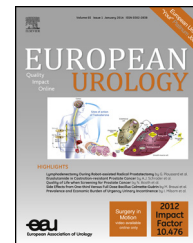


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Platinum Priority – Collaborative Review – Benign Prostatic Obstruction

Editorial by XXX on pp. x–y of this issue

A Systematic Review and Meta-analysis of Functional Outcomes and Complications Following Transurethral Procedures for Lower Urinary Tract Symptoms Resulting from Benign Prostatic Obstruction: An Update

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Article info

Article history:

Accepted June 12, 2014

Keywords:

Benign prostatic obstruction
Meta-analysis
Transurethral procedures
Laser
Prostate

Abstract

Context: A number of transurethral ablative techniques based on the use of innovative medical devices have been introduced in the recent past for the surgical treatment of benign prostatic obstruction (BPO).

Objective: To conduct a systematic review of the literature and a meta-analysis of available randomized controlled trials (RCTs), and to evaluate the efficacy and safety of transurethral ablative procedures for BPO.

Evidence acquisition: A systematic literature search was performed for all RCTs comparing any transurethral surgical technique for BPO to another between 1992 and 2013. Efficacy was evaluated after a minimum follow-up of 1 yr based on International Prostate Symptom Score, maximum flow rate, and postvoid residual volume. Efficacy at midterm follow-up, prostate volume, perioperative data, and short-term and long-term complications were also assessed. Data were analyzed using RevMan software.

Evidence synthesis: A total of 69 RCTs (8517 enrolled patients) were included. No significant difference was found in terms of short-term efficacy between bipolar transurethral resection of the prostate (B-TURP) and monopolar transurethral resection of the prostate (M-TURP). However, B-TURP was associated with a lower rate of perioperative complications. Better short-term efficacy outcomes, fewer immediate complications, and a shorter hospital stay were found after holmium laser enucleation of the prostate (HoLEP) compared with M-TURP. Compared with M-TURP, GreenLight photoselective vaporization of the prostate (PVP) was associated with a shorter hospital stay and fewer complications but no different short-term efficacy outcomes.

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<http://dx.doi.org/10.1016/j.eururo.2014.06.017>

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Please cite this article in press as: Cornu J-N, et al. A Systematic Review and Meta-analysis of Functional Outcomes and Complications Following Transurethral Procedures for Lower Urinary Tract Symptoms Resulting from Benign Prostatic Obstruction: An Update. *Eur Urol* (2014), <http://dx.doi.org/10.1016/j.eururo.2014.06.017>

Conclusions: This meta-analysis shows that HoLEP is associated with more favorable outcomes than M-TURP in published RCTs. B-TURP and PVP have resulted in better perioperative outcomes without significant differences regarding efficacy parameters after short-term follow-up compared with M-TURP. Further studies are needed to provide long-term comparative data and head-to-head comparisons of emerging techniques.

Patient summary: Bipolar transurethral resection of the prostate, photovaporization of the prostate, and holmium laser enucleation of the prostate have shown efficacy outcomes comparable with conventional techniques yet reduce the complication rate. The respective role of these new options in the surgical armamentarium needs to be refined to propose tailored surgical treatment for benign prostatic obstruction relief.

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1. Introduction

Lower urinary tract symptoms (LUTS) are a common complaint in older men [1]. Surgical intervention is the standard treatment for patients with bothersome LUTS due to benign prostatic obstruction (BPO) unwilling to try medical therapies, in cases where medical therapies were not effective, and in cases of complicated LUTS [1]. In the past 2 decades, a wide range of innovative transurethral procedures have challenged the supremacy of the two standard surgical options (monopolar transurethral resection of the prostate [M-TURP] and open prostatectomy [OP]) [2]. These alternative transurethral procedures embrace all laser therapies, encompassing the various types of lasers and modalities of prostatic tissue ablation (enucleation, vaporization, and resection) and bipolar devices permitting bipolar TURP (B-TURP) or bipolar enucleation.

A number of systematic reviews have summarized the growing evidence supporting the use of these new techniques [2–6]. In this rapidly moving field, our objective was to conduct an updated systematic review and meta-analysis gathering all the level of evidence (LE) 1 information available in the literature about transurethral procedures for surgical management of LUTS/BPO, by focusing on commercially available and emerging techniques.

2. Evidence acquisition

2.1. Literature search and inclusion of studies

A systematic review was conducted, based on a literature search through the PubMed/Medline, Embase, Scopus, and ISI Web of Knowledge. Three authors participated in the process of literature search and data acquisition process (J.N.C., G.N., and S.M.). The literature search aimed at identifying all the papers reporting the results of randomized controlled trials (RCTs) in full-length articles published in English, German, Dutch, Italian, or French between 1992 (date of the first publications relative to laser prostatectomy) and September 2013. The following keywords were used in the databases just cited: (randomized OR randomised) AND prostate (in title or abstract fields) AND (Transurethral resection OR TURP OR monopolar OR Bipolar OR GyruS OR TURis OR Vista CTR OR TUVis OR plasmakinetic OR PkEP OR vaporization or vaporisation OR electrovaporization OR electrovaporisation OR TUVp OR vaporesction OR TUVRP OR ablation OR enucleation OR laser OR Nd:YAG OR VLAP OR CLAP

OR photovaporisation OR photovaporization OR PVP OR KTP OR LBO Holmium OR HoLEP OR HoLRP OR HoLAP OR thulium OR TmLRP OR diode [in text]). The search was completed by a PubMed/Medline search for the *Prostatic hyperplasia/Surgery* Medical Subject Heading term, limited to the “randomized controlled trials” category. The reference lists of all systematic reviews in the field were also screened for additional references. After the removal of duplicates and the exclusion of conference abstracts, a first selection was made based on the title and abstract of the papers. Only the RCTs comparing two ablative transurethral techniques were considered, thus excluding studies about transurethral needle ablation, transurethral microwave therapy, transurethral ethanol ablation of the prostate, water-induced thermotherapy, high-intensity focused ultrasound, intraprostatic injections, as well as hybrid/combination procedures. We included studies reporting main functional outcomes (International Prostate Symptom Score [IPSS] or maximum flow rate [Q_{max}]) or postoperative complications. Based on expert agreement, a number of transurethral procedures were excluded from the present report because they were no longer used in clinical practice and/or linked to all references well studied in previous systematic reviews [2,4] without new data available in the literature: visual laser ablation of the prostate, contact laser ablation/vaporization of the prostate, holmium laser resection of the prostate, and holmium laser ablation of the prostate.

Once selected, the full text of the articles were studied to gather information about study design, inclusion criteria, baseline patient characteristics, operative parameters, immediate, short-term (≤ 12 mo), and long-term complications, as well as short-term (12 mo) and medium- to long-term functional outcomes (defined as ≥ 24 mo). Functional data earlier than 12 mo were not considered, in accordance with current standard guidelines for the evaluation of BPO surgery [1]. Quality of the studies was assessed by the Jadad score [7].

2.2. Statistical analysis

A meta-analysis was considered for each outcome including perioperative data, efficacy, or complications for every head-to-head comparison. For an optimal consistency of the results, subgroups meta-analyses were conducted within each category of devices. Meta-analysis was conducted using RevMan software v.5.1 (Cochrane Collaboration, Oxford, UK). Specifically, statistical heterogeneity was tested using the chi-square test. A value of $p < 0.10$ was

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