CLINICAL CASE

Urinary incontinence management with artificial urinary sphincter following radical prostatectomy


* Corresponding author at: Calzada de Tlalpan N° 4800, Colonia Sección XVI, Delegación Tlalpan, C.P. 14080, México D.F., México. Telephone: 3624 5676, 4000 3044. Email: gerardofernandeznoyola@gmail.com (G. Fernández-Noyola).


KEYWORDS
Urinary incontinence; Artificial sphincter; Radical prostatectomy; Radiotherapy; Mexico.

Abstract  The aim of this article is to present the technical aspects of placing the AMS-800™ artificial urinary sphincter for managing total postoperative urinary incontinence. A 73-year-old man with a past medical history of prostate cancer (CaP) underwent radical retropubic prostatectomy in the year 2000. The histopathologic report was stage pT4 adenocarcinoma of the prostate with a Gleason score of 4+5=9. He was managed with maximum androgen blockade and adjuvant radiotherapy, receiving a total of 112 Gy. After the radiotherapy, he presented with total urinary incontinence that required the use of 6 to 8 diapers daily. The patient underwent the placement of an AMS-800™ artificial urinary sphincter with no complications, obtaining total urinary continence and an important improvement in his quality of life. The management of urinary incontinence following radical prostatectomy with the AMS-800™ artificial urinary sphincter has been shown to be effective and is regarded as the gold standard by many urologists. The majority of patients using this device achieve urinary continence and their quality of life is significantly improved.
Introduction

There are postoperative complications from the management of prostate cancer (CaP) with radical prostatectomy that can significantly deteriorate patient quality of life. One of these is urinary incontinence and it is a common symptom in patients that have been recently operated on. However, the majority of patients recover urinary continence, so much so, that one year after surgery this symptom persists in only 7% of the patients. In patients that receive adjuvant radiotherapy, the risk for urinary incontinence increases from 6% to 10%, depending on the dose and the modality employed.1–3

According to symptom frequency and the quality of life deterioration it causes, postoperative urinary incontinence can be classified as mild, moderate, or severe. The latter 2 significantly benefit from surgical treatment. The majority of authors agree that a postoperative follow-up period of at least one year is required before the final grade of incontinence can be determined.4–6

The idea of an artificial urinary sphincter was developed in the mid-twentieth century. In 1947, Foley designed the first artificial sphincter; it was a cuff that was inflated and deflated around the penis that was later developed as a surgical technique to be implanted around the urethra. The new era of the artificial urinary sphincters arrived in 1972 with Scott, Bradley, and Timm, with the elaboration of the AS-721™. This device required a laborious surgical act and the lack of a functional sphincteric mechanism. The placement of an artificial urinary sphincter was proposed and the AMS-800™ artificial urinary sphincter has been used to treat moderate to severe urinary incontinence for 30 years. It has had excellent results with rates of 88% to 95% success at 5 years or more. The complication rates vary depending on the case series, and the most frequent complication is malfunction of the sphincter (11% to 23%), followed by system extrusion (8% to 20%), urethral erosion (8% to 10%), and infection (4% to 6%).7–9

In relation to the results of the artificial sphincter in patients that have received radiation therapy, a high incidence of urethral atrophy, erosion, and infection that has required surgical re-intervention has been reported, in comparison with those patients that have not undergone radiotherapy (41% vs. 11%). However, long-term continence and patient satisfaction do not appear to be affected by this modality.10–12

The persistence of stress incontinence can occur in more than 15% of the patients after artificial sphincter placement. This has been corrected by situating a more proximal cuff, or even by placing a second cuff, if system malfunction has been ruled out.12

Case presentation

A 73-year-old man had a past medical history of CaP and underwent radical retropubic prostatectomy in 2000. The histopathologic report was prostate adenocarcinoma with a Gleason score of 4+5=9 and stage pT4 for which he was given maximum androgen blockade and adjuvant radiotherapy, receiving a total of 112 Gy. The patient presented with total urinary incontinence after the radiotherapy, requiring the use of 6 to 8 diapers daily. During his progression, he received multiple treatments with anticholinergics and se- rotonin reuptake inhibitors with no improvement. In the evaluation protocol, cystourethrography revealed a bladder capacity of 450 mL, as well as permeability of the entire urethra, total bladder emptying, and absence of the shadow of the urinary sphincter (fig. 1). Cystoscopy corroborated the lack of a functional sphincteric mechanism. The placement of an artificial urinary sphincter was proposed and the procedure was carried out with no complications. The patient was released on the second postoperative day. Eight weeks after surgery the sphincteric mechanism was activated and the patient achieved total urinary continence and an important improvement in his quality of life.

Surgical technique

After the placement of a bladder catheter and by the perineal approach, the bulbous urethra was located and dissected...
Esfínter urinario artificial para el manejo de la incontinencia urinaria posterior a prostatectomía radical

(fig. 2), sparing the bulbocavernous muscle as much as possible. The urethra was dissected at the level where the occlusive cuff was to be placed, until the dissector could pass the measuring tape through with ample space (fig. 3).

Once the measuring tape was in place, the urethral circumference was measured, followed by the length of the cuff (fig. 4). The pressure-regulating balloon was then put in the prevesical space so that it barely lay over the muscle and the fascia through the suprapubic incision. Once the balloon was in position, it was filled with 22-23 cc of injectable solution. The connecting tube of this element was subcutaneously moved along until it exited at the level of the suprapubic incision, using the tubing passer that is one of the system components, and the 3 elements were connected (fig. 5). The control pump was placed in the scrotal sac in a subdartos pouch (fig. 6). The wounds were closed and the functioning of the mechanism and the urethral lumen occlusion were corroborated using a flexible cystoscope (fig. 7).

The system was maintained inactive for 8 weeks after which it was then activated. This has reduced the infection rate and system extrusion.
Conclusions

Urinary incontinence management after radical prostatectomy with the AMS-800™ artificial urinary sphincter has been shown to be effective and is regarded as the gold standard by many urologists. Its placement is a simple procedure with low morbidity in the hands of the experienced surgeon and it provides the patient with satisfactory functional and esthetic results that significantly improve quality of life.

Figure 5 A and B Placement of the sphincter system components, first through suprapubic incision and then with the subcutaneous passage of the connecting tubes.

Figure 6 The sphincter control pump is placed in the scrotum through a subdartos pouch.

Figure 7 A and B Cystoscopy identifies the open urethra without the effect of the sphincter, and then with the functioning sphincter.
Conflict of interest

The authors declare that there is no conflict of interest.

Financial disclosure

No financial support was received in relation to this article.

References