The Adjustable Transobturator Tape (Tot) For Post-Prostatectomy Incontınence

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Abstract

Introduction: Post-prostatectomy stress urinary incontinence (PPI) is a serious complication that affects patients' quality of life. There is no pharmacological treatment approved for male stres urinary incontinence. The artificial urinary sphincter is the current 'gold standard' for the surgical treatment of incontinence after PPI. In this retrospective study, we aimed to evaluate the efficiency and safety of adjustable transobturator sling material (Argus T) in male post-prostatectomy stress urinary incontinence. Material and Methods: Between 2008 and 2010, 12 patients following radical retropubic prostatectomy, and 24 patients after transurethral resection of prostate, a total of 36 patients had PPI were treated with Argus T. Results: Median follow-up was 30 months. Total cure rate was 61.1% (22 patients) and partial success rate was 25% (9 patients). Four patients (11.1%) were failed despite readjustment procedure. In one case (2.8%) the sling was removed. Conclusion: Transobturator bulbourethral sling is a cost effective minimally invasive technique for treating SUI after prostatectomy in selected patients with mild to moderate incontinence. Our results represent the effectivity of the procedure. Larger scaled studies with longer follow up periods may help to confirm these findings.

INTRODUCTION

Post prostatectomy stress urinary incontinence (PPI) is a serious complication that affects patients' quality of life (1). The incidence ranges between 0.8% and 87% in the literature (2). The risk of incontinence following prostatectomy includes preoperative factors (eg, age and preoperative continence status), intraoperative factors (eg, surgical technique and surgeon's experience), and postoperative factors (3,4).

The recommended first-line treatment for men with postprostatectomy urinary incontinence is pelvic floor muscle training (PFMT) (5). PFMT decreases the frequency of incontinence episodes and reduces the amount of leakage by compressing the urethra during activity (6). There is no pharmacological treatment approved for male stres urinary incontinence (7). Surgical treatment modalities include artificial urinary sphincter (AUS), periurethral bulking agents, balloon compression devices and retropubic or transobturator sling procedures. The AUS is the current 'gold standard' for the surgical treatment of incontinence after PPI (8). However, this procedure has some limitations (eg, cost, infection, erosion, revision).

The readjustable sling systems have been recently described as an alternative simpler and cheaper surgical option. More recently transobturator retrourethral sling technique is described (9,10).

In this retrospective study, we aimed to evaluate the efficiency and safety of adjustable transobturator sling (Argus T) application in male post-prostatectomy stress urinary incontinence.

MATERIAL AND METHODS

PATIENTS

Between 2008 and 2010, 36 patients with PPI were treated with adjustable transobturator (Argus T) sling procedure. Twelve patients had incontinence following radical retropubic prostatectomy (RRP), and 24 patients had incontinence following transurethral resection of prostate (TURP). All patients preoperative evaluation with physical examination, residual urine mesaurement, pad test, cystoscopy, ICIQ-SF (Turkish version), preoperative and postoperative urodynamic studies existed (11). None of the patients had radiotherapy, urethral stenosis confirmed by cystourethroscopy or neurogenic bladder confirmed by urodynamic studies.

All patients had pharmacological support and PFMT at least

6 months, and waited at least 1 year following the causative surgery. The degree of incontinence was evaluated by number of pads used per day. One or two pads usage was determined as mild; and three to five pads of incontinence as moderate incontinence. None of the patients' preoperative urodynamic findings showed neurogenic bladder patterns, all showed signs of striated sphincter dysfunction. Sphincteric function was also evaluated with retrograde leak point pressure and observation of voluntary sphincter contraction in cystourethroscopy.

Patients who did not need pads were accepted as cured. One or less pad usage per day was accepted as partial success. Need for more than one pad per day was accepted as failure. The strech of the sling was adjusted (tightened or loosened) depending on the continence and voiding difficulty of the patient after sling surgery.

SURGICAL PROCEDURE

Same surgical procedure applied to all patients by one surgeon. Argus T (Promedon SA, Cordoba, Argentina) adjustable sling material is used via transobturator route. The system consists of two pairs of radiopaque rings (washers) which are placed in the fixation arms to adjust tension properly (tightening and loosening) and allow for secure fixation to the fibromuscular tissue of the obturator foramen.

All patients had given preoperative antibiotics. Operation was performed under spinal or general anesthesia. Patient was placed in lithotomy with a moderate trendelenburg position. A 16 Fr Foley catheter was inserted into the urethra and bladder was completely emptied. A 5-7 cm long incision was made longitudinally in the perineum above the urethral bulb. Its center was in the lower border of the pubis. Sharp and blunt dissection was made till the bulbospongiosus muscle. A 3 cm bilateral incision was made on the skin above the inguinal fold at 2 or 3 cm below the insertion of the adductor magnus muscle. The incision was deepened bluntly until reaching the fibromuscular tissue of the obturator foramen, carefully as not to injure it. Through these incisions helical needles were inserted on each side, from outside inwards. Initially, the needles followed a path in the anteroposterior direction. Then, rotating the handle, the tip was directed towards the index finger introduced in the perineal dissection. The rotation of the handle continues until it appears outside of the incision. The connector at the end of the sling was inserted into the connection tip of the needle. Fixation arms were transferred from the perineal incision to the inguinal incisions. The sling was left in the midline, in its definitive position and without tension. Reinforcement rings (washers) were inserted and then moved down the fixation arms until they were placed on the fibromuscular tissue of the obturator foramen. The washer was inserted into the positioner and moved down until the reinforcement ring is reached, until it was placed on the fibromuscular tissue of the obturator foramen.

The tightening procedure was performed through a double check: a) endoscopic observation using a 17 Fr 0 degree cystoscope, checking that the opening of the urethra was closed when tightening the sling and b) adjustment retrograde urethral pressure measurement. A bottle of saline solution and a microdip chamber, connected to the cystoscope irrigation sheath through tubes, must be used for the last check. The ruler must be placed at the level of patient's pubis. The adjustment retrograde urethral pressure was at least 40 cm of water column. The final situation was reached when the endoscopic check shows that the lumen was closed and the drip chamber showed that water passage was stopped. We placed a 16 Fr catheter at the end of the operation and removed it after 24 hours.

RESULTS

Mean patient age was 63.3 (58-74). Median follow up was 30 months (24-48 months). After the first intervention, 20 patients were cured (no pad) and 8 patients were improved. Readjustment was performed on 16 patients (fifteen for incontinence; one for perineal pain and subjective voiding difficulty description by the patient). After second manipulation, two paitents were cured while three was improved. In 11 cases, severity of incontinence was not affected. In one case, sling was removed after readjustment, because severe discomfort and perineal pain complaint by the patient. After removal of the sling material, the patient was incontinent but did not describe pain anymore.

Total cure rate was 61.1% (22 patients) and partial success rate was 25% (9 patients). Four patients (11.1%) were failed despite readjustment procedure. In one case (2.8%) sling was removed. Preoperative and postoperative mean ICIQ-SF (Turkish version) score was 18.7 and 5.2 respectively ($p=0.03$). Preoperative and postoperative mean retrograde leak point pressures were 20 and 50 cmH_2O, respectively ($p=0.04$). Patients were using a mean number of 4 pads (3 to 6) per day preoperatively and 1.7 pads (0 to 5) per day postoperatively ($p=0.09$).

In the RRP group, total cure rate was 50% (6 patients), partial success rate was 25% (3 patients). Sling application

was failed in 25% (3 patients). In the TURP group, total cure rate was 66.7% (16 patients), partial success rate was 25% (6 patients), and failure was seen in 4.1% (one patient). In one patient (4.1%) sling was removed.

Sling implantations were performed in all of the patients without any significant surgical complications (e.g. bladder perforation). Urethral erosion did not occur in any of the patients during the follow up. Postoperative perineal discomfort and dysuria, which responded to analgesics and lasted less than one month, was detected in 5 patients (13.9%). In one case, severe discomfort and pain lead to removal of sling despite medical interventions.

DISCUSSION

Post-prostatectomy incontinence is an unfortunate complication with an incidence of 0.8% to 87% in the literature (2). It has been hypothesized that both intrinsic sphincter deficiency and possible damage to supporting tissues of membranous and bulbar urethra following radical prostatectomy could give rise to incontinence. Postoperative bladder dysfunction could also be responsible for the situation (12). Mild incontinence can be treated with conservative modalities such as medication, PMFT. Moderate, severe and mild SUI, which is resistant to conservative therapies annihilates patient's quality of life and requires surgical treatment.

AUS implantation is accepted as the gold standard treatment modality for post-prostatectomy incontinence in men despite its disadvantages (8). Although it has considerably high continence ratios, AUS is expensive, may present long term mechanical problems, and complicated both for surgeon and patient. Infection and urethral erosions are other common problems with AUS.

TOT is widely used for women with SUI. Clinical results are satisfactory for women. Its usage is widely accepted all over the world because of its low complication rates, satisfactory results and cost effectivity of the procedure (13,14,15). General acceptance and high success rates of this procedure lead TOT to be used in management of post-prostatectomy stress urinary incontinence. Logic of TOT application in men is to pressurize the urethra to compensate intrinsic sphincter deficiency and cranio-posterior replacement of membranous urethra in pelvic outlet. Sling material also can be readjusted under local anesthesia as it was in our patients. Satisfactory results can be achieved by providing sufficient urethral compression with the use of unique pushers to move the washers. We did not face any important complications except in one patient, who complained of persistent and disturbing perineal discomfort which lead to removal of TOT. The other reported complications of this procedure are urethral erosions, voiding dysfunction and bladder perforation (15).

We found a total cure rate of 61.1% (22 patients), and a partial success rate of 25% (9 patients) for mild to moderate PPI patients with Argus T. The only complication was removal of the material because of subjective pain and perineal discomfort unresponsive to analgesics and readjustment in one patient (2.8%).

When we compared the RRP and TURP group, total cure and partial success rates were 50% and 25% to 66.7% and 25%, respectively. While it seems favoring TURP group for success, there was not significant difference by means of statistics (p=0.22).

The ICIQ-SF scores and mean retrograde leak point pressures were significantly improved postoperatively (p=0.03 and p=0.04). Daily pad usage also improved postoperatively but lacks adequate significance (p=0.09).

Because Argus T is easy to apply for both surgeon and patient, we recommend it for mild to moderate PPI cases.

CONCLUSIONS

Mild incontinence can be treated by conservative or medical modalities. For severe cases AUS is accepted as standard treatment procedure but it has some limitations. The male sling was described recently and gained acceptance as an alternative surgical option. Although the early results were encouraging with the male sling procedure, there is still a need for larger series and long term results.

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