

clinically-relevant endpoints such as medication intolerance, falls, sexual dysfunction, and quality of life. Lastly, the effects of post-TUPP medication changes on overall treatment cost were not analyzed, which can have notable implications in clinical decision making.<sup>26,27</sup> However, the strengths of this study include a large sample size, inclusion of novel B3A data, a direct comparison of varying TUPPs within a diverse multisurgeon, multisite practice, and the evaluation of medication changes across multiple postoperative time intervals.

Overall, this study found that compared to tissue-necrosing procedures, tissue-eliminating BPH interventions led to lower rates of postoperative urologic medication utilization. Together, these findings suggest that the choice of TUPP may have implications in long-term urologic medication utilization, providing data that can be useful in practice. Future studies should not only include newer technologies (eg, HoLEP, Prostatic Urethral Lift, Convective Water Vapor Ablation, etc.) but examine the impact of postprocedural BPH medication changes on other aspects of health, patient-reported outcomes, and overall treatment cost.

## CONCLUSION

Superior rates of urologic medication discontinuation, resumption, and de novo initiation were found with tissue-eliminating BPH procedures compared to tissue-necrosing procedures. These results can help inform the choice of BPH procedure with regard to the clinical or personal need for urologic medication discontinuation. Future studies examining the effects of these medication changes on clinical outcomes and treatment costs are warranted in light of newly emerging therapies.

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## EDITORIAL COMMENT

The fundamental principle of surgery always remains the correct indication. This, regardless of costs, is particularly valid in case



of benign prostatic hyperplasia) and bladder outlet obstruction (BOO). The symptoms associated to BOO, as all urologists well know, should be evaluated in a multifactorial context. Therefore, when an indication to treat benign prostatic hyperplasia is given, if there are no imperative indications, it must always be assumed that the treatment will improve the symptoms more effectively than the medications. Or that surgery can solve a problem that drugs can no longer treat. Nowadays several surgical treatments are available to treat BOO so the choice of the best one for the patient may become more challenging but give to the patient better results compared to the past, considering not only technical urological factor but also age, comorbidities and expectations of the patient. The type of technique to use has to consider also surgeon's expertise and technologies available in every single center. In this scenario, a meticulous analysis of cost benefit, even in view of what may happen after BOO treatment, should always be carefully taken into consideration.

The results of this study supported the hypothesis that compared to tissue-necrosing procedures (transurethral microwave therapy and transurethral needle ablation), tissue-eliminating procedures (transurethral resection of the prostate and laser prostatectomy) were associated with greater rates of urologic medication discontinuation, as well as lower rates of medication resumption and de novo initiation.

Even if with some bias characterized by an older population, in the tissue-necrosing procedures sample (with consequent higher incidence of underactive bladder) and the lack of information on the precise degree of disobstruction obtained with the different techniques that may justify the higher use of medication for BOO, from a speculative point of view, this study may support the concept that tissue necrosis in the prostate could generate a sort of "local remodeling" undermining disobstruction which is the primary goal of BOO treatment. Therefore, despite several limitations, the overall findings of this study are to provide helpful information from an administrative standpoint that can have some real-world applicability.

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## AUTHOR REPLY

As noted in the editorial comment by Scarpa and Papalia, achieving better outcomes is largely optimized when interventions are utilized for appropriate indications. This study

retrospectively analyzed benign prostatic hyperplasia procedures within a large health system from an administrative and/or health-services perspective. The hypothesis that procedures eliminating tissue outperform those relying upon tissue necrosis was supported with regard to urologic medication prescription.

However, it must be assumed that patients (prostate size, anatomy, comorbidities, etc.) were optimally matched to their procedures. Also, the extent to which procedures were carried out remains another important variable—obviously the authors' hope this is assumed to be to a thorough degree! Considering these factors, rates of medication use (continuation, resumption, de novo initiation) were better after tissue removing procedures, and arguably with a greater extent of tissue removed (SP vs transurethral procedures).

The findings in this study echo those recently published by Campbell, et al in the August 2019 issue of this journal.<sup>1</sup> While they found lower rates of preoperative urologic medication use before transurethral resection of the prostate (TURP) in Canada, postoperative rates of alpha blocker and 5-alpha reductase use were nearly twice as high 3 months after surgery, whereas rates of anticholinergic use were similar. Long-term rates of medication utilization after TURP were comparable, aside from lower rates of anticholinergic use in Canadian men.

Insights into factors underlying medication discontinuation after BPH treatment remains an area of active research. Analysis of a subset of patients in the current study suggests comorbidity burden is negatively associated with the likelihood of discontinuing BPH medications.<sup>2</sup> Moving forward, this overall body of evidence can serve as useful information for better counseling patients and informing treatment recommendations. How newer BPH treatments compare is a relevant question moving forward.

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