TRANSOBTURATOR TENSION FREE VAGINAL TAPES; A SIMPLE, EFFECTIVE AND ECONOMICAL TREATMENT FOR GENUINE STRESS INCONTINENCE IN FEMALES

Ahmed Ali Khan, Arshad Mahmood
Armed Forces Institute of Urology Rawalpindi

ABSTRACT

Objectives; Objective of this study was to assess the effectiveness of Transobturator tension free vaginal tape (TOT) for the treatment of the genuine stress incontinence by using improvised instruments i.e. specific needles, which is far economical than the patent company made TOT set.

Study Design: Prospective cohort study

Place and Duration of Study: This study was carried out in Armed Forces Institute of Urology (AFIU) Rawalpindi from Jan 2007 to Jun 2009

Patients and Methods: Thirty eight patients were included in study and were operated upon in two and half years. Polypropylene mesh was used transvaginally as mid urethral sling through the obturator foramen 'outside in' technique using special needles. All the patients who only had genuine stress incontinence. Were included.

Results:: A total of 31 (81.57%) of the patients had total satisfaction post operatively. Four (10.52%) patients had equivocal results but improved and had incontinence only when there was strenuous and tough strain. Only 1 (2.63%) patient had no effects on the disease. Two (5.26%) patient had retention of the urine postoperatively for which Foley catheter had to pass for maximum of 18 days. Three (7.89%) patients had minor infection at exit sites of wound and were treated with the oral antibiotics.

Conclusion: Genuine stress incontinence (GSI) is quite common problem in our females especially who had multiple deliveries .TOT is simple, effective and very economical solution to have the best results in our setup. Patients selection, detailed history physical and pelvic examination are most important factors to have the required results.

Keywords: Polypropylene mesh, urgency, uroflowmetry, transobturator sling,

INTRODUCTION

Genuine stress Urinary incontinence is neither a normal part of the aging process nor a routine outcome after parturition which most of the time misunderstood in our society. It is a continuous mental stress which leads to multiple psychological personality disorders and a disturbed social life. Our females are reluctant to disclose their problem even to the husband and close relatives due to certain element of shame, embarrassment and misunderstandings about the problem. Usually there is interval of 5 to 20 years between the ailment and to seek the medical advice. It is estimated to affect up to one-third of women older than the age of 18 years, with a median age of 45 years[2].

Correspondence: Lt Col Ahmad Ali Khan, Urology Departmet, AFIU Rawalpindi
Received: 08 Dec 2009; Accepted: 09 Dec 2010

It is very interesting that genuine stress incontinence is very easy to diagnose just on the typical detailed careful history, simple clinical examination and few laboratory tests. With recent advances in medical technology and better understanding of female anatomy and physiology, many innovative surgical methods are available for correcting stress incontinence. Keeping in view the magnitude of this problem, outcome of the difficult surgeries and cost of different surgical techniques, we adapted TOT, simple, cost effective and valid treatment for stress incontinence.

PATIENTS AND METHODS

This study was carried out in armed forces institute of urology Rawalpindi from Jan 2007 to June 2009. A total of 38 patients were selected from the outpatient department. Patients included in the study were on the basis of the detailed history of incontinence during

stress like cough, sneezing, or even in change of posture. It was carefully evaluated that there should not be any history of urgency at all. It was also taken into account that whether any protection like sanitary pads is used to avoid soakage of the clothes during the day or night.

Urine routine examination was performed to rule out any infection.

Venous blood was checked for base line renal function like urea, creatinine and electrolytes. USG KUB and pelvis was performed in all patients to evaluate pre void and post void residual urinary volume to rule out any overflow incontinence and to know any unrecognized pathology like cystitis, stone, or tumor. All the patients having diabetes, neurological deficit, CVA, spinal or previous pelvic surgery or urinary tract infection were excluded from the study.

Preoperatively, standardized questionnaire was fulfilled including severity of incontinence i.e., number of episodes of incontinence per day and how often need to change the clothes , or if using the sanitary pad then how many pads need to be changed per day depicting the severity of the disease .

Clinical examination included routine general physical examination with special emphasis on the neurological examination. Pelvic examination with vaginal speculum and filling of the urinary bladder up to 300 to 400 milliliters. Then clinically observed the incontinence without strain, during valsalva maneuver and then with cough to see and confirm the presence and severity of the incontinence . Same procedure was done in the standing position. After confirming the presence of GSI patients were explained about the disease and treatment options. If the patient is not satisfied with the conservative management and ready for the surgery and to accept any complication of surgery, they were selected for TOT.

Procedure

TOT (transobturator tension free vaginal tape) procedure was carried out under spinal anesthesia in lithotomy position. After confirming the exact position of the vesical neck by pulling the bulb, a sagitttal 2 cm incision is made in the anterior vaginal wall at mid urethra. Periurethral bilateral dissections of the vaginal wall up to the Periurethral leaf of endopelvic fascia. Then small skin incisions are made bilaterally one centimeter lateral the ischiococcygeus ramus at the level of the clitoris into the groin. A set of 2 specific needles are used to pass through the skin incision and then rotated to perforate the obturator membrane along with its both external and internal obturator muscles and keeping close contact with the bone, turns around the ischiococcygeus ramus.(Fig.1-7)

A finger tip is introduced in the space between the vaginal flap and urethra up to the pelvic fascia and waits for the tip of the needle to come. The needle follows the finger tip and come out of the vaginal incision. Many physicians are concerned of the route of the obturator nerve; if done correctly, the obturator nerve is nowhere near the surgical tract of the needle. The needle is also guided by a finger placed vaginally throughout its tract; therefore there is minimal danger to the blind passage of the needles.

A Prolene tape obtained by cutting a tape 10 mm large and 30 cm long from a mesh 30X30 cm is attached to the specific needle which is then taken out from the obturator foramen. (Pic 5;) The same technique is used on the other side to pass the other extremity of the tape. Prolene tape is adjusted in the mid urethra so that there should not be any twist and there should be clear support to the mid urethral segment. This is the same Prolene mesh which is used in routine for inguinal herniorrhaphy. Cystoscopy is performed only if needed or in doubt of any injury to the urethra or bladder. Stress test is performed after completion of the procedure both with valsalva maneuver and then with cough to put the correct tension on the tape. Finally the tape is checked for its position again and if any twist of sling is there its removed, skin and vaginal wounds are closed.

Follow up

The follow up consisted of a history and level of satisfaction of the patient and protection if any used post operatively, clinical

examination of vaginal and skin wound, uroflowmetry and USG for the residual urinary volume.

RESULTS

This study included 38 patients of GSI treated with TOT. All the patients were quite satisfied with the procedure. Success was measured as the subjective phenomenon more than to rely upon the uroflowmetry and the post void residual urinary volume.

Total duration of surgery was 32 min to 45 (38.5) minutes and without the need of any blood transfusion at all. Antibiotics were given with the induction of anesthesia and for two days postoperatively parenterally and for three days orally. In Hospital stay in all the case were from two days to five days. . Pain was not a major problem in any of the patient postoperatively. No complaint of groin pain was there in any patient. Only two patients having moderate pain were given tab brufen 400 mg thrice a day empirically to avoid the unrest. As the experience was expanded in the second year of study, patient was discharged on the second day of surgery with total of three intravenous injections of antibiotics with switch over to oral for another three days along with analgesics.

Post operatively all the patients had smooth and uneventful recovery. Only 2 (5.26%) patient had retention of the urine postoperatively for which Foley catheter had to pass for 15 days and regained the uroflow of 15 ml/sec on average after four weeks. Only 3(7.89%) patients had minor infection of the skin incision and were treated with the oral antibiotics. None had major wound infection or vaginal erosion due to tape. 31(81.57%) of the patients had total satisfaction post operatively. 4(10.28%) patients were not totally satisfied but had improved condition. They had incontinence only when there was strenuous and tough strain. 2 (5.26%) patients had no effects on the disease. Urgency was not reported by any of the patients though nocturia remained there as it was preoperatively in 11(28.94 %) patients. None of the patient had the complaint regarding the sexual intercourse. Longest follow up was for 28 months.18(47.36 %) patients having more than one and half year of follow up. They are still totally satisfied with the outcome and there is no stress incontinence at all. There was not a single patient in which the prosthesis had to take out for infection.

Total cost of the Prolene mesh 30*30 cm is 4,800 rupees out of which we made three slings which costed about 1,600 rupees per patient. The remaining unused portions were resterilised by the central sterilization unit in our institution. Under aseptic conditions and taking into consideration the basic surgical skills, proper dissection planes, there is less likely chance of infection in these cases.

DISCUSSION

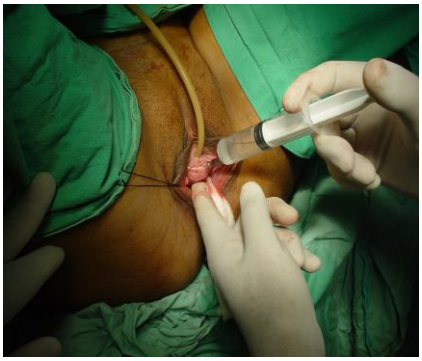
Stress Urinary Incontinence (SUI) is the most common form of urinary incontinence in women. Prevalence of urinary incontinence in women in UK and France is 32%[1]. Whereas SUI contributes about 13.1% in Asian population, whereas, its prevalence in Pakistan is about 11% (Reported by Asian Society for Female Urology ASFU)[2].

This condition has multiple etiologic factors. Childbirth is almost always the initial injury to the structural integrity of the pelvic floor. Female pelvic tissues are dependent on estrogen for strength and support. As a woman ages and estrogens depletes, the trauma produced during childbirth in earlier years can be compounded by weight gain, lifting or straining, and constipation.

With recent and better understanding of anatomy of the female pelvis, its supports , the Urethrovesical segment, physiology and advances in medical technology many innovative surgical methods are available for correcting stress incontinence[12].

There are two theories about the stress incontinence i.e. either it may be due to weekend anatomic support to the urethrovesical segment or due to deficiency of intrinsic sphincter of female urethra. . The distinctions between types I, II, and III are now

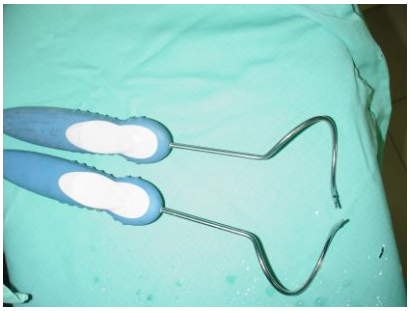
Pic 1 ;To locate the bladder neck



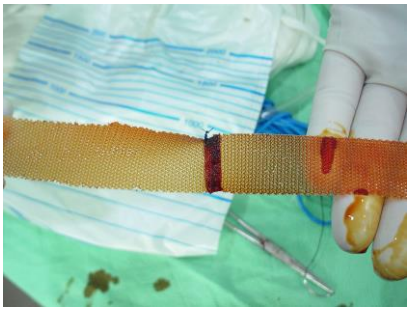
Pic 2;submucosal plane is made by injecting saline

Pic 3;incision made in ant vagina

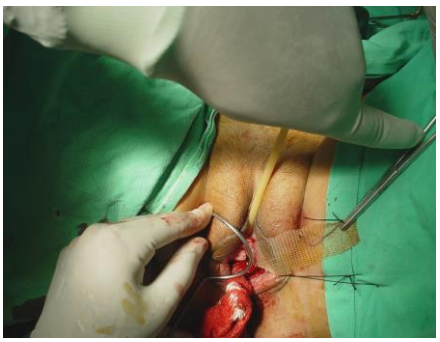
pic 4a; periurethral dissection



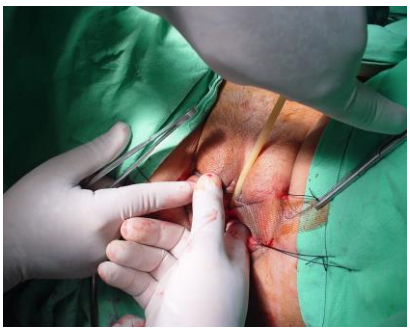
Pic 4b;specific needles



pic 5;1*30 cm Prolene mesh tape



Pic 6;transobturator route made



pic 7;route guided by finger tips

less important than they once were. SUI caused by urethral hypermobility results in a smaller amount of urine loss and requires the use of fewer pads than are required for ISD.

In hypermobility of urethra there is loss of anatomic support occurs, the proximal urethra and the bladder neck descend to rotate away and out of the pelvis at times of increased intra-

abdominal pressure. Because the bladder neck and proximal urethra move out of the pelvis (i.e., outside of the abdomen), the bladder receives greater intra-abdominal pressure relative to the urethra[4]. Due to this pressure differential, the urethra decreases intraurethral resistance and is more susceptible to involuntary urine loss. While the other cause of GSI Intrinsic sphincter deficiency arises from a defect within the urethra proper. In this condition, the urethral sphincteris unable to coapt and generate enough resting urethral closing pressure to retain urine in the bladder. The anatomic support is normal, but the urethra cannot remain closed due to a lack of the mucosal seal mechanism.

In France in 2001, Delorme introduced the transobturator sling procedure (tot sling) in humans1. Dargent et al then performed the operation in 71 patients using a technique inspired by Delorme, and found the short-term results of the transobturator sling procedure were similar to those of the TVT. Thousands of procedures have been performed in Europe and more recently in the United States[5].

TOT procedure has been evolved and is being done with success without morbidity and mortality so far. In this procedure additional support to the midurethra is given with help of the polypropylene mesh sling without any fixation i.e. tension free[6]. In fact this procedure addresses both the weak anatomic support to the vesicourethral segment and also adds strength to urethra if at all there is intrinsic sphincter deficiency. As stated by the American Urologic Association consensus statement in 2001, there are only 2 procedures that are proven to have effective long-term cure rates for the treatment of stress urinary incontinence (SUI). These procedures are the abdominal Burch Colposuspension (or MMK) and the transobturator sling procedure that is completed vaginally .clinical trials have shown the superiority of TOT over TVT i.e. tension free vaginal tapes[7,8]. Over 500,000 of these tot sling procedures have been completed worldwide. As route of entry into the vagina and mid urethral segment is very safe without jeopardizing the obturator nerve or vessel therefore reduces the risk of injury to the internal organs, i.e. the bladder, intestine, major vessels and nerves[3,12]. TOT is the procedure which can also be performed in local anesthesia if patient is unfit for other type of anesthesia or by choice[9]. TOT can also be performed by performed by inside-out technique in which specific needle is entered from vaginal wound and taken out from skin i.e. in reverse order to the technique mentioned in our study[11].

Despite the minimally invasive nature of these procedures peri and postoperative complications have been reported with a variety of techniques[4].

Bladder perforation is negligible with tot .the tunneler passage of the outside in obturator approach has been shown to be associated with lower urinary tract injury.

CONCLUSION

With the clear understanding of the female pelvic anatomy, especially the vesicourethral segment and obturator foramina anatomy, the TOT procedure gives the best results. Our result are comparable with the results given in literature but due to improvised needles and not using the company made TOT set this procedure is not only effective but very much economical.

REFERENCES

1. Abrams P, Cardozo L, Fall M, Griffiths D, Rosier P, Ulmsten U, et al. THE standardisation of terminology of lower urinary tract function: report from the Standardisation Sub-committee of the International Continence Society. Am J Obstet Gynecol 2002; 187:116–26.
2. Hunskaar S, Lose G, Sykes D, Voss S. The prevalence of urinary incontinence in women in four European countries. BJU Int 2004; 93:324–30.
3. Deval B, Ramsay I. Transobturator tape: a new method in the treatment of female stress urinary incontinence. Obstetrician Gynecologist 2005;
4. Delorme E. Transobturator urethral suspension: mini-invasive procedure in the treatment of stress urinary incontinence in women. Prog Urol 2001; 11:1306–13.
5. Ulmsten U, Johnson P, Rezapour M. A three-year follow up of tension free vaginal tape for surgical treatment of female stress urinary incontinence. Br J Obstet Gynaecol 1999;106:345–50.
6. Cody J, Wyness L, Wallace S, Glazener C, Kilonzo M, Stearns S, et al. Systematic review of the clinical effectiveness and cost-effectiveness of tension-free vaginal tape for treatment of urinary stress incontinence. Health Technol Assess 2003; 7: iii, 1–189.
7. de Tayrac R, Deffieux D, Droupy S, Chauveaud-Lambling A, Calvanesebenamour L, Fernandez H, et al. A prospective randomized trial comparing tension-free vaginal tape and transobturator suburethral tape for surgical treatment of stress urinary incontinence. Am Obstet Gynecol 2004; 190:602–8.

8. Neuman M. TVT and TVT-Obturator: comparison of two operative procedures. Eur J Obstet Gynecol Reprod Biol 2006; April 16

9. ;Ulmsten U, Henriksson L, Johnson P,Varhos G.An ambulatory surgical procedure under local anaesthetic for the treatment of female urinary incontinence. Int Urogynecol J Pelvic Floor Dysfunct1996; 7: 81–6

10. Siegel AL. Vaginal mesh extrusion associated with the use of Mentor transobturator sling.Urology 2005; 66:995–9

11. de Leval J.Novel surgical technique for treatment of female stress urinary incontinence: transobturator vaginal tape inside-out. Eur Urol 2003; 44: 724–30

12. Mellier G, Moore R, Jacquetin BA. Metaanalysis of the intra-operative safety and effectiveness of the transobturator hammock seen in results of prospective studies in 9 countries with 204 patients.Neurourol Urodyn 2004; 23: 556–7

13. But I. Vaginal wall erosion after transobturator tape procedure. Int Urogynecol J Pelvic Floor Dysfunct 2005; 16: 506–8