Online version at https://www.minervamedica.it

Minerva Urology and Nephrology 2022 June;74(3):249-51
DOI:10.23736/S2724-6051.22.04958-8

MINERVA OPINION EDITORIAL

Quantitative analysis of urinary incontinence after prostatectomy: lack of standardization in trials

Gianna MARIOTTI [1], Alessandro SCIARRA [1] *, Stefano SALCICCIA [1], Susanna CATTARINO [1], Cristian FIORI [2], Alessandro GENTILUCCI [1]

[1]Department of Urology, Sapienza University, Rome, Italy; [2]Department of Urology, University of Turin, Turin, Italy

*Corresponding author: Alessandro Sciarra, Department of Urology, Sapienza University, 00161 Rome, Italy.
E-mail: alessandro.sciarra@uniroma1.it

Urinary incontinence (UI) is an extremely common disease in all the world, able to significantly impact on the Quality of Life of patients. It is also associated to a great distress influencing social life with high costs for both patients and society.[1] Although advancements of surgical techniques in recent years consistently reduced morbidity after radical prostatectomy (RP) for prostate cancer (PC), RP remains one of the most relevant causes of iatrogenic incontinence in men. Reported rates of urinary incontinence (UI) after RP vary from 5% to more than 40%, depending on the definition of UI and on the methods of evaluation.[2] A correct and standardized quantification of UI helps to define its impact on the Quality of Life of the patient and consents to assess treatment results. Questionnaires on UI can include symptom scores, scales, patient-reported experiences, health – related measures on Quality of Life. European Urologic guidelines (EAU) classifies UI questionnaires based on 3 main criteria, validity, reliability, and responsiveness. Several questionnaires are summarized in the EAU guidelines and the conclusion is that there is no one questionnaire that fulfill all requirements for UI evaluation.[3] Urodynamic is widely considered as a valid tool to confirm diagnosis of UI and to predict outcomes after treatments. It is often reserved in UI cases considered for invasive treatments. ICS suggests using urodynamics when the results may change management in patents considered for invasive treatments and after treatment failure.[4] EAU guidelines[3] recommend doing not routinely perform urodynamics when offering treatments for UI and to do not use urethral or leak point pressure evaluation to quantify severity of UI.[3] Pad testing is a specific tool to quantify UI, measuring urine loss during a day (24-hour pad test), a period of time (1-hour pad test) or during a set of exercises. It is often used to follow results during or after treatments for UI. A 1-hour pad test showed good specificity but lower sensitivity in describing UI,[5] a 24-hour pad test is more reproducible, but can be influenced by daily activities from patients in quantifying UI. ICS considers pad test as optional and suggests using a 24-hour determination.[4] EAU guidelines recommend using a pad test when UI must be quantified and consider a 24-hour duration a sufficient period for balancing accuracy and adherence.[3] Inside clinical trials on urinary incontinence after RP there is a lack of standardization in the quantitative evaluation of urinary leakage. A meta-analysis and systematic review of the literature to compare different forms of non-invasive treatments for post-RP UI, from simple not guided pelvic floor muscle exercises (PFME) to guided biofeedback (BF) and/or pelvic floor muscle electric stimulation (PFES), has been recently

published.[2] In the 26 enclosed trials, post-RP continence status was mainly assessed using urinary symptom questionnaires, voiding diary, pad test results.[6] In particular, an extreme heterogeneity of questionnaires was used among the different studies, homogeneously,19 studies reported results in terms of 24-hour pad test and pad weight (in grams) and in 21 studies continence was objectively defined as no pad use (pad-free status) or <2 g at 24-h pad test. In this meta-analysis,[2] using a random effect model, at 1- and 3-months intervals, mean difference in pad weight recovery from baseline was significantly higher using guided programs (BF, PFES or both) than using PFME alone (3-months: PFME 111.09 g (95% CI 77.59-144.59), BF 213.81 g (95% CI -80.51-508-13), PFES 306.88 g (95% CI 158.11-455.66), BF + PFES 266.31 g (95% CI 22.69-302.93); P<0.01). Similarly, at 1- and 3-months intervals, also event rate (ER) of continence recovery was significantly higher using guided programs than using PFME alone (3-months: PFME 0.40 (95% CI 0.30-0.49), BF 0.49 (95% CI 0.31-0.67), PFES 0.57 (95% CI 0.46-0.69), BF + PFES 0.75 (95% CI 0.60-0.91); P<0.01), while at 6- and 12-months ERs were similar. The meta-analysis found a high rate of heterogeneity (I^2>90%) among the studies in terms of pad weight analysis and lower (I^2 from 53% to 70%) in terms of continence status recovery. This heterogeneity could be related to a lack of standardization in the methods used in the different studies and it reduces the significance of results. Regarding invasive treatments for UI after RP, in a recent meta-analysis to compare different 5 groups of treatments (bulking agents, fixed slings, adjustable slings, circumferential and non-circumferential compressor devices),[7] 35 prospective mono or multicenter clinical trials were included. In these trials, post-RP continence status was heterogeneously assessed and variation in the number of pads was the main parameter used in all trials. The use of 1-hour or 24-hour pad test was less common than in studies on rehabilitative techniques. The use of validated questionnaires was more homogeneous and mainly related to the ICIQ-SF and a higher number of studies reported some results in terms of urodynamic test.[8, 9] Using a random effect, the meta-analysis showed and event rate of continence recovery ranging from 0.33 (95% CI -0.12- 0.78) using bulking agents, to 0.63 (95% CI 0.55-0.71), 0.65 (95% CI 0.58-0.72), 0.50 (95% CI 0.34-0.66) and 0.53 (95% CI 0.36-0.70) respectively using fixed slings, adjustable slings, artificial sphincter, and Pro ACT. A high rate of heterogeneity of results among studies (I^2>80%) was found. Also in this case, this heterogeneity could be related to a lack of standardization in the methods used in the different studies and it reduces the significance of results. The evaluation of urinary incontinence in patients post RP, should always combine objective quantitative and individual subjective parameters. These two estimations often do not correspond, with patients that consider at low impact on their social life a significant quantitative leakage of urine and others that consider a significant symptom few drops. Pad tests are presented from international guidelines as the most objective method to quantify leakage in UI, whereas questionnaires can describe the impact on patient's Quality of Life. International guidelines[3, 4] do not precisely recommend how to monitor in clinical trials these two parameters: several questionnaires are mentioned, and quantification of leakage is associated to different diagnostic tools including pad tests. Either in trials on non-invasive rehabilitative treatments or in those on invasive therapies for UI after RP, validated questionnaires are always enclosed, but data are extremely heterogeneous. Regarding the quantitative analysis of urine leakage, a different approach is considered comparing trials on non-invasive and invasive modalities. Almost all trials on rehabilitative techniques for UI include pad test (24-hours and in some cases 1- or 3-hour pad test), on the contrary almost all trials on invasive techniques for UI after RP consider the daily determination of number of pads as the primary toll to quantify leakage at baseline and to determine treatment efficacy. There are no reasons to use different quantitative evaluations between non-invasive and invasive treatments for UI after RP and this heterogeneity does not consent comparison between these two groups. In our opinion, the determination of the number of pads is not a valid tool to quantify urine leakage and its variation

during treatments and it only consents to define a pad or no-pad status among patients. It exists an extreme variability in the use of pad among patients in relation of few drops or relevant leakages that negatively influence quantification of UI. On the contrary, pad testing, recommended from guidelines, is a specific tool to quantify UI and to follow results during or after treatments for UI. A 1-hour pad test could be more standardized in the activities performed by the patient (no exercises or specific set of activities) in a limited time, but it does not represent a complete real-world situation for a specific patient. A day (24-hour) pad test is a more reliable picture of a real-world situation for the patient, but it can be more influenced by variations in daily activities from different patients and different follow-up intervals. In conclusion, considering mean values and ranges from 3 different and consecutive 24-hour pad tests at the same interval of control, may reduce the variability related to daily activities in the quantification of UI during treatments.[10]

References

1. Ficarra V, Novara G, Rosen RC, Artibani W, Carroll PR, Costello A, *et al.* Systematic review and meta-analysis of studies reporting urinary continence recovery after robot-assisted radical prostatectomy. Eur Urol 2012;62:405–17.

2. Sciarra A, Viscuso P, Arditi A, Mariotti G, De Berardinis E, Di Pierro GB, *et al.* A biofeedback-guided programme or pelvic floor muscle electric stimulation can improve early recovery of urinary continence after radical prostatectomy: A meta-analysis and systematic review. Int J Clin Pract 2021;75:e14208.

3. Burkhard FC, Bosch JL, Cruz F, Lemack GE, Nambiar AK, Thiruchelvam N, *et al.* Urinary incontinence. European Urological Association guidelines; 2021 [Internet]. Available from: https://uroweb.org/guideline/urinary-incontinence/ [cited 2022, Mar 21].

4. Castro-Diaz D. International Continence Society Standards 2020-2021. Urinary incontinence; 2021 [Internet]. Available from: https://www.ics.org/Publications/ICS%20Standards%202020-2021 [cited 2022, Mar 21].

5. Krhut J, Zachoval R, Smith PP, Rosier PF, Valanský L, Martan A, *et al.* Pad weight testing in the evaluation of urinary incontinence. Neurourol Urodyn 2014;33:507–10.

6. Mariotti G, Sciarra A, Gentilucci A, Salciccia S, Alfarone A, Di Pierro G, *et al.* Early recovery of urinary continence after radical prostatectomy using early pelvic floor electrical stimulation and biofeedback associated treatment. J Urol 2009;181:1788–93.

7. Salciccia S, Viscuso P, Bevilacqua G, Tufano A, Casale P, De Berardinis E, *et al.* Comparison of different invasive devices for the treatment of urinary incontinence after radical prostatectomy: a meta-analysis and systematic review. Adv Urol 2022.

8. Giammò A, Ammirati E, Tullio A, Morgia G, Sandri S, Introini C, *et al.* Implant of ATOMS® system for the treatment of postoperative male stress urinary incontinence: an Italian multicentric study. Minerva Urol Nefrol 2020;72:770–7.

9. Checcucci E, Pecoraro A, DE Cillis S, Manfredi M, Amparore D, Aimar R, *et al.*; San Luigi Study Group. The importance of anatomical reconstruction for continence recovery after robot assisted radical prostatectomy: a systematic review and pooled analysis from referral centers. Minerva Urol Nephrol 2021;73:165–77.

10. Salciccia S, Sciarra A, Moriconi M, Maggi M, Viscuso P, Rosati D, *et al.* How to Predict Outcomes from a Biofeedback and Pelvic Floor Muscle Electric Stimulation Program in Patients with Urinary Incontinence after Radical Prostatectomy. J Clin Med 2021;11:127.

Conflicts of interest.—The authors certify that there is no conflict of interest with any financial organization regarding the material discussed in the manuscript.

Authors' contributions.—All authors read and approved the final version of the manuscript.

History.—Manuscript accepted: March 21, 2022. - Manuscript received: March 17, 2022.

(*Cite this article as*: Mariotti G, Sciarra A, Salciccia S, Cattarino S, Fiori C, Gentilucci A. Quantitative analysis of urinary incontinence after prostatectomy: lack of standardization in trials. Minerva Urol Nephrol 2022;74:249-51. DOI:10.23736/S2724-6051.22.04958-8)