Genitourinary Prosthetics
A Primer for the Non-urologic Surgeon

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KEYWORDS

• Artificial urinary sphincter • Penile prosthesis • Testicular prosthesis
• Perioperative management • Erectile dysfunction • Urinary incontinence

KEY POINTS

- There are several implanted urologic devices that may affect surgical care by the general surgeon in the future.
- Given the numbers of penile prostheses and anti-incontinence procedures being performed, all surgeons must evaluate for the presence of urologic prosthetics in patients undergoing nonurologic surgery.
- Patients with artificial urinary sphincters must have their devices deactivated in the open position before any attempt at urethral instrumentation and catheterization.
- Injury to device components of urologic prosthetics in a sterile operative field can be managed with immediate or delayed revision.
- Injury to device components in the setting of an infected operative field can be managed with immediate removal of components and replacement at a later operative session.

INTRODUCTION

Genitourinary prosthetics are used in the management of a variety of urologic conditions with the goal of restoring function and improving the quality of lives of affected patients. Urologic prosthetics may be encountered by general surgeons during clinical assessments when evaluating patients for a multitude of nonurologic surgeries.

Erectile dysfunction (ED) is estimated to affect up to 30 million men in the United States.[1] It can have a devastating impact on both the physical and the psychological aspects of men's health and is frequently attributable to a progressive decline in neurologic, hormonal, and vascular function. More than 50% of men between the ages of 40 and 70 experience some level of ED.[2] Despite the increasing role of phosphodiesterase type 5 inhibitors, such as sildenafil (Viagra), tadalafil (Cialis), vardenafil (Levitra HCl), and avanafil (Stendra) in the management of ED, the penile prostheses

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remain a standard treatment option, with excellent durability and patient/partner satisfaction. This satisfaction is reflected by the number of annual penile prosthesis implantations performed in the United States, increasing from 17,540 cases in 2000, to 22,420 in 2009, to approximately 30,000 in the present day.[3] Penile prostheses have also been used in the treatment of refractory ischemic priapism[4,5] and to facilitate condom catheter usage in spinal cord patients.[6]

Similar to ED, urinary incontinence is a condition that carries a significant economic and health burden with a prevalence of 11.2% in men age 45 to 64 years to 31% in men older than 65 years old.[7,8] The most common cause of stress incontinence in men include the various treatments for prostate cancer: radiation therapy, brachytherapy, and surgical removal of the prostate. Stress urinary incontinence, which is defined as the involuntary leakage of urine with effort or exertion, or with coughing or sneezing, is managed in men surgically when conservative treatment modalities are unsuccessful. With the surge in the number of anti-incontinence procedures and devices available within the armamentarium of urologists, there has been a subsequent increase in the number of anti-incontinence procedures being performed, as reflected in case logs of certifying and recertifying urologists from 2004 to 2010 showing an increase from 1936 to 3366 treatments per year.[9]

Given these findings, it is very likely that surgeons in other disciplines will encounter patients who present with existing genitourinary prosthetics during workup for nonurologic surgery. In this article, an overview is presented of the 3 most common types of urologic prosthetics non-urologic surgeons may encounter: the testicular prosthesis, the penile prosthesis, and the artificial urinary sphincter (AUS).

TYPES OF GENITOURINARY PROSTHESIS

Testicular Prosthesis

Testicular prostheses (**Fig. 1**) are used in cases of anorchism or monorchism, which can occur as a complication of testicular torsion, scrotal trauma, radical orchiectomy for testicular cancer, and sexual reassignment surgery. Patient acceptance and satisfaction rates are high.[10,11] These devices consist of a silicone elastomer filled with saline and are designed to mimic the natural testicle in size and consistency. Placement is performed through an inguinal incision or high scrotal incision, and these can be fixed in place with a nonabsorbable suture to the dartos of the scrotum to prevent migration. Varying sizes allow surgeons to place prostheses that account for the volume of the scrotal sac, the

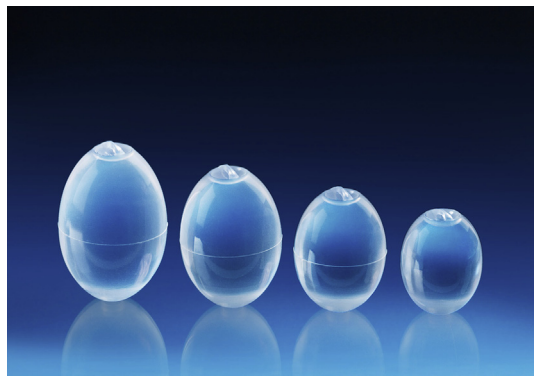

Fig. 1. Torosa saline-filled testicular prosthesis. (© Coloplast Corp. REPRINTED WITH PERMISSION-ALL RIGHTS RESERVED. Coloplast® and Torosa Testicular Prosthesis® are registered trademarks of Coloplast A/S.)

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