

Hypothesis / aims of study

Urinary incontinence post retropubic prostatectomy creates a negative impact on the Quality of Life. Ten percent of patients require surgical procedures after one year [1]. Although the artificial urinary sphincter is considered the gold standard for treatment, its use is limited due to the high costs and device revision rates [2]. A more accessible alternative treatment is the male sling (MS) which presents good results for mild and moderate urinary incontinence (UI) [3]. There are several models of male slings and different techniques for placing and fixing the mesh, which impacts long-term results. Several studies compare the effectiveness of different models, however, the literature regarding surgical technique, especially concerning mesh fixation, is scarce. Therefore, the aim of this study is to evaluate the evolution of male sling techniques, from retro-pubic slings to different fixation forms (non-fixed, fixed to the pubis or urethra) with a particular focus on comparing their effectiveness and adjustment. Comparisons with other techniques will provide valuable information on optimizing surgical outcomes for post-prostate treatment incontinence.

Study design, materials and methods

A total of 91 patients were eligible for the study with a mean age of 66.19 years and a median follow-up time of 48.0 months. The mean preoperative Leak Point of Pressure in urodynamics was 75.81 ± 27.09 cmH₂O. The median preoperative pad test was 349g, with no difference between groups. Patient characteristics are summarized in Table 1. The surgery presented a success rate of 63.5%, with 40% of patients reporting quality of life improvement, this number is even more significant in the group of patients undergoing TOT sling, 55% of patients presented continence and 57.3% reported an improvement in quality of life, as demonstrated in Table 2. Regarding complications, RP sling demonstrated the highest incidence, 9 patients had bladder perforation. Postoperative complications were also higher in the RP sling group, the main complications were infection, mesh extrusion, and acute urinary retention.

Table 1. General characteristics of patients included in the study

	RP Sling	TOT-A Sling	TOT-U Sling	TOT-P Sling	p-value
Number of patients (n)	36	5	45	5	
Age (y; mean ± SD)	65.25 ± 7.46	66.80 ± 4.92	67.49 ± 7.25	64.40 ± 3.29	0.4489
Previous urethral stricture procedure (n [%])	10 (27.8)	1 (20.0)	12 (26.7)	2 (40.0)	0.9195
Second procedure (n [%])	16 (44.4)	3 (60)	12 (33.3)	3 (60)	0.0213
Pelvic radiotherapy (n [%])	5 (13.8)	1 (20)	10 (22.2)	0 (0)	0.6322

Results and interpretation

Male sling is an effective treatment for mild and moderate urinary incontinence, our results show a long-term 63.5% success rate. Several models of male slings have been launched in recent decades, the classic slings were implanted via a retropubic approach, presenting excellent results, but with high complication rates, and were stopped. Then, slings implanted via the transobturator approach were developed which allowed us to achieve the same success rates with greater security. Another question about the ideal way of fixing the sling raises discussion among experts. In our service, the first cases of sling were performed by fixing the mesh in the pubic periosteum, however, low continence resulted in long-term complaints of pain presented by all patients, and the technique was shortly abandoned. We moved to insert the sling transobturator self-fixed.

These patients achieved good continence results but began to experience incontinence in the first weeks after surgery. These results show that, differently than happens in women, the self-fixation of the mesh to the muscles is not enough to guarantee the necessary tension in the male.

Then we chose to fix the arms of the mesh over the urethra and we achieved good continence after surgery in a long-term follow-up. The transobturator approach with fixation of the arms of the sling, allowed to achieve continence rates slightly above those described in the literature, without pain with low rates of complications, and a positive impact on the patient’s quality of life.

Conclusions

The main strength of this study is that it is the first study to discuss the different fixation forms (retro pubic, non-fixed, fixed to the pubis, or sling arms) with a particular focus on comparing their effectiveness and we achieved better results in long-term follow-up, showing the effectiveness and safety of the technique used.

Table 2. Patient outcomes after a median follow-up of 48 months.

	RP Sling	TOT-A Sling	TOT-U Sling	TOT-P Sling	p value
Improvement QL	9 (25%)	2 (40.0%)	25 (55.5%)	1 (20.0%)	0.0205
Continence (n [%])	19 (52.2)	4 (80)	27 (60)	4 (80)	0.2794

References

1. Veshnavei HA. Urinary incontinency after radical prostatectomy and effects of 1 month pre-operative biofeedback training. Am J Clin Exp Urol. 2021 Dec 15;9(6):489-496. PMID: 34993268; PMCID: PMC8727787.
2. W.S. Reynolds, R. Patel, L. Msezane, et al. Current use of artificial urinary sphincters in the United States J Urol, 178 (2007), p. 578
3. Tutolo M, Cornu JN, Bauer RM, Ahyai S, Bozzini G, Heesakkers J, et al. Efficacy and safety of artificial urinary sphincter (AUS): results of a large multi-institutional cohort of patients with mid-term follow-up. Neurourol Urodyn. 2019;38:710–718.