Uro-Technology Journal 2024; 8(3): 47-49 *47*
DOI: 10.31491/UTJ.2024.09.026

Minimally invasive surgical therapies (MISTs) for benign prostatic hyperplasia: current insights and future directions—Interview with Prof. Francesco Greco

Carlotta Nedbal[a,*]

[a] *Urology Unit, Azienda Ospedaliero-Universitaria delle Marche, Università Politecnica delle Marche, Ancona, Italy.*

Abstract

The article is an interview with Prof. Francesco Greco, Department of Urology, Policlinico Ponte S. Pietro, Gruppo Ospedaliero S. Donato, Bergamo, Italy, conducted by Carlotta Nedbal, Urology Unit, Azienda Ospedaliero-Universitaria delle Marche, Università Politecnica delle Marche, Ancona, Italy, on behalf of *Uro-Technology Journal*.

Prof. Francesco Greco, MD, PhD

Prof. Francesco Greco is a specialist in urology. He specializes in urological oncology, robotic and minimally invasive surgery, laser surgery, and endoscopic surgery. Currently, Prof. Francesco Greco is CEO of Centro Salute Uomo in Bergamo. He is recognized as a national and international expert in Laparoscopic and Robotic Surgery (more than 4,000 surgeries as a first operator) and in Laser Surgery for Benign Prostatic Hypertrophy and Stones. Currently, Prof. Francesco Greco is the author of more than 100 national and international scientific publications, in 2013 he was recognized as the best scientific reviewer in the world by European Urology, and in 2016 he was awarded the "Italian Mathura Prize", an award given by the Italian Society of Urology to those who have qualified themselves to be leaders in the field of urology at the international level. (https://www.francescogreco.info/wp-content/uploads/2024/05/F-Greco-CV-italiano_.pdf)

Carlotta Nedbal: What are the latest advancements in MISTs for BPH, and how do they compare in terms of efficacy and patient outcomes?

Francesco Greco: The management of symptomatic BPH is evolving and now includes several minimally invasive surgical therapies (MISTs), including several clinic-based minimally invasive surgical techniques (*e.g.*, UroLift, Rezum, iTind), or surgical treatments (*e.g.*, GREEN-LIGHT laser and Aquablation), and prostate artery embolization [1]. The real clinical advantage of most MISTs is the possibility of being performed in an office-based setting with reduced anesthesiologic and surgical risks for the patient who can be usually dismissed 1 hour after the procedure.

Carlotta Nedbal: What criteria do you use to determine the most suitable MIST for a patient with BPH? Are there specific patient profiles for which certain MISTs are particularly effective or ineffective?

Francesco Greco: MISTs represent an attractive option for men looking for a meaningful improvement in urinary symptoms without the risk of serious long-term adverse effects on sexual function and urinary control, coupled with a short hospital stay and early return to normal activities. In my opinion, we should be able to propose to our patients a tailored-made therapy and MISTs help us to reach this aim.

The best candidate for MISTs performed in an office-based setting (*e.g.*, UroLift, Rezum, iTind), is a patient with a prostate < 120 gr, a flow peak > 9 mL/s and a postvoidal

* Corresponding author: Carlotta Nedbal, MD.
Mailing address: Urology Unit, Azienda Ospedaliero-Universitaria delle Marche, Università Politecnica delle Marche, Ancona, Italy.
Email: carlottanedbal@gmail.com
Received: 07 August 2024 / Accepted: 09 August 2024
Published: 24 September 2024

residual volume. In these patients, we can expect excellent functional outcomes at 3 months follow-up, with a very high rate for ejaculation sparing, In the presence of severe obstruction or larger prostate (> 150 mL), a mini-invasive approach can be represented by GREEN-LIGHT laser and Aquablation, which requires hospitalization of the patient. Even in this case, we can expect excellent functional outcomes but with an increased risk for complications.

Carlotta Nedbal: Can you discuss the potential complications and side effects associated with MISTs for BPH, especially compared to TURP?

Francesco Greco: The risk of surgical complications after MISTs is very low, especially compared to TUR-P, where a considerable number of patients (4-35%) experience sexual dysfunction after treatment for BPH with transurethral resection of the prostate (TURP), which still represents the first choice in most patients [2]. Although REZUM represents a novel minimally invasive treatment, surgical complications have been described after this procedure [3]. Nevertheless, the complications are all CLAVIEN 1 GRADE, and they are mostly represented by postoperative bladder spasm, urinary tract infections, or haematuria but clinically not relevant. Postoperative erectile dysfunction and retrograde ejaculation were rare [4].

Carlotta Nedbal: What role do new technologies, such as robotic assistance or laser treatments, play in the evolution of MISTs for BPH?

Francesco Greco: Laser treatments including HoLEP and THULEP and robotic-assisted procedure represent a pre-MISTs clinical phase, as they present a more invasive approach for the therapy of BPH, considering the necessity of hospitalization and the risks for surgical complications, including urinary incontinence, erectile disfunction, bleeding, transfusions, urinary infection and rarely bladder injuries. The advent of MISTs has made possible what it seemed to be a dream: he idea to treat benign prostate hyperplasia in an outpatient setting. The introduction of new surgical devices such as REZUM, UROLIFT, I-TIND, has turned this idea into reality, reducing hospitalization, complications' rate, convalescence and improving patients' quality of life [5].

Carlotta Nedbal: What do we know about the long-term efficacy and durability of MISTs for BPH? How do MISTs impact the quality of life for patients post-procedure?

Francesco Greco: In 2019, McVary *et al*. presented a double-blind RCT, reporting significant and long-term mean IPSS score improvement after REZUM [6]. At the 3 month follow up, there was a reduction of IPSS by 50%, which resulted significantly when compared to 20% in the control group ($P < .0001$). Furthermore, there was an improvement in quality of life (QoL) (42.9%, $P < .0001$) and Q_{max} (49.5%, $P < .0001$) at a 4-year follow-up, with a surgical failure rate of 4.4%. No patient reported any disturbances in sexual function.

Similar results were also confirmed in an Italian multicenter series including 135 consecutive patients treated by REZUM at 5 institutions. The authors reported a significant decrease of IPSS from baseline at first ($P = 0.001$) and third ($P < 0.0001$) month after surgery and a slight but statistically significant increase of the IIEF-5 score from baseline at 6 months ($P = 0.04$) [7].

A recent study compared the efficacy of Rezūm with a matched cohort of patients undergoing transurethral resection of the prostate (TURP) for catheter-dependent urine retention secondary to benign prostate hyperplasia (BPH) [8]. Eighty-one patients undergoing Rezūm were compared with equal number of matched patients who undergoing TURP. Despite patients undergoing TURP had significantly better voiding outcomes after 1 and 3 months, both groups were comparable after six and 12 months in terms of mean IPSS (11.1 ± 6.4 *vs* 10.8 ± 3.4, $P = 0.71$), QoL indices (2.4 ± 1.6 *vs* 2.1 ± 2.3, $P = 0.33$) and Q_{max} (22.0 ± 7.7 *vs* 19.8 ± 6.9 mL/sec, $P = 0.06$).

In another study published in 2024, Rezūm therapy was compared to bipolar transurethral resection of prostate (B-TURP) for the management of benign prostatic hyperplasia (BPH) of 50-120 g size. Rezūm significantly ameliorated IPSS from the baseline score by 55.3%, QoL by 50%, Q_{max} by 62.5%, International Index of Erectile Function (IIEF) by 7.1%, PVR by 50%, residual prostate size by 28.1% and PSA by 42% at 2 years. Meanwhile, the improvement in B-TURP was significantly higher than Rezūm group, Rezūm therapy had a significantly shorter duration of operative time and hospital stay. Also, it had fewer complications in comparison with B-TURP [9].

Carlotta Nedbal: Do you have a specific follow-up protocol for your patients, and what does it involve?

Francesco Greco: To reduce the immediate discomfort of the patient, it is recommended to start antiinflammatory therapy on the 1st day after the procedure, when the patient will be checked for a control.

The patient will then undergo an ultrasonography and urine analysis with urine culture at 1-month follow-up, whereas at 3- and 6-month FU, the patient will undergo PSA control, IPSS score, IEEF-5 and uroflowmetry.

Carlotta Nedbal: How do the costs of MISTs compare to traditional surgical options, and what are the implications for healthcare systems?

Francesco Greco: When we analyze the costs of MISTs, an initial but superficial impact could consider these techniques more expensive than traditional procedures such as TUR-P, due to the use of single-use material. Nevertheless, in 2023 an Italian study compared the costs and budget impact of adopting water vapor thermal therapy with the Rezūm™ System, for treatment of lower urinary tract symptoms (LUTS) secondary to benign prostatic hyperplasia (BPH) to transurethral resection of the prostate (TURP) [10]. A Markov model (4-year time horizon, 3-month cycle length), developed to support a submission to the National Institute of Health and Care Excellence (NICE) in England was adapted to an Italian payer perspective. A cost minimization analysis was conducted, assuming equal efficacy between both therapies. Net difference in costs per patient

was reported, considering procedure, adverse events and retreatment costs. Probabilistic and deterministic sensitivity analyses considered the uncertainty of the results. Population data and market share distribution assumptions were applied to a cohort of Italian patients treated in one year to report the budget and capacity impact of increased use of Rezūm. Over 4 years, the costs per patient with Rezūm were €2072 compared to €2836 with TURP, resulting in net savings of €764. Sensitivity analyses showed that this conclusion was robust. Replacing 10% of TURP procedures with Rezūm generates cost-savings of € 7,139,549 over 4 years and saves 4671 theatre hours and 26,856 bed days in one year. Replacing 30% of BPH surgical procedures with Rezūm generates cost-savings to € 21,418,647 over 4 years, saves 14,012 theatre hours and 80,567 bed-days in one year. Moreover, the ability to perform REZUM with oral sedation as well as prostate block in an office-based setting could reduce the necessity of hospitalization and shorten the waiting list and the anxiety of the patients. In this way, the treatment of BPH could be decentralized from general hospitals to the urologic offices, that are present on the territory, thus increasing the number of patients who could be treated in one day. This could also contribute to reducing healthcare spending which represents another relevant problem at least in Italy.

Carlotta Nedbal: What are the most promising areas of research in the field of MISTs for BPH, and how do you envision the future landscape of BPH treatment evolving over the next decade?

Francesco Greco: The future of BPH therapy has been addressed toward an ultra-minimally invasive approach and MISTs will replace the traditional surgical procedures in the next future. This will be also supported by an increased awareness of male patient to prevention. Consequently, an early diagnosis will decrease the medical cases of severe obstructions, overactive bladder, and larger prostate, thus letting MISTs as the best and most effective procedure in the treatment of BPH. The time of hospitalization and laser operations, with all risks for incontinence and erectile dysfunction associated with them, is going to be over. A new era is coming: the treatment of BPH in an office-based patient without hospitalization and, especially, with real respect to the quality of life and sexual desires of our patients.

References

1. Greco F. Uro-Technology Journal: past and future in urology. *Uro-Technology Journal,* 2022, 6(2): 01-02. [Crossref]
2. Schou J, Holm Christensen NE, Nolsøe C, & Lorentzen T. Prostatectomy and impotence: can temperature variations around the prostate during TURP explain postprostatectomy impotence? *Scand J Urol Nephrol Suppl,* 1996, 179: 123-127.
3. Alkeraithe F, Bin Hamri S, Alsaleh F, & Alasmari F. Unexpected encapsulated hematoma after Rezum therapy: First outcome of an emerging therapy. *Urol Case Rep*, 2022, 44: 102125. [Crossref]
4. Chin CP, Garden EB, Ravivarapu KT, Shukla D, Omidele O, Levy M, *et al*. Medium-term real-world outcomes of minimally invasive surgical therapies for benign prostatic hyperplasia: water vapor thermal therapy (Rezum) vs prostatic urethral lift (UroLift) in a high-volume urban academic center. *J Endourol*, 2022, 36(12): 1559-1566. [Crossref]
5. Elterman D, Gao B, Lu S, Bhojani N, Zorn KC, & Chughtai B. New technologies for treatment of benign prostatic hyperplasia. *Urol Clin North Am*, 2022, 49(1): 11-22. [Crossref]
6. McVary KT, Rogers T, & Roehrborn CG. Rezūm water vapor thermal therapy for lower urinary tract symptoms associated with benign prostatic hyperplasia: 4-year results from randomized controlled study. *Urology*, 2019, 126: 171-179. [Crossref]
7. Siena G, Cindolo L, Ferrari G, Maruzzi D, Fasolis G, Condorelli SV, *et al*. Water vapor therapy (Rezūm) for lower urinary tract symptoms related to benign prostatic hyperplasia: early results from the first Italian multicentric study. *World J Urol*, 2021, 39(10): 3875-3880. [Crossref]
8. Tayeb W, Azhar RA, Subahi M, Munshi S, Qarni A, Bakhsh A, *et al*. Rezŭm water vaporization therapy versus transurethral resection of the prostate in the management of refractory urine retention: matched pair comparative multicenter experience. *World J Urol*, 2024, 42(1): 48-58. [Crossref]
9. Samir M, Elaal AAA, Gad KAS, & Basyony MW. Two-year follow-up comparing Rezūm therapy versus bipolar transurethral resection of the prostate for treating benign prostatic hyperplasia. A prospective randomized study. *Int J Urol*, 2024, 31(5): 545-550. [Crossref]
10. Blissett RS, Blissett DB, Oselin M, Demaire C, Woodward E, Siciliano M, *et al*. Transurethral water vapor therapy for treatment of lower urinary tract symptoms secondary to benign prostatic hyperplasia: a cost-minimization and budget impact analysis from an Italian healthcare perspective. *Minerva Urol Nephrol*, 2023, 75(3): 343-352. [Crossref]

Cite this article as: Nedbal C. Minimally invasive surgical therapies (MISTs) for benign prostatic hyperplasia: current insights and future directions—Interview with Prof. Francesco Greco. *Uro-Technology Journal*, 2024, 8(3): 47-49. doi: 10.31491/UTJ.2024.09.026