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

The above table depict 20% of the patient has growth of E coli and Klebsiella. they have been treated with nitrofurontoin and norfloxacin and some with cephalosporin.

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 plaction	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

Table 14: Post operative complication of individual procedure

S. No	Procedure	Urinary retention	No of patient	Percentage
1	Kellys placcation	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 placcation	18	
2	Stameys repair	02	
3	TVT	08	
4	TOT	12	

Table 16: Recurrence of sui in followup cases

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

The above table depict recurrence of SUI in follow up patient. However only kellys placcation 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 30-50with 20 % of cases between the age of 50-59yrs 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

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)

single patient was nulliparous 100% of the patient were multiparous who delivers one or more time

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

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

In this study, 40% patient had normal mences, 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 cystoectocele, DUB, prolapse, cystoectocele. In our study 62% of patient had SUI along with prolapse cystoectocele,3% with fibroid, 3% with DUB,2% prolapse,4% with adenomyosis,4% with cystoectocele. The majority of patient had SUI along with prolapse cystoectocele.

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 colpo perineorrhaphy 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 19: Bladder perforation

S. No		TOT	TVT
1	Barber et al ¹¹ 2006	0%	5%
2	de Tayarac et al ¹² 2004	0%	9.7%
3	Current studies	0%	6%

Table 23: Failure rate

S. No		Kellys plication
1	Beck et al 1991 ¹⁴	35%
2	Harris et al ¹⁴ 1995	46%
3	de Tayarac et al ¹² 2004	47%
4	Current studies	31%

Table 24:

S. No		Stameys operation
1	Hilton et al ¹⁵ 1991	26%
2	Ashken et al ¹⁶ 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		TOT	TVT
1	Laurence M D et al 2004 ¹³	10 %	22.8%
2	de Tayarac et al ¹² 2004	13.3%	25.8%
3	Current studies	8 %	18 %

Table 21: Urinary retention

S. No		Kellys plication
1	Beck et al 1991 ¹⁴	40%
2	Harris et al ¹⁴ 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

Table 22: Failure rate

S. No		TOT	TVT
1	Tomsaz et al ²⁵ 2002	6.6 %	8.2 %
2	de Tayarac et al ²² al 2004	6.5%	8.8%
3	Porena M et al 2004	4.8 %	10.6 %
4	Current studies	5.4%	5.7%

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.

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