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Surgical and Minimally Invasive Interventions for LUTS/BPH: Highlights from 2006

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Abstract

Objectives: This manuscript reviews the strengths and weaknesses of alternatives to transurethral resection of the prostate (TURP) to treat lower urinary tract symptoms suggestive of benign prostatic hyperplasia (LUTS/BPH).

Methods: The majority of data discussed in this paper were presented at the 2006 annual meetings of the European Association of Urology and the American Urological Association. Data from randomised controlled trials (RCTs) comparing surgical interventions for LUTS/BPH versus TURP, from studies including >100 patients and with at least 1 yr of follow-up were included. The participants' opinions on two representative clinical cases were assessed via interactive voting.

Results: Short-term efficacy of therapy analogues to TURP (bipolar transurethral resection in saline [TURIS], transurethral vaporisation of the prostate [TUVP], and holmium laser resection/enucleation [HoLRP/HoLEP]) seems comparable to TURP, with good safety profiles. Various direct comparative studies show that energy-based ablative techniques (transurethral needle ablation [TUNA], transurethral microwave therapy [TUMT], and photoselective vaporisation of the prostate [PVP]) may be an effective alternative to TURP and are associated with fewer complications. Mechanical stenting seems to be a solution for patients who cannot undergo general anaesthesia. Initial data on the use of botulinum toxin for LUTS/BPH looks promising. However, in all cases, more long-term data (>5 yr of follow-up) are needed to confirm these short-term outcomes.

Conclusions: Accumulating evidence is reported in favour of several alternatives to TURP. However, in all cases, prospective, long-term RCTs are needed to evaluate if these promising short-term outcomes are sustained over time.

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1. Introduction

Lower urinary tract symptoms suggestive of benign prostatic hyperplasia (LUTS/BPH) are frequently encountered in ageing men. Over the age of 40, about one quarter of men suffer from LUTS/BPH [1]. Treatment options for LUTS/BPH generally fall into three categories, specifically, watchful waiting, pharmacology (primarily α_1-adrenoceptor antagonists, 5α-reductase inhibitors), and (minimally invasive) surgery. Surgery is recommended for patients who are moderately to severely bothered by their LUTS and refractory to medical treatment [2]. A minimally invasive procedure is appropriate for patients with moderate and occasionally severe LUTS in whom the prostate is still relatively small [2].

For decades, transurethral resection of the prostate (TURP) has been considered the ''gold standard'' surgical intervention for patients with LUTS/BPH [3]. Following TURP, 70–85% of patients experience improvement of symptoms [4]. However, TURP can be associated with significant morbidity, including TUR syndrome, intraoperative and postoperative bleeding with need for blood transfusions, and acute myocardial infarction [5–7]. However, recent developments in TURP have significantly decreased the associated morbidity [7,8].

The relatively high incidence of complications traditionally associated with TURP has driven the development of novel surgical/minimally invasive treatments for LUTS/BPH. Here, we discuss several alternatives to TURP, which can be used to treat LUTS/BPH, in particular the TURP analogues such as bipolar transurethral resection in saline (TURIS), transurethral vaporisation of the prostate (TUVP) and holmium laser resection/enucleation (HoLRP/HoLEP), energy-based thermal ablation with transurethral needle ablation (TUNA), transurethral microwave therapy (TUMT) and photoselective laser vaporisation (PVP), botulinum toxin injections, and mechanical intervention with intraprostatic stents. New surgical and minimally invasive treatments for LUTS/BPH should have a comparable efficacy and durability to TURP, but better safety outcomes, such as fewer perioperative and postoperative complications, which reduce the length of hospital stay and allow the patient to return earlier to work or to take up regular activities of daily living. Furthermore, the new techniques should be less costly.

2. Methods

The majority of data discussed in this paper were presented at the 2006 annual meetings of the European Association of Urology (EAU) and the American Urological Association (AUA). Data from randomised controlled trials (RCTs) comparing surgical interventions for LUTS/BPH versus TURP, from studies with >100 patients, and with at least 1 yr of follow-up were included. The data were presented and discussed during the ''New Horizons in Urology'' meeting in Marbella. The meeting was attended by approximately 135 urologists from countries throughout Europe. Two specific patient cases were introduced to the audience, followed by an interactive voting session where the delegates had to select their preferred treatment option. The subsequent debate with the audience and experts was chaired by Prof. Schulman and Dr. Illing.

3. TURP analogues

3.1. *Bipolar TURIS*

Using bipolar systems, coagulation occurs at a much lower peak voltage of 65–120 V compared with monopolar systems of 500–800 V, depending on the system used. It has been suggested that this lower peak volume of energy will cause fewer filling symptoms after resection than standard monopolar TUR systems [9,10]. High-frequency current generated by a bipolar instrument tends to remain superficial. The bipolar resection system makes it possible to use physiologic 0.9% saline as the irrigation fluid, which reduces the risk of TUR syndrome [11].

Terrone et al [12] performed a bipolar resection in 50 patients with randomised allocation to either TURP or bipolar treatment. There were no statistically significant differences in the mean duration of the procedure (TURIS vs. TURP: 53.4 vs. 51.6 min), mean amount of tissue resected (TURIS vs. TURP: 31.3 vs. 25.2 g), and mean postoperative plasma sodium concentration (TURIS vs. TURP: 139.9 mmol/l vs. 139.5 mmol/l). Improvement in maximum urinary flow rate (Q_{max}) was similar between the groups (TURIS vs. TURP: 22.2 vs. 20.9 ml/s) with a trend to a quicker improvement of voiding symptoms in the bipolar group. The mean catheterisation time was lower in the bipolar group (TURIS vs. TURP: 2.6 d vs. 3.4 d, $p = 0.06$). Outcomes of this trial show that bipolar TURIS has a comparable efficacy to TURP. These data were confirmed in another RCT including 100 patients with LUTS/BPH; the study found no statistically significant differences in efficacy and safety outcomes between bipolar TURIS and TURP [13]. TUR syndrome did not occur in any group. Ho et al [14] presented the outcomes of a single-blind, prospective RCT comparing bipolar TURIS and monopolar TURP, including 48 and 52 patients, respectively. TUR syndrome did not occur in the TURIS group compared to two patients from the TURP