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MINI-REVIEW

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A multidimensional approach to male urinary incontinence: treatment efficacy and mental health perspectives

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Abstract

Male urinary incontinence (UI) is a prevalent yet under-discussed condition that has a significant impact on patient quality of life and social, emotional and physical well-being. UI in men can arise as stress incontinence, urge incontinence, or mixed incontinence depending on the timing and manifestation of urinary leakage. The economic implications of UI are substantial, with UI in men leading to billions in healthcare costs annually in the United States alone. UI is associated with decreased quality of life and depression, particularly among socioeconomically vulnerable populations. For men, this condition can cause emotional and financial distress, affecting quality of life, social reintegration, and professional activities. Addressing the mental health aspects of UI through screening, open communication, and tailored interventions is crucial for improving patient outcomes and quality of life. The diagnostic process for UI begins with a thorough history and physical examination to classify the type and severity, which dictates the treatment approach. Other office-based diagnostic tools can help to accurately characterize symptoms and assess impact on quality of life. For complex cases or when standard diagnostics fail to clarify the condition, referrals to urologic specialists for advanced testing are recommended. Conservative management is always preferred as the first-line therapy for UI, including for stress, urge and mixed incontinence. Medications tend to be more effective and prevalent in the management and treatment for urge incontinence while surgical interventions are likely to give the best outcomes for stress incontinence. Referral to a urologic specialist is often necessitated in complex cases or for surgical treatment of UI. In this study, we provide a comprehensive analysis of male UI, enhance understanding and awareness of the condition, guide management practices to improve patient outcomes, and explore the economic burden and mental health implications of UI in men.

Keywords

Urinary incontinence; Male urinary incontinence; Urinary incontinence management; Urinary incontinence treatment; Urinary incontinence diagnosis; Stress urinary incontinence; Urge urinary incontinence; Mixed urinary incontinence

1. Introduction

Male urinary incontinence (UI) is an under-discussed condition with significant impacts on health and quality of life. In this paper, we address the evolving landscape of male UI in order to provide a comprehensive analysis of the problem, enhance understanding and awareness of the condition, and guide management practices to improve patient outcomes while exploring its economic burden and mental health implications. We first define the types of UI commonly encountered in men and discuss how to thoroughly assess UI. We then evaluate contemporary medical and surgical modalities for treatment and examine the effectiveness of each one of these options.

1.1 Defining urinary incontinence

UI is defined as the unintentional leakage of urine and can be classified based on the timing and manifestations of symptoms. The risk factors for UI in men are multifaceted and include increasing age, a history of urinary tract infections (UTIs), major depression, stroke, and hypertension [1, 2]. In older men, benign prostatic hyperplasia (BPH) also emerges as a significant risk factor [2]. While age is listed as a major risk factor, male UI is not a normal age-related process and should be investigated when present in a patient of any age.

Urge incontinence is the most prevalent type of UI in men and is defined by sudden compelling urges to void, often with difficulty postponing urination and subsequent involun-

tary leakage [3]. The underlying factor in urge incontinence is dysfunction of the detrusor muscle, which is the smooth muscle located in the bladder wall which functions to contract and propel urine through the urethra [3]. Overactivity of this muscle can be a result of neurologic disorders such as stroke or brain tumors as well as degenerative diseases like Parkinson's. Urothelial inflammation can also precipitate detrusor overactivity; however, it is most often idiopathic [3]. Moreover, any cause of bladder outlet obstruction, including BPH, can increase the risk of developing urge incontinence as a secondary problem caused by the outlet obstruction.

Stress urinary incontinence (SUI) in men is characterized by involuntary leakage of urine during moments of increased intraabdominal pressure, such as sneezing, coughing, exercise or lifting [4]. This definition underscores the relationship between physical exertion or stress and urinary leakage, and it results from urethral sphincteric deficiency [5, 6]. Although advances in surgical technique and prostate cancer treatment have been made in recent years, radical prostatectomy (RP) remains the leading cause of male SUI [6]. Among the patient-specific factors for SUI after RP, age at surgery emerges as a critical predictor of SUI, with the risk of incontinence increasing exponentially with each passing year [7]. Older age at the time of prostatectomy is associated with higher odds of undergoing incontinence procedures [8]. Other issues such as stage of cancer, modality of surgery, surgeon experience, and blood loss do not seem to have a strong bearing on the risk of incontinence after prostatectomy [7]. Additional potential causes of SUI include transurethral resection of the prostate, brachytherapy, and external beam radiation therapy [5, 9].

When symptoms of stress incontinence and urge incontinence are combined, this is referred to as mixed urinary incontinence. The degree of stress *vs.* urge symptoms in mixed incontinence can vary by patient, with some patients having a predominance of one type with a smaller presence of the other. Most men with postprostatectomy incontinence predominantly experience stress incontinence, but many may also suffer from concurrent overactive bladder (OAB), especially if they have undergone additional radiation therapy [10]. In addition, nighttime incontinence and nocturia may signal either urge urinary incontinence or severe SUI [5].

Understanding these distinctions is crucial for both clinicians and patients in managing urinary incontinence and tailoring treatment to individual needs.

1.2 Prevalence of urinary incontinence

General reported prevalence rates for all types of UI (stress, urge and mixed) in men can be as high as 39%, and the incidence increases with age [1, 11, 12]. The prevalence of UI in men younger than 45 is approximately 2–5%; however, this number quickly doubles to about 11% for men 45–64 and once again can increase to as high as 34% for patients >65 [1, 12]. Urge incontinence is the most prevalent type of urinary incontinence for all age groups.

The prevalence of SUI sees a significant jump in men older than age 45 [12]. SUI, often resulting from various treatments for prostate cancer including RP and radiation therapy, remains a significant concern, with reported rates between 4% and 90% in some series [2, 7, 9, 13]. Data from other modern studies further highlight this concerning trend, with incontinence rates ranging from 15% to 40% one-year post-surgery, as reported by patients [8]. Other studies have reported one-year SUI rates up to 90% [14, 15]. Similarly, SUI rates following robot-assisted radical prostatectomy (RARP) vary significantly, reaching up to 30% depending on the definition used [7, 16].

1.3 Burden of urinary incontinence

UI of all types poses a significant financial burden on the healthcare system and patients, costing billions of US dollars per year [17]. These include direct healthcare expenses, individual out-of-pocket costs for routine care, and significant costs to caregivers. Specifically, the economic burden of SUI in the United States is estimated to be between $19 and $30 billion per year [18]. This is compounded by significant costs associated with a decline in quality of life, reduction in functional productivity, and the price of anti-incontinence procedures, including the artificial urinary sphincter (AUS) or male sling surgeries. Moreover, a 2018 systematic review estimated the economic burden of OAB to be greater than $100 billion annually in the United States [19]. This data illuminates how the loss of productivity associated with UI can have significant financial implications, both for patients and for their employers. Employees with UI nearly double workplace costs when compared to continent employees due to higher medical, prescription drug, sick leave, and short-term disability costs [20].

From a caregiver perspective, long-term care (LTC) facilities are particularly afflicted by the burden of UI whether it is from stress, urge or mixed incontinence. UI is a common yet frequently untreated symptom in these facilities, with substantial implications for patient safety, LTC staff workload, and costs for incontinence supplies and staff time. It is reported to affect up to 70% of older residents at LTCs, contributing to a high incidence of falls and a significant amount of staff effort devoted to managing the condition [21]. About a third of all LTC falls occur when a patient attempts to use the bathroom [21]. In addition, incontinence management in LTCs requires on average 56% of a certified nursing assistant's time, and the high workload associated with incontinence care is also a factor in nursing assistant turnover [21]. As a result, early identification and treatment of UI in older individuals can optimize time spent with nursing staff and improve efficiency of care at LTCs and other healthcare institutions.

1.4 Effects of urinary incontinence on mental health

The impact of UI on mental health is profound, and UI symptoms impair social, physical, and psychological well-being [22]. A 2020 meta-analysis found that UI was strongly associated with a diminished quality of life [23].The issue is particularly pressing as the proportion of elderly men is expected to increase substantially by 2050 [22].

There is a notable association between UI severity and depression with studies indicating that individuals with moderate to severe UI exhibit higher odds of experiencing depression

compared to those without incontinence [22]. Additionally, the impact of UI on depression is stronger among those at the lowest socioeconomic levels [22]. This carries wider socioeconomic implications given that the burden of UI is often more pronounced in socioeconomically vulnerable populations, highlighting the need for broader, multidisciplinary approaches to address this issue [22].

Incontinence after prostate treatment can also lead to emotional and financial distress, affecting reintegration into society and relationships [5]. Male incontinence significantly influences quality of life and can delay treatment for other post-prostatectomy conditions like erectile dysfunction. Patients often prioritize addressing UI before tackling issues related to potency [15]. Following prostate treatment, sexual arousal incontinence and climacturia can be disturbing to men, and many will avoid intercourse due to fear of leakage [5]. UI also greatly interferes with daily activities and work. This condition can be more disruptive in physically demanding jobs compared to sedentary occupations, potentially affecting job security [22].

Monitoring depression in patients with UI is crucial and regular mental health assessments should be integrated into the treatment plan [24]. Healthcare providers should be vigilant for symptoms of depression, especially in individuals with severe UI and for vulnerable populations. Open communication about mental health, along with appropriate referrals to mental health professionals, when necessary, can provide comprehensive care. Tailoring interventions to address both the physical symptoms of UI and the associated psychological distress can significantly improve overall patient outcomes and quality of life.

2. Diagnostic approaches

2.1 Differential diagnosis of urinary incontinence

When addressing male UI, it is important to conduct a differential diagnosis to identify and distinguish UI from other conditions that may present with similar symptoms. Several other disorders can either mimic or exacerbate UI symptoms.

Infections such as UTIs or prostatitis can increase urinary frequency and urgency, mimicking the symptoms of urge UI. Similarly, the urethral discharge from infectious urethritis can be mistaken for UI. These symptoms often resolve with appropriate antibiotic treatment. Another important consideration is diabetes mellitus, which can cause polyuria and glycosuria, leading to frequent urination and urgency that can also be confused with UI. Proper management of blood glucose levels is essential to mitigate symptoms.

It is also important to distinguish urge incontinence from OAB, as OAB does not involve any involuntary urinary leakage. In addition to OAB, further differentiation should be made from BPH with lower urinary tract symptoms (LUTS). BPH with LUTS can cause increased urinary frequency, urgency, weak urinary stream and post-void dribbling that can be concerning for patients. Unlike UI, the dribbling associated with BPH is usually due to incomplete bladder emptying rather than a loss of urinary control, and the management focuses on treating the underlying prostate enlargement.

Neurological disorders and neurodegenerative diseases are additional considerations in the differential diagnosis. These conditions can affect bladder function and control, leading to symptoms of UI. Similarly, constipation can indirectly cause or exacerbate UI by exerting pressure on the wall of the bladder, thereby reducing its capacity and prompting urinary frequency and urgency.

2.2 Diagnostic evaluation of urinary incontinence

The workup of any type of UI begins with a comprehensive history and physical exam. In particular, the history should obtain the patient's voiding habits, duration of symptoms, provoking factors, surgical history, current medications, and concomitant medical conditions [3]. History taking in particular should also inquire about the use of any absorbable pads or diapers and the types of activities that are associated with leakage. Fluid intake and common bladder irritants, including caffeine and alcohol, should also be ascertained through the history [3]. Medication reconciliation is important as there are a number of medications that can contribute to UI, including medications with anticholinergic and antihistaminic properties, benzodiazepines, opioids, antipsychotics, and a number of cardiac drugs. Most importantly, how bothersome the symptoms are to the patient should be identified, and validated tools such as the International Consultation on Incontinence Questionnaire (ICIQ), as recommended by the International Continence Society, can assess the impact of the symptoms on the patient's quality of life [25]. Quality of life plays a key role in establishing both the goals of treatment and the intensity of the treatment for UI.

Physical exam should include a genitourinary, abdominal and screening neurological exam as well as a mental status exam and assessment of body mass index (BMI) [3]. A standing stress test is very helpful, where the clinician asks the patient to perform the Valsalva maneuver, and sometimes cough, in order to increase intraabdominal pressure and invoke stress urinary incontinence.

Once the history and physical exam confirm the presence of UI, a urinalysis with microscopy and urine culture, if UTI is suspected, should be performed with the goal of identifying any glycosuria, hematuria or infection [3].

Other office-based tools can validate the diagnosis and better direct treatment, such as ultrasonography to assess post-void residual volume (PVR) as well as uroflowmetry [25]. Assessing PVR urine volume is useful for understanding bladder emptying efficiency. Elevated PVR (>200 mL) may indicate detrusor underactivity or obstruction, necessitating further diagnostic evaluations from a urologic specialist [5, 26]. A voiding diary is instrumental in objectively capturing the frequency, volume, and circumstances of urinary events, offering insights into the patient's functional bladder capacity and triggers for incontinence [9, 10]. It can further characterize symptoms, where the patient tracks their fluid intake, voiding patterns, and any instances of incontinence as well as what precipitated the incontinence. The voiding diary should be maintained for at least 3 days, or until the patient's next contact

with a provider [27, 28].

If the patient has signs of SUI, the severity of SUI should be objectively measured using a standardized 24-hour pad weight test, with different levels of severity defined based on the amount of urine loss during the test [11]. The 24-hour pad weight test serves as an important tool since patient-reported pad usage often does not correlate with the actual volume of incontinence, which is essential for selecting the appropriate treatment [10]. It can also be used as a tool to assess an objective response to treatments.

In difficult cases or confusing presentations, subspecialty referral to urology for potential cystoscopy or urodynamics testing is indicated [29]. There are multiple forms of urodynamics testing including uroflowmetry, cystometry, urethral pressure profiles, leak point pressure measurements, or neurophysiologic studies. As a result, this testing can offer critical data on bladder capacity, detrusor activity, Valsalva leak point pressure, and confirmation of UI, further guiding treatment decisions [3, 10]. In addition, referral to a urologic specialist should be considered for men over the age of 60 and those with a history of pelvic radiation, pelvic surgery, neurogenic lower urinary tract dysfunction, abnormal urinalysis findings, incontinence with recurrent infections, or unpredictable leakage or significant voiding dysfunction [4, 25, 28].

The workup and diagnostic strategies by type of urinary incontinence are described below in Table 1.

3. Treatment and management

Treatment options for male UI are based on the etiology, type and severity of incontinence. Setting clear treatment goals and managing patient expectations is important when treating UI as its bother will differ based on the patient, and providers should adopt patient-centered care when discussing options. General treatment recommendations are displayed in Table 2 below.

3.1 Urge incontinence

The goals of treating urge incontinence are to control bladder overactivity and improve the patient's quality of life. As a result, some men will need no intervention at all if they have minimal or no decrement in quality of life, as well as patients who may not perceive a benefit in quality of life with treatment [29].

In patients where treatment is merited, first-line treatment is centered around conservative management including lifestyle modifications, bladder training and delayed voiding, pelvic floor muscle training (commonly known as Kegel exercises), and avoidance of bladder irritants such as caffeine and smoking [3, 29]. Lifestyle modifications also include weight loss and fluid management.

Second-line treatments involve oral antimuscarinic or beta-3 agonist medications. The American Urological Association (AUA) does not prefer a particular antimuscarinic; the choice of antimuscarinic should be guided by the side-effect profile of the medication with regard to the patient [29]. Mirabegron and Vibegron are the United States Food and Drug Administration (FDA) approved beta-3 agonist options. Dose adjustment or class switching from an antimuscarinic to a beta-3 agonist (or *vice versa*) is preferred initially if the current medication is ineffective, and combining an antimuscarinic and beta-3 agonist can be considered for patients refractory to monotherapy [29]. Antimuscarinics should be prescribed with caution in elderly patients as well as patients currently on other anticholinergic medications. The AUA recommends a trial of 8 to 12 weeks for behavioral therapies and 4 to 8 weeks for pharmacologic therapies prior to assessing their effectiveness for the individual man [29].

Third-line treatments are considered if a patient has failed both conservative management and two second-line pharmacotherapy treatments [3]. At this point, the patient should be referred to a urology specialty clinic for further management. FDA approved third-line treatments include intradetrusor botulinum toxin A (BTA), peripheral tibial nerve stimulation (PTNS), or sacral neuromodulation (SNS) [29].

3.2 Stress incontinence

The treatment of male SUI typically begins with conservative management similar to the treatment of urge incontinence. These modifications include fluid intake regulation, minimizing caffeine and alcohol, smoking cessation, weight loss, and implementing timed or double voiding routines to improve bladder control [9]. Pelvic floor muscle training (PFMT)

TABLE 1. Summary of required and recommended urinary incontinence diagnostic testing.

	Stress UI	Urge UI	Mixed UI
History	*	*	*
Physical Exam	*	*	*
Urinalysis	*	*	*
Symptom Questionnaire (*e.g.*, ICIQ-UI SF)	+	+	+
Post-Void Residual Volume (PVR)	+	+	+
Voiding Diary	+	+	+
24-Hour Pad Weight Test	+	+	+
Urodynamic Studies (UDS)	^	^	^
Cystourethroscopy	^	^	^

**Required for all patients; +Recommended for all patients; ^Recommended in select cases with subspecialty referral. ICIQ-UI SF: International Consultation on Incontinence Questionnaire-Urinary Incontinence Short Form.*

TABLE 2. Treatment recommendations for male urinary incontinence.

	Stress UI	Urge UI	Mixed UI
Conservative Management			
Bladder/Voiding Training	1	1	1
Pelvic Floor Muscle Training	1	1	1
Irritant Avoidance	1	1	1
Weight Loss	1	1	1
Fluid Management	1	1	1
Medications			
Antimuscarinics		2	2[2]
Beta-3 Agonists		2	2[2]
Duloxetine, Imipramine	2[1]		2[1,2]
Surgical Management			
Artificial Urinary Sphincter	3		3
Male Sling	3		3
Adjustable Balloon Device	3		3
Urethral Reconstructive Surgery	4		4
Other Management Options			
Sacral Neuromodulation		3	
Peripheral Tibial Nerve Stimulation		3	
Intradetrusor BTA		3	
Urinary Diversion		4	
Stem Cell Injections	NR		NR
Urethral Bulking Agents	NR		NR

1: First-Line Treatment Recommendation; 2: Second-Line Treatment Recommendation; 3: Third-Line Treatment Recommendation; 4: Fourth-Line Treatment Recommendation; NR: Not Recommended; [1]Duloxetine is approved in the European Union for treatment of SUI but not in the United States; [2]Dependent on predominance of urge or stress symptoms; BTA: botulinum toxin A.

remains an integral part of conservative management due to its non-invasive nature and potential for early benefit. This is particularly useful for men undergoing RP as these exercises have been shown to accelerate the initial recovery of continence [5].

There are no specifically approved pharmacologic therapies for male SUI in the United States [11]. While approved in many European Union nations, the off-label use of duloxetine and imipramine are sometimes considered for mild post-prostatectomy SUI, although they are generally not sufficient for achieving full continence [10, 28].

If these conservative measures and pharmacologic options fail to yield satisfactory results, surgical management becomes the preferred treatment option for persistent or severe SUI [9]. At this point, a referral to a urologic specialist is recommended. These are typically safe, outpatient same day surgical procedures. The artificial urinary sphincter (AUS, AMS 800, Boston Scientific, Boston MA) is a well-established treatment that can provide long-term relief and high patient satisfaction for men experiencing bothersome SUI. For moderate to severe male SUI, the AUS is often considered the gold standard in surgical treatment [14]. This is a fluid-filled hydraulic system that includes a cuff around the urethra, a pressure regulating balloon (PRB) placed in the abdomen, and a pump located in the scrotum (Fig. 1) [9]. At rest, the fluid in the device fills the cuff and inflates it, thus compressing the urethra and protecting the man against leakage of urine. When he wishes to urinate, he cycles the device by squeezing the pump in the scrotum which transfers fluid from the cuff into the PRB, thus opening this part of the device and allowing the man to urinate freely. These devices last an average of 7 to 10 years and may be replaced when they fail with another low-risk outpatient procedure.

Male slings are another surgical option, typically recommended for men with mild to moderate SUI and no previous radiotherapy [5, 11]. The male transobturator slings work by repositioning the urethra and lengthening the membranous urethra, thus allowing the muscles to work more efficiently and prevent leakage [9]. Two notable male sling systems available in the USA include the AdVance (AMS) (Fig. 2) and the Virtue (Coloplast) (Fig. 3) systems. For those with severe SUI, male slings may not be as effective as the AUS, making AUS the preferred option in these cases [5].

Some specialized centers offer adjustable balloon devices (ProACT, Uromedica, Plymouth, MN, USA) as another surgical option for mild SUI following RP or transurethral resection of the prostate (TURP); however, there is not as much clinical experience with this device compared to the AUS or slings [5].

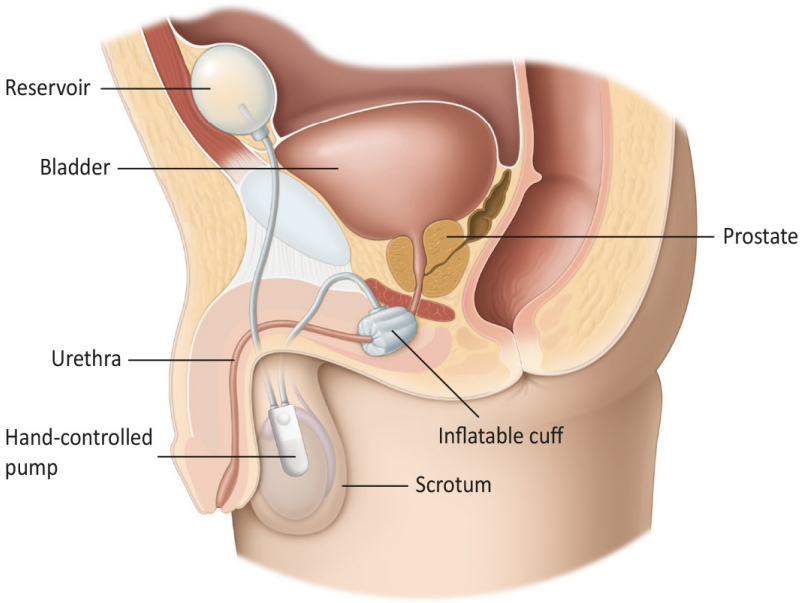

FIGURE 1. Placement of artificial urinary sphincter in a male. Artificial urinary sphincter (AUS) prevents stress urinary incontinence through an inflatable cuff that surrounds and compresses the urethra. The pump is located in the scrotum of the patient and manually and mechanically transfers fluid from the cuff to the reservoir, or pressure regulating balloon (PRB), allowing for the passage of urine. Image credit: European Association of Urology.

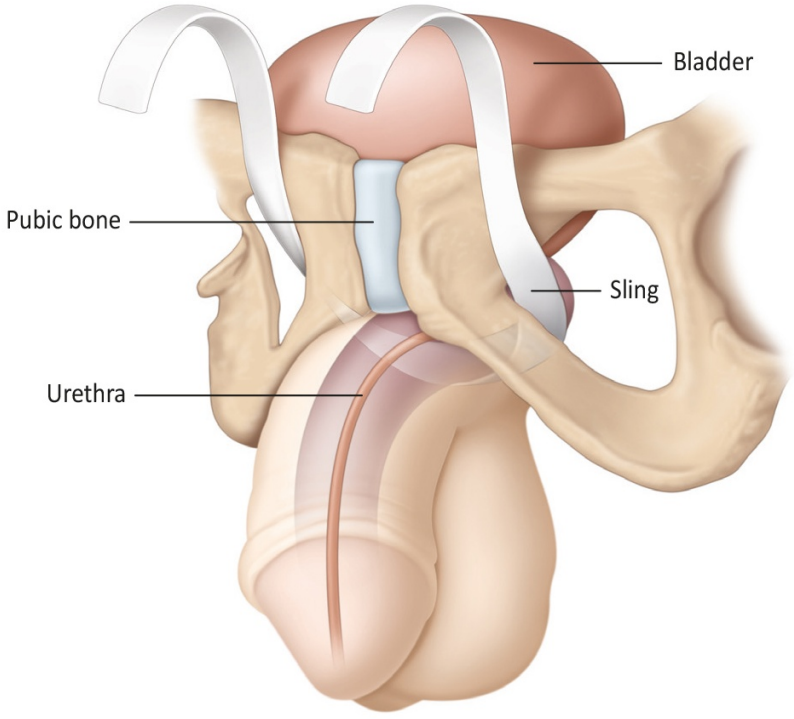

FIGURE 2. Two-armed male urinary sling placement. Male urinary slings function to reposition and buttress the urethra to prevent urinary leakage. The AdVance (AMS) sling is a two-armed sling available in the USA. Image credit: European Association of Urology.

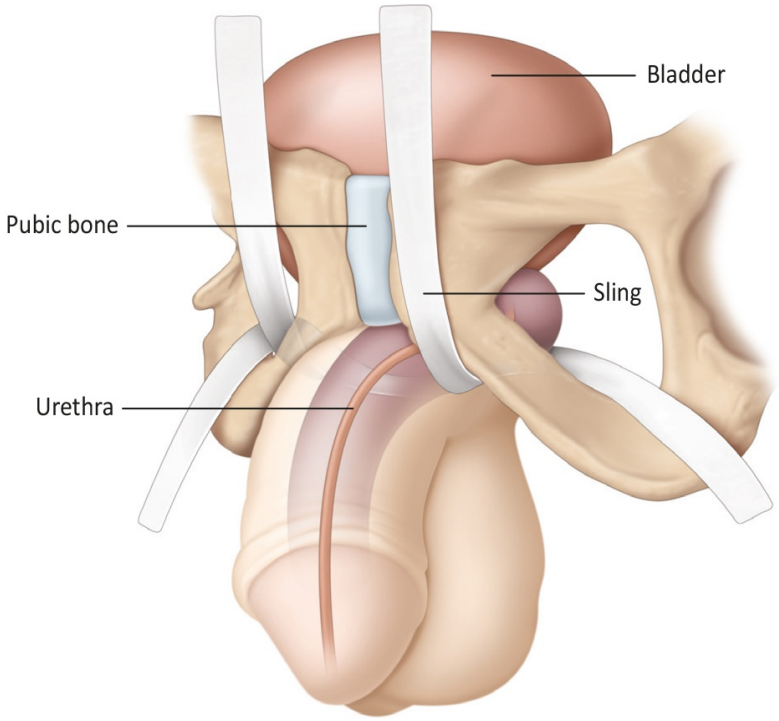

FIGURE 3. Four-armed male urinary sling placement. Male urinary slings function to reposition and buttress the urethra to prevent urinary leakage. The Virtue (Coloplast) sling is a four-armed sling available in the USA. Image credit: European Association of Urology.

The device utilizes two adjustable balloons implanted near the prostatic remnant to exert pressure on the bladder neck and increase outlet resistance to prevent urinary leakage [30, 31]. In addition, these devices have a higher potential for intraoperative complications and early device explantation compared to the other surgical options for male UI, thus surgeon experience is an important factor in the consideration of this option [5]. Lastly, while urethral bulking agents have been historically used for SUI, they are not FDA-approved for this indication and have lower efficacy rates; thus, they should be presented to patients with realistic expectations [5].

3.3 Emerging therapies

Regenerative stem cell injections show potential as a non-surgical option for stress and mixed UI by regenerating smooth muscle and extracellular matrix of the external sphincter; however, further studies are needed which limits its recommendation [4, 9, 11].

4. Outcomes

4.1 Conservative management

Lifestyle modifications are simple, first-line treatment options for all types of UI; however, success rates of achieving complete continence through these modifications are limited. In a systematic review that analyzed the impact of various treatments on stress, urge, and mixed incontinence, lifestyle advice may improve up to 23–38% of men one-year after treatment initiation [32]. PFMT is also a staple in the initial treatment for stress, urge and mixed urinary incontinence. Success rates of PFMT vary based on the type of incontinence, with 6-month dry rates between 47–78% [32]. PFMT before prostate surgery, particularly RP, has also shown promising results. A study highlighted significantly better continence rates at three months postoperatively in patients who performed preoperative PFMT compared to those who started postoperatively [11]. Early postoperative PFMT also reduces the time to regain continence after surgery [11].

4.2 Pharmacologic management

Pharmacologic treatments are typically combined with lifestyle and behavioral modifications for optimal patient management. Some studies have looked at the efficacy of medications for the treatment of UI. For patients with urge UI, antimuscarinics have a collective cure rate of nearly 50%, but these drugs are associated with high withdrawal rates [28, 32]. The effectiveness of mirabegron, a beta-3 agonist, was shown to be similar to antimuscarinics [33]. In men >65, mirabegron is better tolerated than antimuscarinics [28]. While not approved in the United States, duloxetine may result in a dry rate of 58% after a year of follow up; however, treatment was discontinued in 38% of cases due to adverse events based on a systematic review on this topic [34].

4.3 Surgical management

When looking at the AUS, a two-year follow-up study showed varying degrees of continence with a high level of patient satisfaction and willingness to undergo the surgery again and recommend it to other men [5, 9]. Approximately 80% of patients will go on to achieve continence with the AUS, however, this rate has ranged from 61 to 100% across studies, partly due to a lack of standardized measures for reporting continence [9, 11, 14]. Over time, the effectiveness of the AUS may diminish, with failure rates of approximately 25% by 5 years and 50% by 10 years after implantation, with a median durability of about 7.5 years [9, 11]. Male urethral slings demonstrate success rates similar to the AUS in carefully selected patients. They are particularly effective in men with no history of radiation and mild to moderate UI, and many groups report cure rates between 51–73% [9, 10]. However, outcomes are generally less favorable in patients with a history of radiation and high-volume incontinence (24-hour pad weights typically >200 g) [15]. Adjustable balloons have also shown efficacy with nearly 80% of patients experiencing improvement in UI symptoms based on a meta-analysis on this topic [35]. However, this meta-analysis revealed also a 31.2% overall complication rate and 26.5% explantation rate after adjustable balloon implantation, and another study showed a similar complication rate of 22.5% at a minimum follow up of 2 years [31, 35].

5. Conclusions

Urinary incontinence is a common, yet often overlooked, condition that afflicts a considerable number of men in the United States. Regardless of the type of UI, when appropriately evaluated and treated, the outcomes are quite good. Behavioral and lifestyle modifications and medications tend to be the mainstay of management and treatment for urge incontinent patients while surgical interventions are likely to give the best outcomes for stress incontinent patients. Referral to a urologic specialist is often merited in complex cases or for treatment refractory urinary incontinence.

It is important to recognize that the psychological impact of UI in men can be profound, affecting the social, emotional, and physical aspects of a patient's life. It can lead to significant anxiety, depression and social isolation, influencing the overall well-being and quality of life of patients. The burden of this condition is not only personal but also extends to economic implications, highlighting the need for comprehensive management approaches. This necessitates multidisciplinary efforts not only in treatment but also in providing psychological support and addressing broader socioeconomic factors.

ABBREVIATIONS

UI, urinary incontinence; UTI, urinary tract infection; BPH, benign prostatic hyperplasia; SUI, stress urinary incontinence; RP, radical prostatectomy; OAB, overactive bladder; RARP, robot-assisted radical prostatectomy; AUS, artificial urinary sphincter; LTC, long-term care facility; ICIQ, International Consultation on Incontinence Questionnaire; ICIQ-UI SF, International Consultation on Incontinence Questionnaire-Urinary Incontinence Short Form; BMI, body mass index; PVR, post-void residual volume; UDS, urodynamic studies; BTA, botulinum toxin A; PTNS; peripheral tibial nerve stimulation; SNS, sacral neuromodulation; AUA, American Urological Association; FDA, United States Food and Drug Administration; PFMT; pelvic floor muscle training; PRB, pressure regulating balloon.

AVAILABILITY OF DATA AND MATERIALS

Not applicable.

AUTHOR CONTRIBUTIONS

MJS and ACP—conceptualized and designed the study. MJS—performed the investigation and wrote the manuscript. ACP—provided resources and clinical expertise relevant to the study. Both authors contributed to editorial changes in the manuscript. Both authors read and approved the final manuscript.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Not applicable.

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CONFLICT OF INTEREST

ACP is a speaker, consultant, and researcher for Boston Scientific Corporation. MJS declares no conflicts of interest.

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