

# Transobturator Tape (TOT) in Management of Female Stress Urinary Incontinence

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## **ABSTRACT**

### **BACKGROUND**

Transobturator tape (TOT) is a minimally invasive procedure that gained increased popularity in the surgical field for management of patients with stress urinary incontinence . The use of TOT had significantly simplified the surgical procedure and made it safer.

### **OBJECTIVES**

To evaluate the safety and efficacy of the TOT procedure in women with SUI.

### **PATIENTS AND METHOD**

Thirty female patient are complaining of urinary incontinence presented at urology department of Ghazi Al-Hariri surgical specialties hospital from January 2012-Oct. 2013 were enrolled in this study. All of our patients are with pure SUI. The procedure was done under spinal anesthesia. TOT require placement of macroporous polypropylene tape at the mid urethra through the obturator membrane with minimal vaginal incision. The patients were followed up before discharge, 1 month and six month using cough test.

### **RESULTS**

Mean patients age is 48.2 year (range 30-60 year) with a mean parity of 5(range from 3-7 child). The mean operating time is 26.5 minutes (ranging from 20-30 minutes). Intraoperative complications occur in 6 patients (20%), include hemorrhage in 5 patients, hematoma in one patient. The total incidence of postoperative complication was 36%, transient thigh pain occurred in seven patients, two patients got retention, two patients got de novo urgency. The objective cure rate was 93.3%

## CONCLUSION

The TOT procedure is a safe and effective technique for the management of patient complaining of SUI.

## Introduction

Urinary incontinence is the complaint of any involuntary leakage of urine. It results from a failure to store urine during the filling phase of the bladder due to abnormality of bladder smooth muscle or the urethral sphincter <sup>[1]</sup>. The International Continence Society (ICS) has defined the UI as “the complaint of any involuntary loss of urine that is a social or hygienic problem” <sup>[2]</sup>

### 1.1 ANATOMY

In both males and females, there are 2 sphincter elements:

- (1) an internal involuntary smooth-muscle sphincter at the bladder neck
- (2) an external voluntary striated-muscle sphincter from the prostate to the membranous urethra in males and at the mid urethra in females.

The bladder neck sphincter is a condensation of smooth muscle. This area is rich in sympathetic innervation. <sup>[1, 2]</sup> In the filling phase, the bladder neck remains closed to provide continence. It opens during both spontaneous contraction and contraction induced by stimulation of the pelvic nerve. The lower urinary tract receives afferent and efferent innervation from both the autonomic and somatic nervous systems. <sup>[3]</sup>

The parasympathetic innervation originates in the second to fourth sacral segments. The cholinergic postganglionic fibers supply both the bladder and smooth-muscle sphincter. The sympathetic nerves originate at T10–L2. The noradrenergic postganglionic fibers innervate the smooth muscles of the bladder base, internal sphincter, and proximal urethra.

Somatic motor innervation originates in S2–3 and travels to the striated urethral sphincter via the pudendal nerve. <sup>[4]</sup>

Some motor neurons to the tonic small muscle fibers of the striated sphincter may also project through the pelvic nerve. There are both somatic and visceral afferents from the bladder and urethra. The somatic afferent is carried by the pudendal nerve, while the visceral afferent projects through the sympathetic and parasympathetic nerves to their respective spinal areas <sup>[3, 4]</sup>.

### 1.2 Pathophysiology

The lower urinary tract provides continence by storing urine at low pressure until it is socially convenient and appropriate to void. This function is mediated by the presence of an expansible, low-pressure organ, the bladder, and a

sphincter-controlled outlet mechanism. The outlet mechanism prevents urinary incontinence during an increase abdominal pressure by means of the sphincter and a complex pelvic support mechanism. Understanding the pathophysiology of stress incontinence at an anatomic level can help to identify specific anatomic defects and direct individualized treatment of patients suffering from incontinence.<sup>[3,4]</sup>

### 1.2.1 The Stress Continence Control System

The urethral closure pressure must be greater than the bladder pressure at rest and during increases in abdominal pressure to maintain continence. The components necessary to meet this goal are a well-vascularized urethral mucosa and submucosa, a well-organized and functioning intrinsic urethral smooth muscle, a properly functioning striated sphincter with intact pudendal innervation (i.e., rhabdosphincter), and a stable, supportive hammock of surrounding muscular and fascial tissues.<sup>[1, 3]</sup>

Surgery directed at the bladder outlet continence mechanism at the level of bladder neck or mid-urethra aims to counteract the loss of urethral support by creating a new zone that offers support and acts as a back plate to absorb the transmitted pressure and

safeguard the sphincter configuration.<sup>[2, 3]</sup>

### 1.2.2. Urethral Sphincter Mechanisms

The glandular secretions of the inner mucosa increase the surface tension, promoting its plasticity and increasing its ability to coapt. The abundant middle spongy vascular tissue of the sub mucosa forms a watertight seal and provides up to 30% of the total closure pressure, this vascular cushion, like the other tissues of the urethra, is under the influence of estrogens. Estrogenic deficiency in postmenopausal women results in atrophy of this layer, reduces the hermetic seal of the urethra mucosal, and may contribute to the multifactorial cause of stress incontinence.<sup>[32]</sup>

The smooth muscle layers are present throughout the upper four fifths of the urethra, and their circular disposition suggests that contraction has a role in constricting the lumen. The longitudinal smooth muscle does not seem to have a passive role during the filling; rather, it has been proposed that it acts by shortening and opening the lumen to initiate micturition.<sup>[1, 2]</sup>

The U-shaped loop of the detrusor smooth muscle surrounds the proximal urethra and favors its closure by creating a constant tone. Detrusor fibers at the bladder neck are

longitudinally oriented, and they extend from the bladder neck to the subcutaneous adipose tissue that surrounds the urethral meatus.<sup>[2]</sup>

The striated urogenital sphincter consists of two parts, the distal one : rhabdosphincter , the compressor urethra and the urethrovaginal sphincter . The proximal one third of the urethra is surrounded by a sleeve of circular striated muscle that is continuous with a longer ascending cone, which extends to the vaginal introitus. It Originates from inside surface of the inferior pubic ramus and Inserted to the anterior wall of the vagina. Nerve supply from perineal branches of the pudendal nerve (S2, S3, and S4) and its blood supply is from internal pudendal artery from the internal iliac artery.<sup>[1]</sup>

The rhabdosphincter is composed mainly of type 1 fibers, composed of slow-twitch tissue capable of maintaining constant tonic contractions of the urethral lumen. From manometric and electrophysiological evaluations, this produces the greatest level of resting pressure and electromyography activity.<sup>[2]</sup>

The urethral support mechanism comprises all the structures extrinsic to the urethra that offer a supportive back plate on which the proximal urethra and mid-urethra lie.

The anatomic support is derived more from the fascial structures than from the musculature itself. The pubo-urethral ligament attaches the mid-urethra to the inferior side of the pubic symphysis and prevents downward movement during its rotational descent. It works in conjunction with the pubo-urethralis muscle, a subdivision of the levator ani muscle that forms a sling around the proximal urethra. Together they form the mid-urethral complex. It has been postulated that elongation of the posterior pubo-urethral ligaments may be a significant contributory factor to the loss of urethral support seen in stress incontinence. Major facials support to the urethra also is provided by the urethra-pelvic ligament, which attaches the urethra to the tendinous arc.<sup>[2]</sup>

The pelvic floor musculature, represented by the levator ani muscles, carries the weight of the pelvic contents and prevents the abdominal pressure from stretching the ligamentous support structures. The levator ani includes the puborectalis muscle, which surrounds the rectum, connecting the pubic bones anteriorly in a U-shaped configuration; the pubococcygeus muscle, which crosses from the pubis to the coccyx; and the iliococcygeus muscle. The iliococcygeus muscle arises laterally from the arcus tendineus fascia and

forms a horizontal sheet that spans the posterior opening of the pelvis, providing a shelf on which the pelvic organs lie. The urethra and vagina pass through an aperture in the elevator musculature, the urogenital hiatus.

The constant muscle tone, maintained by predominantly type I (slow-twitch) striated muscle fibers, compresses the vagina and urethra anteriorly toward the pubic bone and keeps the hiatus closed. The elevator ani contains type I fibers that provide resting tone and type II (fast-twitch) fibers that maintain the urethral closure under stress and prevent stretching of the pelvic ligaments.<sup>[2,3,4]</sup>

### 1.3. Types of urinary incontinence

#### 1. Stress urinary incontinence

Symptomatic complaint of involuntary leakage of urine on effort exertion, sneezing or coughing. Sign of involuntary urinary loss from the urethra synchronous with exertion, sneezing, or coughing. Urodynamic diagnosis of the involuntary leakage of urine during increases in abdominal pressure in the absence of a detrusor contraction—so-called urodynamic stress incontinence.<sup>[32]</sup>

#### 2. Urgency urinary incontinence

Symptomatic complaint of involuntary leakage accompanied by or immediately preceded by urgency as *contrasted* to urge, which is a normal

sensation. The current term *urge* has therefore been replaced by urgency UI. Sign of involuntary urinary loss from the urethra that is accompanied by or immediately preceded by urgency. Urodynamic diagnosis of incontinence related to an involuntary detrusor contraction during urodynamic—so-called detrusor over activity associated incontinence.<sup>[32]</sup>

#### 3. Mixed urinary incontinence

It is a combination of urge and stress urinary incontinence and is present in approximately 40% of women with stress incontinence. Mixed urinary symptoms is a term applied to the presentation of a patient with a combination of OAB and stress incontinence. Urgency incontinence can present in different symptomatic forms (e.g., as frequent small losses between micturitions or as a catastrophic leak with complete bladder emptying).<sup>[32]</sup>

#### 4. Enuresis

Involuntary loss of urine. If it is used to denote incontinence during sleep, it should always be qualified with the adjective “nocturnal.”<sup>[32]</sup>

#### 5. Overflow incontinence

Is not a symptom or condition but rather a term used to describe leakage of urine associated with urinary retention.<sup>[32]</sup>

#### 6. Extraurethral incontinence

Is the observation of urine leakage through channels other than the urethra (e.g., fistula or ectopic ureter).<sup>[2, 3]</sup>

#### **1.4 STRESS URINARY INCONTINENCE**

Stress urinary incontinence (SUI) is involuntary urinary leakage on effort, exertion, sneezing, or coughing, due to:

- 1) hypermobility of the bladder base, pelvic floor
- 2) Intrinsic urethral sphincter deficiencies.

- GRADE 0 report of urinary incontinence, but without clinical signs.
- GRADE 1 leakage that occurs during stress with <2cm descent of the bladder base below the upper border of the symphysis pubis.
- GRADE 2 leakage on stress accompanied by marked bladder base descent (>2cm) that occurs only during stress (II<sub>a</sub>) or is permanently present (II<sub>b</sub>).
- GRADE 3 bladder neck and proximal urethra are already open at rest (with or without descent). Also known as intrinsic sphincter deficiency (ISD).<sup>[4]</sup>

#### **1.5 Risk factors**

##### **Predisposing factors**

- gender (female > male)
- race (Caucasian > Afro-Caribbean)

- 
- 
- genetic predisposition
- childbirth
- pelvic, perineal, and prostate surgery (radical hysterectomy) leading to pelvic muscle and nerve injury
- radical pelvic radiotherapy

##### **Promoting factors**

- smoking (associated with chronic cough and raised intra-abdominal pressure)
- multiparity
- obesity
- increased fluid intake
- medications
- poor nutrition
- ageing
- constipation
- poor mobility<sup>[4]</sup>

#### **1.6 Prevalence of Urinary Incontinence**

The estimated prevalence of UI in middle-aged and older women in the general population appears to be in the range of 30% to 60% (increasing with age). A large variation present in the estimated prevalence of UI in women, even after taking into account differences in definitions, ascertainment, and demographic characteristics. White, non-Hispanic women have a substantially higher prevalence of stress UI than black or Asian women that is not explained by

differences in known risk factors for UI. <sup>[5, 6]</sup>

## 1.7 Diagnostic Evaluation

### 1.7.1.History

1. The incontinence should first be characterized subjectively
2. The leakage should be quantified if possible.
3. The voiding pattern should be defined.
4. Establishment of the duration of symptoms and any inciting events that

contributed to the onset of leakage is important.

5. It is helpful to determine the impact that the leakage has on the patient's daily life and activities. <sup>[7]</sup>

### History should focus on the following items

1. Neurologic conditions such as Parkinson disease, multiple sclerosis, stroke, spinal cord injury, back surgery, and myelodysplasia can have a considerable impact on lower urinary tract (LUT) function
2. Medical diagnoses such as diabetes mellitus and dementia can affect continence.
3. Neurologic or urologic trauma can affect LUT function, specifically with

regard to outlet resistance and/or bladder contractility, stability, and compliance. Although outlet resistance may be compromised by trauma or LUT surgery, urethral strictures related to trauma or neurologic dysfunction that abnormally increase outlet resistance during voiding can cause obstruction and secondary symptoms related to the obstruction

4. Gynecologic and obstetric history including gravity, parity, and hormonal status is important. <sup>[7, 8]</sup>

### 1.7.2.Physical Examination

The general appearance of a patient including details such as age,

gait, stature, and fragility can provide important information regarding

performance status, neurologic status, and other factors that may direct proper treatment planning. Similarly, an abdominal examination evaluating for incisions, hernias, organomegaly or bladder distention, and habitus is important, particularly if any abdominal surgery may be considered. Vaginal examination is a very important part of physical examination during which, the vaginal rugae is noticed if absent indicating estrogen deficiency. <sup>[8, 9]</sup>

### Cough test

Urinary leakage at coughing (increase intra\_abdominal pressure) which indicate stress incontinence

### Q-tip test

The Q-tip is inserted into the bladder through the urethra, and the angle that the Q-tip moves from horizontal to its final position with straining is measured. Hypermobility is defined as a Q-tip angle of greater than 30 degrees from horizontal

### MARSHAL BONNEY TEST

It anticipate the clinical effect of a suspension operation in relation to cure urinary incontinence: using the

index and middle fingers, the paraurethral tissue is lifted and the patient is asked for coughing or Valsalva provocation with a full bladder. <sup>[8, 9]</sup>

### 1.7.3. Investigation

**Bladder diaries:** record the frequency and volume of urine voided, incontinent episodes, pad usage, fluid intake, and degree of urgency. Alternatively, pads can be weighed to estimate urine loss (pad testing). <sup>[9, 10]</sup>

**Urinalysis:** can exclude UTIs. <sup>[9, 10]</sup>

**Blood tests, U/S, X-ray imaging, cystoscopy:** indicated for persistent or severe symptoms, bladder pain, and voiding difficulties. <sup>[9, 10]</sup>

**Screening tests:** flowmetry measures the pressure of urine voided. A low rate indicates bladder outflow obstruction or reduced bladder contractility. The volume of urine remaining in the bladder after voiding (post-void residual) is also useful (<50ml is normal; >200ml is abnormal; 50-200ml requires clinical correlation). <sup>[9, 10]</sup>

### Urodynamic investigations:

cystometry can measure the minimal pressure at which leakage occurs on straining (abdominal leak point pressure). Videourodynamics can visualize movement of the proximal urethra and bladder neck, and establish the precise etiology of UI. It can also

identify relevant anatomical or neurological abnormalities and risk factors for the development of upper tract deterioration. <sup>[9, 10]</sup>

### Sphincter electromyography (EMG):

measures electrical activity from striated muscles of the urethra or perineal floor, and provides information on synchronization between bladder muscle (detrusor) and external sphincter. <sup>[9, 10]</sup>



## 1.8 TREATMENT

### Conservative therapy

It is considered as the 1<sup>st</sup> line therapy for SUI especially in not sever conditions, it include life style modification, reduction of body weight ,stop smoking and restriction of fluid intake. These are often considered as supportive measure to prevent further aggravation of SUI. Pelvic floor muscle training (PFMT) is the most common recommending conservative therapy for women with SUI.

PFMT is used to rehabilitate or strengthen the pelvic floor muscles, it increases the ability to produce an increase in urethral resistance, conditioning the patient is able to perform a correct pelvic floor muscle contraction. It counteract pelvic floor muscle weakness, increasing support of the urethra and bladder and improves the tone of the pelvic floor muscle particularly the levator ani. PFMT include long, slow contractions at regular intervals. The major drawback on this type of treatment is the compliance which is high upon initiation but decrease with time. Combined therapy of PMFT and adjunct like biofeedback and electrical stimulation seems to have no additional benefit over PMFT alone but may be

useful to some women to learn how to perform a correct PFM contraction.<sup>[9]</sup>

### Medical treatment

Various drugs are available for women with stress UI include oestrogen, adrenoceptor agonists, tricyclic antidepressants, duloxetine have been tried for stress UI. However there is limited or no evidence of the efficacy of these drugs and some are associated with significant side effects. Patients in whom conservative or pharmacological treatment are not successful or who have sever SUI are candidate for surgery to improve their condition.<sup>[10]</sup>

### Surgical options

**1. Injection therapy** The injection of bulking materials into the bladder neck and periurethral muscles is used to increase outlet resistance. Bulking substances include silicone polymers (Macroplastique); cross-linked bovine collagen; Teflon; PTFE; and carbon coated zirconium beads (Durasphere); hyaluronic acid dextranomer.<sup>[12, 13]</sup>

### 2. The artificial urinary sphincter:

The artificial urinary sphincter consists of an inflatable cuff placed, via a lower

abdominal incision, around the bladder neck, a pressure-regulating balloon placed extraperitoneally, and an activating pump placed in the labia majora. The cuff provides a constant pressure to compress the urethra. <sup>[14, 15]</sup>

**3. Retropubic suspension** As that described by BURCH in 1961 using coopers ligaments as an anchor for sutures that include the periurethral and perivesical tissues <sup>[16]</sup>

**4. Transvaginal suspension** described by PEYERA and modified by RAZ in 1981 uses vaginal incisions to place sutures that passed upward and secured to the abdominal fascia. Sling procedures are mainly used for female stress incontinence associated with poor urethral function (type III or ISD), or when previous surgical procedures have failed. Also used for incontinence due to urethral damage (following radical pelvic surgery or radiotherapy), and for neurological urethral dysfunction (e.g. myelodysplasia) in both sexes. It is essential that urethral and bladder function is evaluated prior to surgical repair. <sup>[17, 18]</sup>

**5. Sling procedure** have been used for treatment of female SUI. At the beginning of the 20<sup>th</sup> century, VONGIORDNAO describe the 1<sup>st</sup>

urethral sling that used Gracillis muscle .Modification to the technique done by used other muscle body such as pyramidalis muscle flap and plication of the perivesical muscular structures common to these techniques was the belief that muscles placed around the bladder neck would provide sphincteric function. As the sling technique evolved a variety of materials came into use. PRICE described the 1<sup>st</sup> fascia lata sling in 1933. The origin of the contemporary pubovaginal sling may found in the classic technique described by ALDRIDGE in 1942 in which a strip of rectus fascia were secured beneath the urethra to provide increase resistance at time of high abdominal pressure, this technique was later modified to leave the external oblique aponeurosis attached to the pubic tubercle and suture the fascial end beneath the proximal urethra. <sup>[19, 20]</sup>

#### Types of sling

- Autologous rectus fascia, fascia lata (from the thigh), vaginal wall slings.
- Non-autologous allograft fascia lata from donated cadaveric tissue.
- Synthetic monofilament polypropylene tape (TVT or tension-free vaginal tape). <sup>[21, 22]</sup>

### Autologous and allograft slings

The tissue strip is inserted via an abdominal incision, and tunnelled through the endopelvic fascia on one side, behind the proximal urethra and into the anterior vagina, and then guided out the other side. The two ends are sutured to rectus fascia, using the minimal amount of tension needed to prevent urethral movement. In men, the sling is placed around the bulbourethra. Alternative methods of fixation include bone anchoring; however, this is associated with increased risk of osteitis pubis.<sup>[23, 24]</sup>

### Synthetic slings

The TVT is a popular procedure as it is less invasive, it can be inserted under local anaesthetic as a day case, and it has few complications. The tape has long trocars on each end, which are inserted either side of the urethra through a vaginal approach. They perforate the endopelvic fascia, and are pushed out onto the lower abdominal wall. Once the tape is positioned loosely behind the mid-urethra, its covering is removed, and the ends cut flush to the abdomen.

Both techniques use cystoscopy to assist prevention of bladder perforation during sling placement. Post-operatively, patients may temporarily require SCIC until post-

void residuals are less than 100ml.<sup>[24, 25]</sup>

## TRANSOBTURATOR SLING PLACEMENT

Recently, transobturator passage of synthetic slings using specially designed instruments has been introduced. Theoretically, this may be a safer approach in that it should avoid the possibility of bowel and other intra-abdominal organ injury. Early outcome data seem to match that reported for the other mid-urethral slings.<sup>[25, 26]</sup>

### 2. Patients and Methods

Thirty female patient with stress urinary incontinence presenting at urology department of Ghazi Al-Hariri surgical specialties hospital from January 2012-Oct. 2013 were enrolled in this study. The inclusion criteria in this study are any female patient with pure stress urinary incontinence. Excluding criteria include patient with mix urinary incontinence, patient with postvoiding residual urine of more than 100ml and pregnant ladies, patient who has infection at site of operation, chronic severe UTI and anti-coagulant therapy. Patients were considered to have mix urinary incontinence by clinical judgment and presence of

detrousal over activity during preoperative urodynamic evaluation.

The severity of urinary incontinence was classified using the Ingelman sundburg scale as follow:

Grade1 urinary incontinence on coughing or sneezing.

Grade 2 urinary incontinence on running or picking up an object from the floor.

Grade 3 urinary incontinence on walking or stairs climbing.

Each patient was evaluated by using certain data including age, parity, gynecological history and medical and surgical history. Clinical evaluation include physical examination, vaginal examination, stress cough test, marshal test and Q-tip test, urinalysis, urodynamic assessment and cystoscopy. All patient underwent incontinence surgery using Obtryx sling system-halo which is a sterile single use system consisting of two delivery devices one patient right and one patient left and one mesh assembly, The mesh assembly is comprised of polypropylene knitted mesh protected by disposable plastic sleeve at the distal ends of the mesh assembly there are association loops designed to be placed in the needle slot of the distal end of the delivery device, the disposable delivery device consist of a handle with stainless steel needle ,

The needle is designed to facilitate the passage of the mesh and the mesh assembly through bodily tissues for placement through the obturator foramen.

## 2.1. Technique

As with other sling procedures, the patient is placed in the dorsal lithotomy position and spinal anesthesia is used. Access to the obturator foramen is easier with the thighs at a right angle to the pelvis. The area is prepped and draped, taking care to include the inner thighs in the area prepped. A weighted vaginal retractor was used to push the posterior vaginal wall away and open the field. A 1- to 2-cm incision is made in the vaginal wall over the mid-urethra about 1 cm proximal to the meatus. Sites are marked on the inner thighs approximately 2 cm lateral to the thigh crease and 2 cm anterior to the level of the urethral meatus. Stab wounds are made at these thigh sites. A pocket is developed periurethrally to the level of the internal obturator membrane. The medial rim of the obturator foramen is pinched between a vaginal finger and one on the inner thigh near the stab wound at the pre-marked site. A curved device is passed from the inner thigh site, through skin, muscle, and fascia onto the vaginal finger and then rotated

into the vagina. The sling material is attached to the curved instrument and brought out to the thigh area. This is then repeated on the contralateral side. Cystoscopy would be done at this point to exclude any bladder or urethral perforation. Patients were covered by intravenous antibiotic (3<sup>rd</sup> generation cephalosporin with Penicillin group). Vaginal packing was removed on day one postoperatively. The patients were instructed to avoid heavy exercise and intercourse for 2 months postoperatively. The patient were then assessed on the bases of a clinical examination and questioning before there hospital discharge and one month and six months following surgery. Patient assessment was made objectively as no leakage during the cough test with full bladder and subjectively by asking them to establish satisfaction level and describe any persisting or new urinary symptoms. Patient satisfaction expresses how well the functional result achieved matched their expectation of the surgical procedure.

### 3.RESULTS:

All the procedures were performed in Ghazi Al-Hariri surgical specialties hospital. A total of 30 patients were enrolled in this study, mean patient

age was 48.2 year (range 30-60 year) (Figure 1). All women were multiparous with a mean parity of 4(range from 3-7 child) 9 patients (30%) were postmenopausal (Figure 2). 4 patients (13%) had grade 1 UI, 10 patients (33.3%) grade 2 and 16 patient (53%) were grade 3 according to the Ingelman sundburg scale (Figure 3). The mean operating time 26.3 minutes (ranging from 20-30 minutes). One women (3%) had simultaneous surgery for cystocele correction, other woman (3%) with simultaneous rectocele repaired. All operation done under spinal anesthesia. Intraoperative complication occur in 6 patient (20%) include minor hemorrhage in 5 patients(16%) during vaginal dissection with no need for transfusion, the hemorrhage was treated by packing and resolved without need for secondary procedure, hematoma in one patient (3%) which resolved spontaneously in one week, bladder perforation zero and urethral injury zero (Figure 4). The total incidence of postoperative complication was 36% (11\30), transient thigh pain occurred in seven patients disappeared after 8 weeks of treatment with simple analgesic, there were 2 patients (6%) with retention, one treated with SCIC for 4 weeks,

the other need to release the tape after 8 weeks of SCIC. Two patients with de novo urgency (6%) and treated with anti-cholinergic for 4 weeks, no one of them develop surgical site infection, tape rejection, vascular and nerve injury (Figure 5). The mean hospitalization was 1 day at which catheter removed . The patient was followed up before discharge, 1 month and six month using cough test (Figure 6)

## 5. CONCLUSION

The TOT operation is a safe and effective technique for the treatment of female stress urinary incontinence . It is simple vaginal procedure with a very short learning curve. Perioperative risks are relatively low, the duration of hospitalization is short and the patients returned to their daily activity rapidly.

## 4. Discussion:

Female SUI is a frequent, disabling and troublesome pathology. The transobturator approach for tension-free suburethral vaginal tape has gained wide popularity in the surgical management of SUI.

Of the 30 patients who were operated (undergone TOT procedure) 28 (93.3%) patients were

continent postoperatively after removal of Foleys catheter.

Intraoperative complication revealed 5 (16.6%) patients experienced intraoperative hemorrhage which is a minor that stop after wound closure with no need for blood transfusion, and 1 (3.3%) patients with hematoma which resolved spontaneously within one week.

On postoperative follow up, 2 (6.6%) patients experienced retention one of them managed with SCIC for 2 weeks and the other end with tape lysis.

2 (6.6%) had denovo urgency managed with anti-cholinergic drugs for one month .

7 (23%) patients experienced thigh pain which treated with simple analgesia for 2 weeks maximally. No tape rejection and no vascular injury.

Our results are comparable to the study of Phillippe Grise *et al*<sup>[27]</sup> in which the total patients who had undergone TOT sling procedure in this study 79% were completely cured (continent), 13% improved, and in 7% patients the surgical procedure failed. 2.4% patients had postoperative urinary retention in this study where as 6% our patient had postoperative urinary retention.

The mean operative time in our study is 26.3 minutes (20 – 30) which is lesser than the study conducted by Farahat Nissar Khan *et al* <sup>[28]</sup> in which the mean operative time is 33.8 minutes (30–40). When compared to a study of Pardo Schanz J *et al* <sup>[29]</sup>, 3% intraoperative complications resulting in bladder injury were seen and 3% experienced thigh pain whereas no intraoperative bladder injury occurred in our study and 23% had thigh pain.

The hospital stay was one day comparable to previously published report by Farahat Nissar Khan *et al* <sup>[28]</sup> in which the hospital stay was 6 ± 2.4 days.

*De novo* urgency was (6%) in comparable to 10.6% in previously

published report by Isabelle Kaelin – Gambirasio *et al* <sup>[30]</sup>

Hemorrhage related complications includes intraoperative bleeding and surgical site hematoma in the TOT procedure in 3% of the cases while it was 1-2 % according to Arun Chawla <sup>[31]</sup> Urethral injury and tape rejection were zero which is the same results of Arun Chawla <sup>[31]</sup> Transobturator tape procedure is the gold standard for current surgical management of female stress urinary incontinence. TOT is simple, minimally invasive and cost effective procedure for current surgical management for female stress urinary incontinence. When performed after proper training TOT sling procedure has 100% success rate (continence) and is associated with only minor postoperative complications which resolves within few days.

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## استخدام الشريط المار بفتحة المسد لعلاج سلس الادرار الاجهادي لدى النساء الخلاصة

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### المقدمة:

شهدت الجراحة البولية تطورا ملحوظا في مجال معالجة سلس الادرار الاجهادي متمثلا بظهور الشريط المار في غشاء المسد الذي يمتاز بأمانه وكفاءته وسهولة استعماله.

### هدف الدراسة:

لتقييم كفاءة وامن الشريط المار في غشاء المسد في معالجة سلس الادرار الاجهادي.

### منهج الدراسة:

تضمنت هذه الدراسة اختيار ٣٠ مريضة تعاني من سلس الادرار الاجهادي، اخترن اجراء عملية وضع الشريط المار في غشاء المسد في مستشفى الشهيد غازي الحريري للجراحات التخصصية من الفترة كانون الثاني ٢٠١٢ – تشرين الأول ٢٠١٣.

أجريت العمليات تحت التخدير الشوكي، ان عملية وضع الشريط المار في غشاء المسد تتضمن وضع شريط بروليني في منتصف الاحليل من خلال ثقب مهبل صغير. تم متابعة المرضى قبل اخراجهم من المستشفى وبعد مرور شهر وبعد مرور ستة أشهر من اجراء العملية.

### نتائج الدراسة:

معدل عمر المريضة كان ٤٨،٢ سنة (٣٠-٦٠ سنة)، معدل الولادات ٥ (٣-٧ ولادة)، معدل وقت العملية ٢٦،٥ دقيقة (٢٠ - ٣٠ دقيقة)، المضاعفات اثناء العملية حدثت في ٦ مرضى (٢٠%) متضمنة نزيف في ٥ مرضى، تجمع دموي في مريض واحد. المضاعفات بعد العملية حدثت في ٣٦% متضمنة الام الفخذ المؤقت في ٧ مرضى، احتباس الادرار الحاد حدث في مريضتين، أعراض المثانة الملحة في مريضتين. نسبة الشفاء الموضوعي كانت ٩٣،٣%.

### الاستنتاجات:

ان عملية الشريط المار في غشاء المسد هي عملية امنة وفعالة لمعالجة النساء المصابات بسلس الادرار الاجهادي.