Surgery for Male Urinary Incontinence

Co-Chairs: Averbeck MA & Goldman HB

ICI 7

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Affiliations to disclose†:

HG: Consultant - Medtronic, Allergan, Astellas, Urovant, Laborie, Sacramed, Vensica, NewUro

MAA: Medtronic (proctor), GSK (internal expert), Coloplast (advisory board)

SH: not reported

AS, ACS, CVC, EC and MLG have no conflicts of interest to disclose.

† All financial ties (over the last year) that you may have with any business organisation with respect to the subjects mentioned during your presentation

Funding for speaker to attend:

- [X] Self-funded
- [ ] Institution (non-industry) funded
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Aims and methods

- Assessing and reviewing the outcomes of surgical therapy published since the 6th ICI (non-neurogenic male incontinence)
- Articles from peer-reviewed journals, abstracts from scientific meetings, and literature searches by hand and electronically formed the basis of this review.
- The outcomes were analyzed, discussed among the members of the committee and included in the chapter.

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Strategy

- WG assembly: Q4 2018
- Task division Q1 2019
- Initial editing rounds: Q3 2019 to Q1 2020
- Pandemic (7th ICI postponed)

2021 UPDATE:

- 1st round: July 5th
- 2nd round: July 19th
- 3rd round: Aug 2nd
- 4th round: Aug 16th
- 5th round: Aug 30th
- 6th round: Sep 13th
- FINAL REVIEW: Sep 27th

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Teleconference on Sep 19th

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Chapter Scope

- Evaluation prior to surgical therapy
- Post Prostatectomy Surgical options
  - Bulking Agents
  - Adjustable Continence Therapy (Periurethral balloons)
  - Artificial Urinary Sphincter (AUS)
  - Male Slings
- Incontinence following Radiation
- Refractory Detrusor Overactivity / Specific surgery for OAB
- Urethral Fistulae
- Management of AUS Complications
- Incontinence Following Pelvic Trauma
- Future directions

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TOPICS

Background

Evaluation prior to surgical therapy

Surgical options

- Bulking Agents
- Adjustable Continence Therapy (Periurethral balloons)
- Artificial Urinary Sphincter (AUS)
- Male Slings

Future directions

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TOPICS

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- Male Slings

Future directions

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BACKGROUND

- Urinary incontinence (UI) is a common complication after radical prostatectomy (RP) and has a negative effect on quality of life (QoL).
- Post-prostatectomy incontinence (PPUI), like any urinary incontinence, may be caused by **bladder dysfunction, sphincter dysfunction or a combination of both.**

Faiena I et al. *Clin Genitourin Cancer.* 2015;13:447–52.

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Despite technological advances...

1% to 40% of patients complain of persistent urinary incontinence after radical prostatectomy.

The **incidence of PPUI** depends on the **definition of urinary incontinence and the length of follow-up**.

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Conservative management

- PFME may be offered for periods of up to 6–12 months depending on whether there is any progress noted by the patient (LE 3-4; GR C)

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TOPICS

Background

Evaluation prior to surgical therapy

Surgical options

- Bulking Agents
- Adjustable Continence Therapy (Periurethral balloons)
- Artificial Urinary Sphincter (AUS)
- Male Slings

Future directions

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Evaluation prior to surgical therapy

History and physical examination

- **Bother**

Urinalysis and culture if indicated

PVR and Voiding diary

Pad test/Pad number

- Pad weight >200g poor prognostic for TO sling

Urodynamics **May be useful** (LE 3; GR C)

- Characterize incontinence (bladder or sphincter)
- Detect detrusor overactivity, diminished compliance, bladder outlet obstruction

Cystourethroscopy should be performed to assess for urethral and bladder pathology that may affect outcomes of surgery. Residual external sphincter function can also be assessed (Committee Opinion)

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TOPICS

Background

Evaluation prior to surgical therapy

Surgical options

- **Bulking Agents**
- **Adjustable Continence Therapy (Periurethral balloons)**
- **Artificial Urinary Sphincter (AUS)**
- **Male Slings**

Future directions

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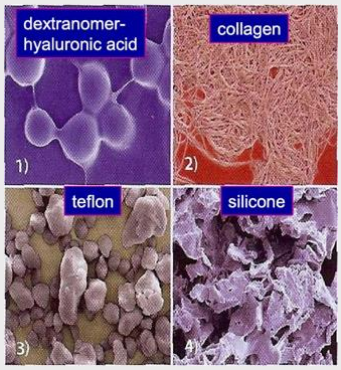
Urethral Bulking Agents

Injectable agents, even with repeated application, have a low success rate and should only be used when more effective treatments are not possible (LE 3-4; GR C)



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Adjustable Continence Therapy: Periurethral balloons

- Adjustable balloons appear to be a feasible procedure in the short to medium term for patients with mild to moderate leakage and no prior radiation.
- However, the **potential benefits should be weighed against the need for multiple sessions of refilling the balloon, and the reported rate of peri- and post-operative complications.**

LE 3; GR D [no recommendation possible]

Complications: dislocation, infection, fluid loss, erosion

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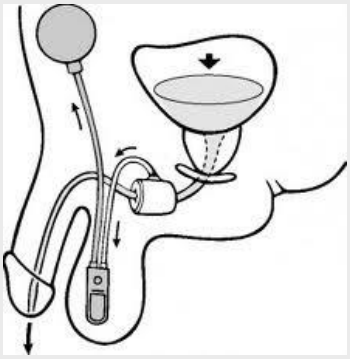
ARTIFICIAL URINARY SPHINCTER



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ARTIFICIAL URINARY SPHINCTER

- The artificial sphincter is the preferred treatment for properly selected men who have moderate to severe stress incontinence after radical prostatectomy as the AUS has the longest record of safety and efficacy.
- The AUS has been reported extensively for men with moderate to severe incontinence.
- This recommendation relates exclusively to the AMS 800 as newer devices do not have a similar evidence base or experience. (LE 2-3; GR A)

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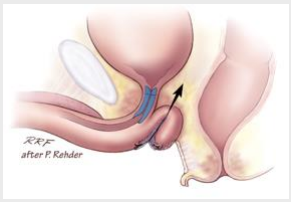
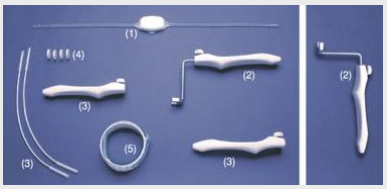
Male slings





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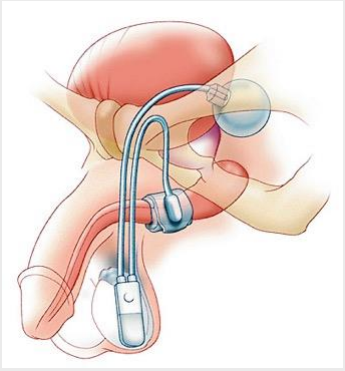
We know that the AUS remains as the gold-standard for moderate-to-severe post-prostatectomy urinary incontinence,

BUT….



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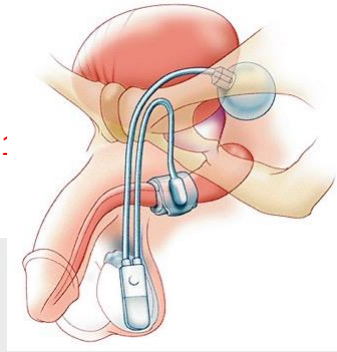
THERE ARE SOME LIMITATIONS TO CONSIDER:

- High cost
- Invasiveness of the technique
- Need for adequate manual dexterity for pump management
- Need for re-intervention in up to 37% of cases within 1 years ***



*** Venn SN, Greenwell TJ, Mundy AR: The long–term outcome of artificial urinary sphincters. J. Urol. 2000; 164: 702–6.

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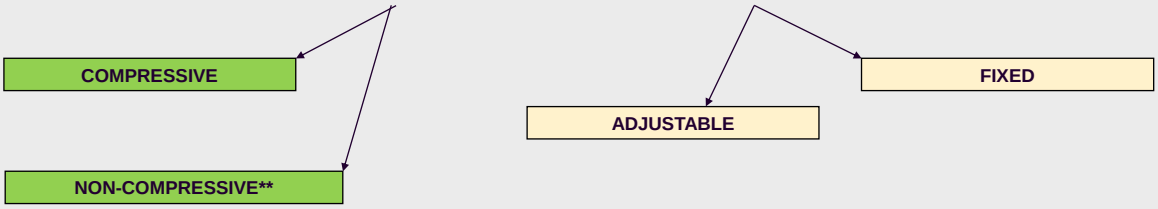
MALE SLINGS



** Davies TO, Bepple JL, McCammon KA. Urodynamic Changes and Initial Results of the AdVance Male Sling. *Urology* 2009; 74: 354–358

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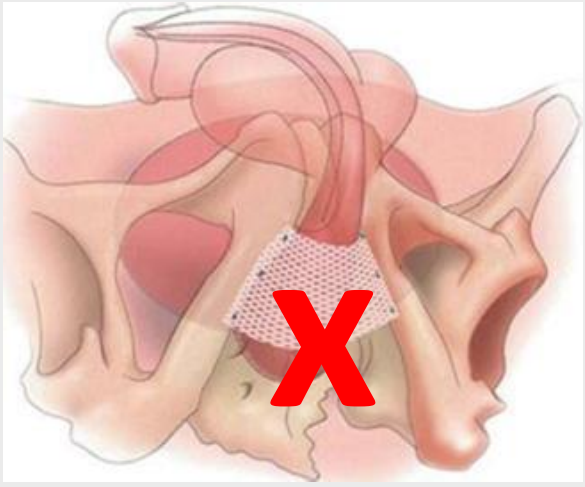
Bone-anchored male sling (BAMS)



"The morbidity related to bone screws such as pubic bone osteitis and bone-anchor dislodgement, coupled with the emergence of more effective alternatives decreased the popularity of these BAMS resulting in discontinuation from the commercial market"

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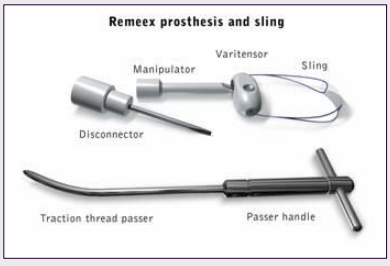
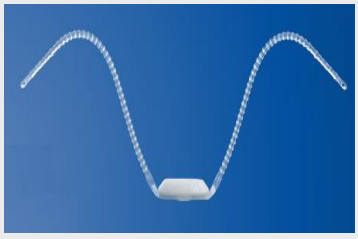
Adjustable Slings

Reemex®: Prolene mesh sling
Neomedic, Barcelona, Espanha



Argus®:
Promedon, Córdoba, Argentina



ATOMS®
AMI, Feldkirch, Áustria

TO-placed mesh tape with an adjustable soft inflatable silicone cushion, connected to a refillable port

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Fixed Slings

Advance XP®

Virtue®

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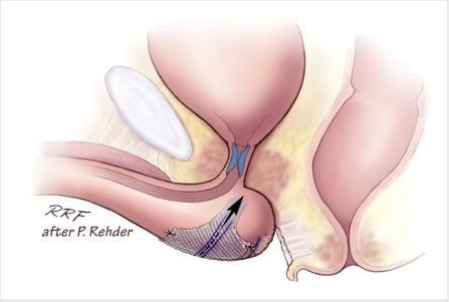
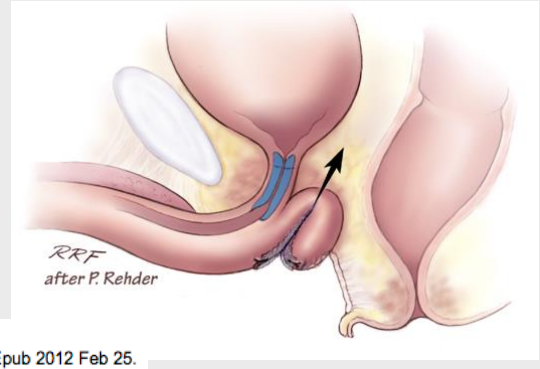


In contrast to others, this sling causes minimal obstruction

Working concept of the AdVance® Sling:
=> Reposition of the membranous urethra into the small pelvis



Rehder P, Haab F, Cornu JN, Gozzi C, Bauer RM.
Eur Urol. 2012 Jul;62(1):140-5. doi: 10.1016/j.eururo.2012.02.038. Epub 2012 Feb 25.

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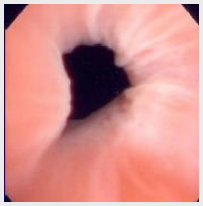
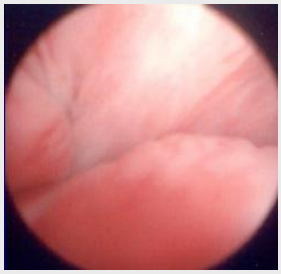
Evidence of residual external sphincter function during dynamic cystoscopy

- Reinforced coaptation by pressure on the perineum
- Length of coaptation > 1.5 cm

IDEAL





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Risk Factors for Sling Failure

Patient history characteristics
- Prior radiation treatment
- Prior SUI surgery
- Prior urethral stricture treatment

Patient Urodynamic characteristics
- Low ALPP
- Poor residual sphincter function
- High pad weight/number

Surgical technique
- Organic (resorbable) sling material
- Inadequate tunneling of TO sling
- Inadequate fixation of quadratic sling

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Male Slings

Male slings are an acceptable surgical approach with several-year follow-up data supporting their safety and efficacy in men with mild to moderate degrees of PPI.

They are associated with a low rate of urinary retention, infection, urethral erosion, and urethral atrophy.

Adjustable slings appear to have similar efficacy rates compared to nonadjustable slings, but have a higher reoperation rate, typically for readjustment.

(LE 3; GR C)

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Male Slings vs AUS

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EURURO-9249; No. of Pages 12
ARTICLE IN PRESS
EUROPEAN UROLOGY XXX (2019) XXX–XXX

available at www.sciencedirect.com
journal homepage: www.europeanurology.com

European Association of Urology

Platinum Priority – Incontinence
Editorial by XXX on pp. x–y of this issue

Outcomes of a Noninferiority Randomised Controlled Trial of Surgery for Men with Urodynamic Stress Incontinence After Prostate Surgery (MASTER)

Paul Abrams[a], Lynda D. Constable[b,], David Cooper[b], Graeme MacLennan[b], Marcus J. Drake[a,c], Chris Harding[d,e], Anthony Mundy[f], Kirsty McCormack[b], Alison McDonald[b], John Norrie[g], Craig Ramsay[b], Rebecca Smith[a], Nikki Cotterill[a,h], Mary Kilonzo[i], Cathryn Glazener[b], on behalf of MASTER Trial Team*

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Patients screened N = 840

Male Sling N = 190

AUS N = 190

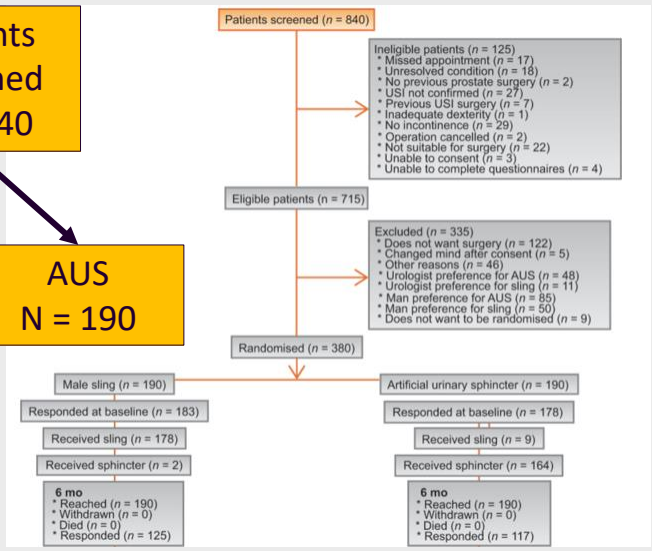

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Table 1

Baseline characteristics

	Male sling *N* = 190	AUS *N* = 190
Age (yr)	68 (64, 71)	69 (63, 72)
ICIQ-UI SF	16 (14, 19); (*N* = 172)	17 (14, 19); (*N* = 166)
Score for effect on everyday life	8 (6, 10); (*N* = 178)	8 (7, 10); (*N* = 176)
24-h pad test result (g)	256 (89, 545); (*N* = 159)	267 (130, 554); (N = 159)
Pads used on an average day	3 (2, 4); (*N* = 180)	3 (2, 5); (*N* = 173)

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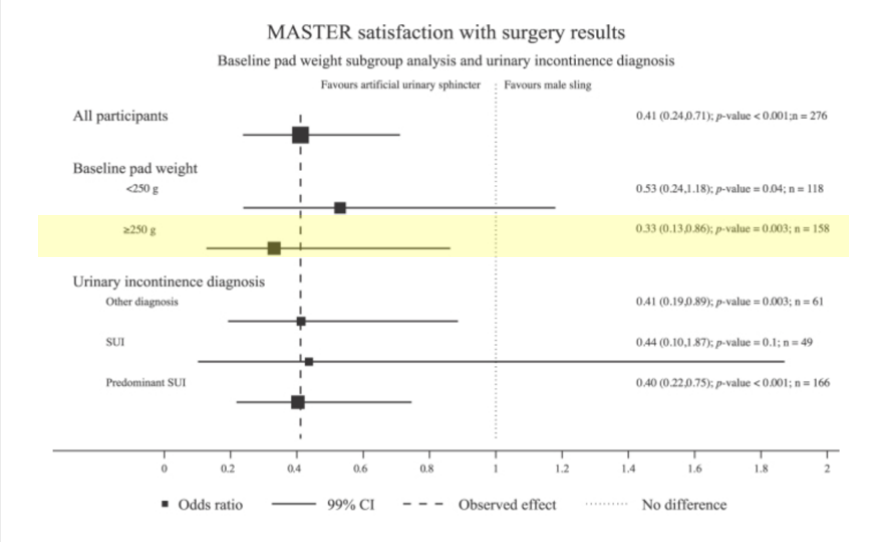

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Table 3

Adverse events

	Male sling	AUS
Received operation	180/190(94.7)	173/190(91.1)
Serious adverse events [a]	6	13
Total number adverse events	225	189
	N = 180	*N* = 173
Number of participants with any adverse events	152 (84.4)	147 (85.0)
Number of adverse events per participant		
0	28 (15.6)	26 (15.0)
1	102 (56.7)	119 (68.8)
2	34 (18.9)	18 (10.4)
3	11 (6.1)	6 (3.5)
≥4	5 (2.8)	4 (2.3)
Type of adverse event		
Postop catheter required	28 (15.6)	8 (4.6)
Catheter required for >24 h	20 (11.1)	6 (3.5)
Urinary tract infection		2 (1.2)
Pyrexia	1 (0.6)	3 (1.7)
Wound infection	3 (1.7)	1 (0.6)
Sepsis, septicaemia, or abscess	1 (0.6)	

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Male Slings vs AUS

The Master trial showed that if surgery is needed, both AUS and sling result in improved leakage and high satisfaction, despite most men **not being** completely dry.

However, most other published results indicate that men with moderate to severe incontinence undergoing implantation of an artificial urinary sphincter have better outcomes than those who undergo sling placement. (LE 2; GR A)

While male slings had more overall complications, AUS complications were generally more significant when they did occur.

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Sling versus AUS

Mild-moderate SUI – Sling

Moderate-severe SUI – AUS

What are mild, moderate and severe?

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Standing cough test for evaluation of post-prostatectomy incontinence: a pilot study

Allen F. Morey, MD, Nirmish Singla, MD, Maude Carmel, MD, Alexandra Klein, MD, Timothy J. Tausch, MD, Jordan Siegel, MD, Isamu Tachibana, MD, Jeremy Scott, MD
Department of Urology, University of Texas Southwestern Medical Center, Dallas, Texas, USA

Grade		Defination	Proposed management
0		Leakage by history but not an exam	Sling
1		Delayed drops only	Sling
2		Early drops, no stream	Sling
3		Drops initially, delayed stream	Aus
4		Early and persistent stream	Aus

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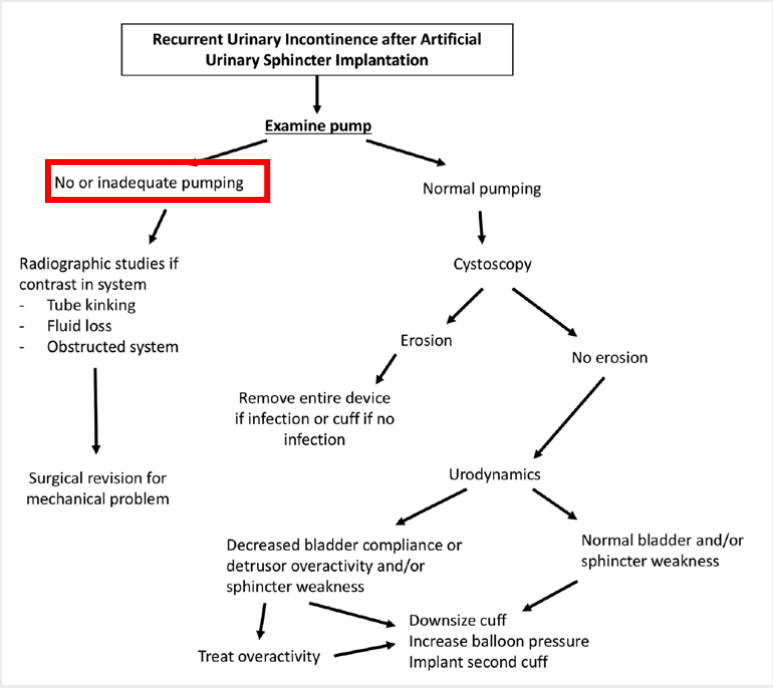

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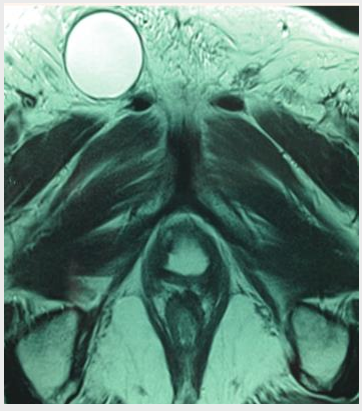
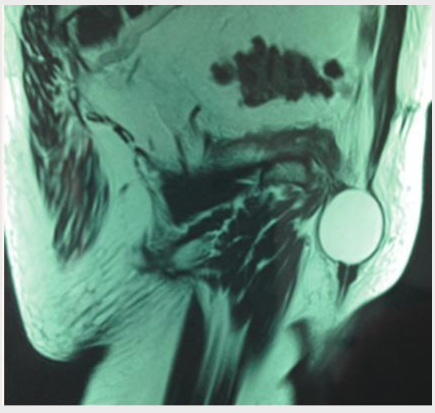
Complications





Herniation of the reservoir through the inguinal canal

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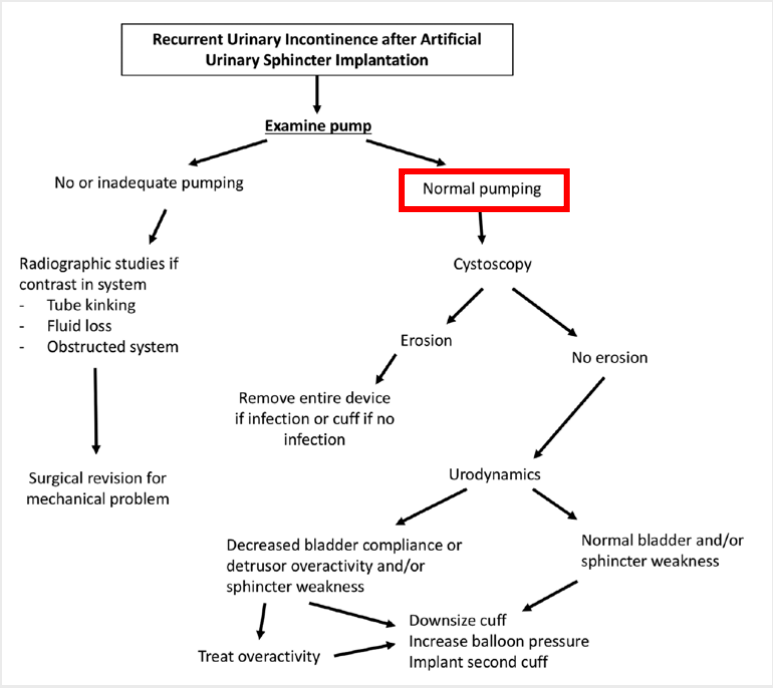

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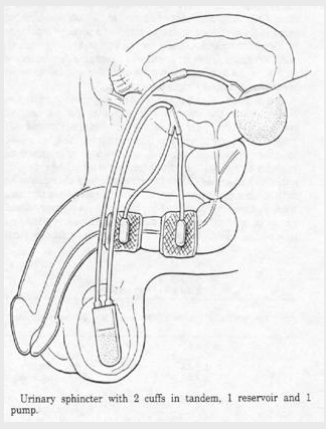
Tandem Cuff



After irradiation / previous therapy

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Complications

Infection

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Management of AUS complications

- Incontinence may result from alteration in bladder function, urethral atrophy, cuff erosion or mechanical malfunction of the device.
- Reported therapeutic options for recurrent urinary incontinence due to urethral atrophy include: change of the pressure regulating balloon for a newer one or one generating a higher pressure; repositioning of the cuff proximally or distally; downsizing the cuff (most common approach); increasing the amount of fluid in the system; transcorporal cuff, and second-cuff implantation.

(LE 3; GR C)

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Management of AUS complications

- Infection and/or erosion of components usually require surgical removal of all or part of the prosthesis (standard of care).
- Compared to primary urethral repair techniques, a Foley catheter placement alone may represent suboptimal management following severe cuff erosions due to increased risk of urethral complications.

(LE 3; GR C)

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TOPICS

Background

Evaluation prior to surgical therapy

Surgical options

- Bulking Agents
- Adjustable Continence Therapy (Periurethral balloons)
- Artificial Urinary Sphincter (AUS)
- Male Slings

Future directions

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FUTURE DIRECTIONS

Role of MS surgery to treat climacturia following radical prostatectomy

This condition is often underdiagnosed and undertreated

In a different approach using a modified Virtue mesh, Valenzuela et al showed that climacturia resolved in 28 of 30 (93%), and SUI improved in 23 of 27 (85%).

Salter CA, Bach PV, Miranda E et al. Bother associated with climacturia after radical prostatectomy: Prevalence and predictors. J sex Med. 2020. Pii: S1743-6095(19)31877-6. doi: 10.1016/j.jsxm.2019.12.016

Valenzuela RJ, Ziegelmann MJ, Hillelsohn JH et al. Preliminary outcomes of the male urethral "Mini-Sling": A modified approach to the Andrianne Mini-Jupette procedure with penile prosthesis placement for climacturia and mild stress urinary incontinence. J Sex Med. 2019;16(8):1310-17

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Future Directions

- Stem cell treatments
- Innovations in sling and sphincter technology
- Integration of electronic components to the artificial sphinter to control the degree of periurethral compression depending on the patient's physical activity (?)

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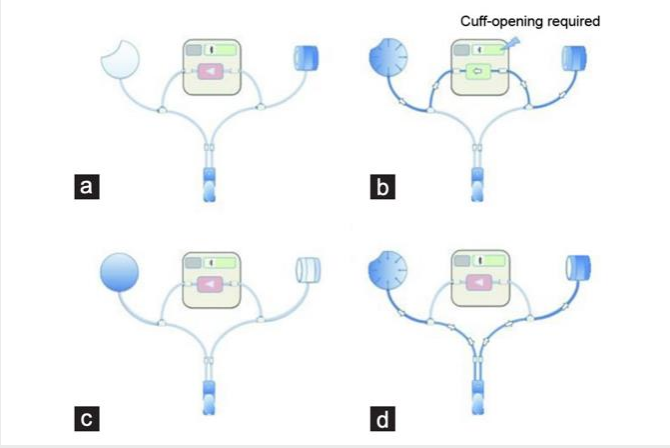
Current possible designs for remote-controlled electronic artificial urinary sphincters



Carson CC. Asian Journal of Andrology (2020) 22, 154–157

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THANK YOU !

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