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Men's Health Case-Scenarios: Male Continence

EDUCARE

Learning Objectives

1. Be able to discuss the continence complications of radical prostatectomy with patients.
2. Assess the degree of incontinence a patient presents with in terms of its subjective severity, objective severity and impact on the patient.
3. Identify high risk patients (e.g. with concomitant or salvage radiotherapy) and describe the additional risks these patients experience in terms of incontinence management.
4. Select relevant diagnostic tests.
5. Create a management plan based on the outcomes of clinical history, physical examination and investigations.
6. Collaboratively discuss available treatment options for men based on the severity of incontinence and its impact on their quality of life.
7. Counsel patients effectively on the risks and benefits of surgery with reference to your own personal clinical audit of your case series and with regard to the literature, for outcomes in relation to objective dryness, subjective dryness, quality of life improvement, satisfaction as well as the risk of perioperative complications, durability of treatment, risks of mechanical failure and revision surgery.
8. Discuss the assessment and treatment options available for recurrent urinary incontinence following AUS or sling insertion.
9. Understand the options for revision of devices (i.e. single component revision versus whole device revision).
10. Manage patients with sphincter implants safely through emergency presentations of UTI, acute urinary retention, cuff erosion and mechanical failure of device components.
11. Educate patients on how frequently to cycle their device, and necessary precautions when undergoing other urological surgery or catheterization.
12. Put into practice guidance on antibiotic prophylaxis for implant surgery and minimize infection risks during implantation.
13. Identify urethral atrophy and put into place a management plan for these patients.
14. Describe minimum datasets for inclusion of patients in outcome registries.

1. A 56 year old man who has a Gleason 7 carcinoma of the prostate (pT1c, on standard transrectal biopsy) with a PSA of 4.5 has been referred to you by the urologist treating his prostate cancer. After the diagnosis of prostate cancer, the patient has decided to proceed with a robotic radical prostatectomy but is concerned about the risk of incontinence following the procedure and would like your advice. He has several questions:
    a. What are his chances of incontinence following the procedure?[1,2,3,5]
    b. What can he do to speed up the recovery of his continence?[6]
    c. If he is still leaking post-operatively how long should he wait before he comes back to see you?

References:

1. Heesakkers J et al, 2017. Pathophysiology and contributing factors in postprostatectomy incontinence: a review. *Eur Urol*; 71:936–944.

2. Ficarra V et al, 2009. Retropubic, laparoscopic, and robot assisted radical prostatectomy: a systematic review and cumulative analysis of comparative studies. *Eur Urol*; 55:1037–1063.

3. Ficarra V et al, 2012. Systematic review and meta-analysis of studies reporting urinary continence recovery after robot-assisted radical prostatectomy. *Eur Urol*; 62:405–417.

4. Geraerts I et al, 2013. Prospective evaluation of urinary incontinence, voiding symptoms and quality of life after open and robot assisted radical prostatectomy. *BJU Int*; 112:936–943.

5. Haglind E et al, 2015. Urinary incontinence and erectile dysfunction after robotic versus open radical prostatectomy: a prospective, controlled, nonrandomised trial. *Eur Uro;* 68(2):216–225.

6. Wu ML et al, 2019. The therapeutic effect of pelvic floor muscle exercise on urinary incontinence after radical prostatectomy: a meta-analysis. *Asian J Androl.*; 21:1-7.

2. A 60 year old man who works as a tennis umpire part time has been referred to see you. 8 months ago he had a radical prostatectomy performed in a European centre of excellence for a Gleason 8 tumour. His PSA is now undetectable and he feels well. He is concerned about the small amount of urine he leaks as this has prevented him from returning to umpiring tennis matches. On good days he uses only one pad, but sometimes he experiences significant wetting of this pad and needs to change to a second pad.
    a. How would you manage this man?
    b. What is the differential diagnosis of his incontinence?
    c. What investigations would you perform?[7,10]
    d. What treatment options are available for each differential?[8,10,11,12]
    e. How successful are they?[8,10,11,12]

References:

7. Averbeck MA, et al 2019. Surgical treatment of post-prostatectomy stress urinary incontinence in adult men: Report from the 6th International Consultation on Incontinence. *Neurourol Urodyn.* 2019; 38(1):398-406

8. Crivellaro S et al, 2016. Systematic review of surgical treatment of post radical prostatectomy stress urinary incontinence. *Neurourol Urodyn*; 35:875–881.[Included male InVance sling which has been withdrawn].

9. Bauer RM et al, 2017. 36-month data for the AdVance XP ®male sling: results of a prospective multicentre study. *BJU I:* 119:626-630.

10. Bauer RM et al, 2011. Contemporary management of postprostatectomy incontinence. *Eur Uro*; 59(6):985–996.

11. Van Bruwaene S et al, 2015. The use of sling vs sphincter in post-prostatectomy urinary incontinence. *BJUI*, 116(3): 330–342.

12. Radadia KD, 2018. Management of postradical prostatectomy urinary Incontinence: a review. *Urology*; 113:13-19.

3. A 70 year old retired teacher has been sent to see you for a second opinion. Following a TURP last year he has been continuously leaking urine and wears 6 pads per day. He can no longer put up with this and the urologist who has referred him to you recommended an artificial urinary sphincter to be implanted. The teacher asked to see you as he understands that you are an expert in implanting the AdVance XP male sling, but isn't sure whether it would work for him.
    a. How is it postulated that the AdVance XP sling restores continence in men post radical prostatectomy?[12,13]
    b. Is there any evidence of success or failure in men with incontinence due to sphincter injury following TURP?[15,16]
    c. He asks you for your recommendation – which treatment do you recommend?

References:

13. De Ridder D et al, 2011. The AdVance® Male Sling: anatomic features in relation to mode of action. *Eur Urol Suppl*; 10(4):383–389.

14. Rehder P et al, 2016. Hypothesis that urethral bulb (corpus spongiosum) plays an active role in male urinary continence. *Adv Urol*; 4: 1–11.

15. Kretschmer A et al, 2016. Long-term outcome of the retrourethral transobturator male sling after transurethral resection of the prostate. *Int Neurourol J;* Vol 2016: Article ID 6054730, 11 pages.

16. Hogewoning CRC et al, 2017. Sling surgery for the treatment of urinary incontinence after transurethral resection of the prostate: new data on the Virtue Male Sling and an evaluation of the literature. *Urology*; 100:187-192.

4. A 20 year old man with spina bifida1[7,18] who had an artificial urinary sphincter implanted three years ago presents to the emergency room with retention of urine. According to his mother he had been continent with the sphincter since implantation but for the past one week he has had hematuria, for the past day with clots and now cannot pass urine. He is febrile (39.5°C) and looks dehydrated but not anaemic.
    a. How do you manage him?
    b. What specific precautions do you need to take in relation to his sphincter?
    c. What size catheter should you use?[19]
    d. How long can you safely leave it for?[20]
    e. What sized instruments can you use for endoscopic transurethral procedures?

References:

17. Herndon CD et al, 2003. The Indiana experience with artificial urinary sphincters in children and young adults. J Urol; 169(2):650-654.

18. López Pereira P et al, 2006. Artificial urinary sphincter: 11-year experience in adolescents with congenital neuropathic bladder. *Eur Urol*; 50(5):1096–1101.

19. Khoury JM et al, 1994 . Urethral cuff erosion as a result of urinary catheterization in patients with an artificial urinary sphincter. *N C Med J*; 55(5):162–164.

20. Seldeman CA et al, 2013. Is prolonged catheterization a risk factor for artificial urinary sphincter cuff erosion? *Urology*; 82(4):943–947.

5. A 66 year old man is on your operating room schedule for the next week for implantation of an artificial urinary sphincter and you are gaining consent for the procedure.
    a. What complications of surgery are possible?[21,22]
    b. How would you manage the patient if a urethral stricture or bladder neck contracture (BNC) was identified during investigation of postprostatectomy incontinence (prior to artificial sphincter implantation)?[23,24]
    c. How do you manage urethral injury after AUS cuff erosion?[25]

References:

21. Linder BJ et al, 2015. Perioperative complications following artificial urinary sphincter placement. *J Urol;* 194(3):716–720.

22. Van der Aa F et al, 2013. The artificial urinary sphincter after a quarter of a century: a critical systematic review of its use in male non-neurogenic incontinence. *Eur Urol*; 63(4):681–689.

23. Kovell RC et al, 2015. Management strategies for postprostatectomy bladder neck contractures. *Curr Urol Rep*; 16:65 (7 pages).

24. Bang SL et al, 2017. Post prostatectomy vesicourethral stenosis or bladder neck contracture with concomitant urinary incontinence: our experience and recommendations. *Curr Urol*; 10(1):32-29.

25. Gross MS et al, 2017. Urethral stricture outcomes after artificial urinary sphincter cuff erosion: results from a multicentre retrospective analysis. *Urology*;104:198-203.

6. You are counselling a 65 year old man whose friend has recently had a revision of his artificial urinary sphincter due to mechanical failure. Your patient is severely incontinent following a radical prostatectomy and you have suggested to him that a sphincter is his best option, but he is concerned about further procedures.
    a. What device survival data can you share with him?[26-29]

References:
26. Yafi, FA et al, 2017. Device survival after primary implantation of an artificial urinary sphincter for male stress urinary incontinence. *J Urol*; 197(Part 1):759–765.

27. Van der Aa F et al, 2013. The artificial urinary sphincter after a quarter of a century: a critical systematic review of its use in male non-neurogenic incontinence. *Eur Urol*; 63(4):681–689.

28. Léon P et al, 2015. Long-term functional outcomes after artificial urinary sphincter implantation in men with stress urinary incontinence. *BJU Int.*;115(6):951-7.

29. Tutolo M et al, 2018. Efficacy and safety of artificial urinary sphincter (AUS): Results of a large multi-institutional cohort of patients with mid-term follow-up. *Neurourol Urodyn.* 2018 Dec 21. doi: 10.1002/nau.23901. [Epub ahead of print]

7. A patient presents 5 years after implantation of an artificial urinary sphincter complaining that he is now completely incontinent again. Palpation of the pump and attempting to squeeze it shows no flow of fluid. You perform a plain X-ray which shows no contrast in the system but you are unsure from the patient as to whether contrast was added to the filling fluid at time of implant. MRI scan is performed – fluid is present throughout the pressure regulating balloon (PRB) and cuff and pump. You still cannot active the pump.

a. Discuss possible causes of reduced efficiency in artificial urinary sphincter devices?[30,31]
b. How would you further investigate this patient?[30,31,32]
c. What are the surgical options?[30-34]

References

30. Linder BJ et al, 2016. Artificial urinary sphincter mechanical failures-is it better to replace the entire device or just the malfunctioning component? *J Urol*; 195(5):1523–1528.

31. Dobberfuhl AD et al, 2017. A systematic approach to the evaluation and management of the failed artificial urinary sphincter. *Curr Urol Rep*.; 18(3):18.

32. Averbeck MA et al, 2019. Surgical treatment of post-prostatectomy stress urinary incontinence in adult men: Report from the 6th International Consultation on Incontinence. *Neurourol Urodyn.* 2019; 38(1):398-406.

33. Eswara JR et al, 2015. Revisional techniques after artificial urinary sphincter failure in men: results from a multicentre study. *Urology*; 86:176-80.

34. Moses RA et al, 2019. Efficacy of pressure regulating balloon exchange in men with post artificial urinary sphincter persistent or recurrent stress urinary incontinence. *Urology*; 123:252-257.

8. Three years after implantation of an artificial urinary sphincter, a 75 year old man returns to see you complaining of dysuria, urgency, inability to properly cycle the device, passing blood in his urine and perineal pain. On examination you find a warm tender swelling in his perineum. He is pyrexial 38°C. You are concerned that he has a cuff erosion.

a. What are the patient risk factors for urethra/cuff erosion?[35,36]
b. How do you manage him immediately?
c. How do you manage his device and any urethral injury? [35-41]
d. How long would you wait before device replacement?

References:

35. Brant WO et al, 2014. Reconstructive urology risk factors for erosion of artificial urinary sphincters: a multicenter prospective study. *Urology*; 84(4):934–939.

36. Siegel JA et al, 2015. In situ urethroplasty after artificial urinary sphincter cuff erosion. *Translational Andrology*; 4(1):56–59.

37. Eswara JR et al, 2015. Reconstructive urology revision techniques after artificial urinary sphincter failure in men: results from a multicenter study. *Urology*; 86(1):176–180.

38. Rozanski AT et al, 2014. Immediate urethral repair during explantation prevents stricture formation after artificial urinary sphincter cuff erosion. *J Urol*; 192(2):442–446.

39. Bryan DE et al, 2002. Salvage procedure for infected noneroded artificial urinary sphincters. *JUrol*; 168(6):2464–2466.

40. Gross MS et al, 2017. Urethral stricture outcomes after artificial urinary sphincter cuff erosion: results from a multicenter retrospective analysis. *Urology*; 104:198-203.

41. Keihani S et al, 2017. Outcomes of urethroplasty to treat urethral strictures arising from artificial urinary sphincter erosions and rates of subsequent device replacement. *Urology*; 107:239-245.

9. A 75 year old man returns to see you 10 years after implantation of an artificial urinary sphincter. He had a relatively straightforward course after his sphincter implantation, and has remained dry until the past year. The device still cycles easily, but even with the cuff inflated he leaks urine. At first when he was straining or coughing, but now pretty much all the time. You review his operation notes and find that he had a single 4.5cm cuff implanted at his surgery.

a. What investigations would you perform?[42,43]
b. If you plan revisional surgery, what is your strategy?[42,43]
c. What outcomes and complications will you describe as you gain consent from him?[42,44]

References:

42. Dobberfuhl AD, et al. 2017. A systematic approach to the evaluation and management of the failed artificial urinary sphincter. *Curr Urol Rep*.;18(3):18.

43. Averbeck MA et al, 2019. Surgical treatment of post-prostatectomy stress urinary incontinence in adult men: report from the 6th International Consultation on Incontinence. *Neurourol Urodyn*; 38(1):398-406.

44. Linder BJ et al, 2016. Artificial urinary sphincter mechanical failures-is it better to replace the entire device or just the malfunctioning component? *J Urol*; 195(5):1523–1528.

10. A 59 year old man underwent a radical prostatectomy four years ago for Gleason 7 carcinoma of the prostate with a PSA of 6.7ng/ml. He was continent post-operatively but three years ago he experienced three consecutively rising PSA measurements and he underwent a course of radiotherapy. His PSA has remained very low since the radiotherapy but now he is experiencing leakage of urine – predominantly when he laughs, coughs or strains. He experiences urgency of micturition with occasional leakage if he cannot make it to the toilet in time.

a. How would you manage this man?
b. What investigations would you perform?
c. What is the differential diagnosis?
d. If your management plan includes surgical intervention – what are the outcomes associated with sphincter and sling surgery in men following pelvic irradiation? [45-49]

References:

45. Sullivan JF, et al 2018. The transobturator suburethral sling: a safe and effective option for all degrees of post prostatectomy urinary incontinence. *Can J Urol.*; 25(2):9268-9272.

46. Radomski SB et al, 2018.Complications and interventions in patients with an artificial urinary sphincter: long-term results. *J Urol.*; 200(5):1093-1098.

47. Moser DC et al, 2018. Impact of radiation and transcorporeal artificial sphincter placement in patients with prior urethral cuff erosion: results from a retrospective multicenter analysis. *J Urol.*; 200(6):1338-1343.

48. Van Bruwaene S et al, 2015. The use of sling vs sphincter in post-prostatectomy urinary incontinence. *BJU Int*; 116(3): 330–342.

49. Guillaumier S et al, 2017. Radiotherapy is associated with reduced continence outcomes following implantation of the artificial urinary sphincter in men with post-radical prostatectomy incontinence. *Urol Ann*.; 9(3):253-256.

[Walsh I et al, 2002. Artificial urinary sphincter implantation in the irradiated patient: safety, efficacy and satisfaction. *BJU Int*; 89:364–8.]

[Lai HH et al, 2007. 13 years of experience with artificial sphincter implantation at Baylor College of Medicine. *J Urol*; 177:1021–538.

11. A 70 year old man returns to clinic following insertion of an artificial urinary sphincter two years previously. The pump is working and cycling, but he started leaking again and he feels that the system does not have enough pressure to stop his urinary incontinence with triggers such as lifting and cough. He asks if just one part can be changed rather then remove and replace the whole device again.

a. How would you advice this patient?[50-52]

References:

50. Eswara JR et al, 2015. Reconstructive urology revision techniques after artificial urinary sphincter failure in men: results from a multicenter study. *Urology*; 86(1):176–180.

51. Moses RA et al, 2019. Efficacy of pressure regulating balloon exchange in men with post artificial urinary sphincter persistent or recurrent stress urinary incontinence. *Urology*; 123:252-257.

52. Linder BJ et al, 2016. Artificial urinary sphincter mechanical failures-is it better to replace the entire device or just the malfunctioning component? *J Urol*; 195(5):1523–1528.

12. A 51 year old man returns to clinic with recurrent clinical stress urinary incontinence 12 months after insertion of a male AdVance sling, and is using 3 pads per day. He would like to be continent and wishes to discuss the best options for this.

a. How would you manage this patient?[53]

b. Can the male AdVance sling be used to treat heavy incontinence?[54,55]

References:

53. Ajay D et al, 2015. The artificial urinary sphincter is superior to a secondary transobturator male sling in cases of a primary sling failure. *J Urol*.; 194(4):1038-42.

54. Comiter C et al, 2015. Surgery for postprostatectomy incontinence: which procedure for which patient? *Nat Rev Urol.*; 12(2):91–9.

55. Sullivan JF et al, 2018. The transobturator suburethral sling: a safe and effective option for all degrees of post prostatectomy urinary incontinence. *Can J Urol*; 25: 9268-72.

13. Discuss strategies used to reduce the risk of infection around the time of surgery for artificial urinary sphincter insertion.

a. What antibiotic prophylaxis would you use?[56-58]

References:

56. Adamsky MA et al, 2018. Evaluating the role of postoperative oral antibiotic administration in artificial urinary sphincter and inflatable penile prosthesis explantation: a nationwide analysis. *Urology*; 111:92-98.

57. Brant WO et al, 2017. Artificial urinary sphincter. *Transl Androl Urol*; 6(4):682-694.

58. Hofer MD et al, 2015. Current concepts in infections associated with penile prostheses and artificial sphincters. *Urol Clin North Am*.; 42(4):485-

14. A 72 year old man is on your operating room schedule for the next week for insertion of a Male AdVance Male Sling System and you are gaining consent for the procedure.

a. What patient factors are predictive of a positive prognostic outcome?
b. What complications of surgery are possible?[59,60]

References:

59. Bauer RM et al, 2017. 36-month data for the AdVance XP ®male sling: results of a prospective multicentre study. *BJU I:* 119:626-630.

60. Ye H et al, 2018. Effectiveness and complications of the AMS AdVance™ Male Sling System for the treatment of stress urinary incontinence: a prospective multicenter study. *Urology*; 120:197-204.