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Review – Benign Prostatic Enlargement

What Is New with Sexual Side Effects After Transurethral Male Lower Urinary Tract Symptom Surgery?

Malte Rieken^{a,b,*}, Tiago Antunes-Lopes^{c,d}, Bogdan Geavlete^{e,f}, Tom Marcelissen^g,
on behalf of the EAU Young Academic Urologists Functional Urology and BPH Group

^a alta uro AG, Basel, Switzerland; ^b University Basel, Basel, Switzerland; ^c Hospital de S. João, Porto, Portugal; ^d Faculty of Medicine, University of Porto, Porto, Portugal; ^e Department of Urology, “Saint John” Emergency Clinical Hospital, Bucharest, Romania; ^f “Carol Davila” University of Medicine, Bucharest, Romania; ^g Department of Urology, Maastricht University Medical Centre, Maastricht, The Netherlands

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Abstract

Transurethral resection of the prostate as well as laser prostatectomy (by either holmium laser enucleation of the prostate or Greenlight laser vaporization) is associated with risks of sexual dysfunction such as antegrade ejaculation and occasionally erectile dysfunction. While ejaculation-sparing variations of these techniques show promising results, larger multicenter studies are needed to confirm promising data. Prostatic urethral lift maintains erectile and ejaculatory function at 5-yr follow-up. The same is true for the 3-yr data on the Rezum system. Recently, Aquablation has shown promising results; however, these 6-mo data need to be confirmed during longer follow-up. An individualized, shared decision-making process based on clinical parameters and patient preference is warranted to select the ideal treatment option for each patient.

Patient summary: Sexual dysfunction such as loss of ejaculation and, less frequently, erectile dysfunction can occur after transurethral prostate surgery. Ejaculation-sparing modifications as well as minimally invasive alternatives show promising results. An individualized approach is warranted to select the ideal technique for each patient.

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* Corresponding author. alta uro AG, Centralbahnplatz 6, 4031 Basel, Switzerland.
E-mail address: m.rieken@outlook.com (M. Rieken).

1. Introduction

Transurethral resection of the prostate (TURP) and alternative treatment options such as laser prostatectomy constitute the mainstay of surgical treatment for symptomatic benign prostatic obstruction (BPO). Although these therapeutic approaches have very well-documented efficacy concerning lower urinary tract symptom (LUTS) relief, they can be

associated with relevant sexual side effects. Erectile dysfunction (ED) and more frequently ejaculatory dysfunction (EjD) in the form of retrograde ejaculation are common complaints. As an increasing number of men who need to undergo surgical BPO relief are interested in the preservation of sexual function, transurethral surgical alternatives are gaining popularity. This nonsystematic mini-review provides a brief overview on the current status of sexual side effects of transurethral

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BPO surgery and also provides evidence on sexual function–sparing minimally invasive alternatives.

2. Impact of TURP and laser techniques on sexual function

TURP has been reported to be associated with a considerable rate of retrograde ejaculation (65.4% after TURP vs 18.2% after transurethral incision of the prostate) as well as a rate of ED of 6.5% [1]. However, one needs to take into consideration that the population investigated in these trials often already suffers from preoperative ED as well as EjD. In a recent systematic review investigating the impact of various BPO surgeries on EjD, the authors found that the rate of retrograde ejaculation after TURP was 66.1% [2]. In addition, it was assessed whether the weight of resected tissue has an impact on EjD. The incidence of retrograde ejaculation was comparable between men having a standard TURP and those undergoing a minimal resection [2]. The rate of EjD has also been evaluated in men undergoing laser vaporization of the prostate with the Greenlight laser. Rates of retrograde ejaculation varied among studies, and were reported between 34.7% and around half of the patients. With respect to ED, International Index of Erectile Function (IIEF)-5 scores are maintained after treatment [3] and no significant differences to TURP were detected in randomized controlled trials. On the contrary, one prospective analysis found that in patients with preoperative IIEF-5 scores of >19, postoperative IIEF-5 scores were significantly decreased at 6, 12, and 24 mo after treatment with the former 120-W laser system [4]. In randomized studies comparing holmium laser enucleation of the prostate (HoLEP) with TURP, rates of postoperative EjD were comparable, with rates of 50.0–76.6% and 50.0–78.3% for HoLEP and TURP, respectively [2]. In contrast, HoLEP seems to improve sexual function in a subset of patients. Although 50% of the patients reported a decrease in postoperative IIEF, 17% referred an improvement. Interestingly, sexual satisfaction may improve significantly following HoLEP and is associated with amelioration in LUTS and quality of life [5].

Ejaculatory function–sparing modifications have been described for TURP, HoLEP, and photoselective vaporization of the prostate (PVP) [1]. From a surgical point of view, these techniques involve sparing and preservation of the pre- and

paracollicular tissue. The reported rates of antegrade ejaculation were 90.8%, 46.2%, and 86.6% for the ejaculation–sparing modifications of TURP, HoLEP, and PVP, respectively [1,6,7]. According to the published data, no negative impact of these ejaculation–sparing modifications on LUTS functional outcomes was observed.

3. Minimally invasive sexual function–sparing transurethral techniques

In recent years, various minimally invasive alternatives emerged aiming at preserving sexual function and improving LUTS. Among these, prostatic urethral lift (PUL; Urolift), convective radiofrequency thermal therapy (Rezum system), as well as image-guided robotically assisted waterjet ablation of the prostate (Aquablation) reported relevant improvements concerning sexual function preservation (Table 1).

PUL is the technique with the longest follow-up available. Five-year outcomes of a prospective randomized trial comparing PUL with sham showed a stable sexual function during follow-up [8]. The authors found no significant degradation in mean erectile function (IIEF-5) or ejaculatory function (Male Sexual Health Questionnaire [MSHQ] EjD function) over the course of 5 yr [8].

The Rezum system has also been investigated for its impact on sexual function. Recently, 3-yr results of a prospective randomized trial of Rezum versus control (rigid cystoscopy) were published. Erectile function remained improved and durable in the subset of sexually active subjects [9]. The rate of retrograde ejaculation was not indicated in the published results of the study; however, both MSHQ-EjD function and MSHQ-EjD both showed a significant decline during follow-up, which indicates improvement [9].

Recently, results of a randomized controlled trial comparing Aquablation with TURP were published. Among sexually active individuals, the rate of retrograde ejaculation was lower in patients treated with Aquablation compared with TURP (10% vs 36%, $p = 0.0003$). In sexually active men, mean erectile function scores (IIEF-15) were stable after Aquablation and slightly decreased after TURP. On the contrary, ejaculatory function scores (MSHQ-EjD) were stable after Aquablation but worsened significantly after TURP [10].

Table 1 – Overview of selected studies on sexual function after minimally invasive BPO surgery.

Study	Technique used	Patients included (n)	Change in erectile function	Change in ejaculatory function	Rate of retrograde ejaculation
Roehrborn et al [8]	PUL	140	16.82 ± 6.22 → 16.45 ± 7.12 (IIEF-5, baseline → 5 yr)	9.22 ± 2.89 → 9.53 ± 3.21 (MSHQ-EjD function, baseline → 5 yr)	NA
McVary and Roehrborn [9]	Rezum	135	23.2 ± 7.4 → 21.3 ± 9.1 (IIEF-EF, baseline → 3 yr)	9.9 ± 3.0 → 8.5 ± 4.5 (MSHQ-EjD function, baseline → 3 yr)	NA
Gilling et al [10]	Aquablation	117	No significant decline in IIEF-15 score at 6 mo (exact numbers not provided)	No significant decline in MSHQ-EjD score at 6 mo (exact numbers not provided)	10% (6 mo)

BPO = benign prostatic obstruction; EF = erectile function; EjD = ejaculatory dysfunction; IIEF = International Index of Erectile Function; MSHQ = Male Sexual Health Questionnaire; NA = not available; PUL = prostatic urethral lift.

4. Conclusions

TURP as well as other established surgical techniques for BPO treatment can be associated with deterioration of sexual function such as ED and retrograde ejaculation. While conflicting data have been published on the impact of these techniques on erectile function as well as sexual satisfaction, retrograde ejaculation is reported in a majority of men after surgery. Ejaculation-sparing modification techniques are promising but need to be further confirmed in larger high-quality multicenter studies. Among minimally invasive techniques, PUL, the Rezum system, and Aquablation show significant improvement of preservation of sexual function. Each of these procedures has its specific advantages and limitations. While PUL is not ideal for patients with a median lobe, it can be offered under local anesthesia and in an outpatient setting. While this is also true for the Rezum system, Aquablation needs to be performed under anesthesia. Thus, it is crucial to tailor surgical BPO treatment to individual needs of each man, with particular characteristics to choose the ideal alternative and achieve the best possible functional outcomes, patient satisfaction, and quality of life.

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Study concept and design: Rieken.

Acquisition of data: Rieken.

Analysis and interpretation of data: Antunes-Lopes, Marcelissen, Geavlete.

Drafting of the manuscript: Rieken.

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