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Local Anaesthesia for Minimally Invasive Surgical Therapies in Benign Prostatic Obstruction: A Systematic Review of Clinical Outcomes and Procedural Tolerability (Protocol)

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Foundation Trust.**ADMINISTRATIVE INFORMATION****Support** - None.**Review Stage at time of this submission** - Completed but not published.**Conflicts of interest** - None declared.**INPLASY registration number:** INPLASY202670101**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 25 July 2026 and was last updated on 25 July 2026.**INTRODUCTION**

Review question / Objective To systematically evaluate the clinical outcomes, procedural tolerability and local anaesthetic techniques associated with minimally invasive surgical therapies (MISTs) for benign prostatic obstruction (BPO) performed predominantly under local anaesthesia. Adult men undergoing UroLift®, Rezūm®, iTind® or transperineal laser ablation (TPLA) were included. Where available, outcomes were compared with alternative anaesthetic strategies. Primary outcomes included symptom improvement (IPSS), urinary flow (Qmax), post-void residual volume (PVR) and procedural tolerability. Secondary outcomes included sexual function, complications, retreatment and patient satisfaction.

Rationale Benign prostatic obstruction is one of the commonest causes of lower urinary tract symptoms in ageing men. Minimally invasive surgical therapies have expanded rapidly over the last decade and are increasingly delivered in

outpatient settings using local anaesthesia, reducing the need for general anaesthesia and hospital admission. Although individual techniques have been evaluated extensively, evidence comparing local anaesthetic pathways across different MISTs remains fragmented. This systematic review was undertaken to synthesise the available evidence regarding clinical effectiveness, procedural tolerability and anaesthetic techniques, and to identify gaps requiring future research. Minimally invasive surgical therapies have emerged as alternatives to conventional surgery for benign prostatic obstruction and are increasingly performed in outpatient settings under local anaesthesia. Although individual procedures have been evaluated separately, no systematic review has compared the clinical outcomes, procedural tolerability and local anaesthetic techniques across contemporary MISTs. This review was undertaken to synthesise the available evidence and identify areas requiring further research.

Condition being studied Benign prostatic obstruction secondary to benign prostatic hyperplasia causing lower urinary tract symptoms.

METHODS

Search strategy Electronic searches were performed in PubMed/MEDLINE and Embase from database inception to 4 September 2025. The Cochrane Library (CENTRAL) was additionally searched during revision to ensure comprehensive identification of eligible studies. Searches combined controlled vocabulary (MeSH and Emtree terms, where applicable) with free-text terms across three concepts:

Condition: “benign prostatic hyperplasia”, BPH, “benign prostatic obstruction”, BPO, “lower urinary tract symptoms”, LUTS;

Intervention: “minimally invasive surgical therapy”, MIST, “prostatic urethral lift”, UroLift, “water vapour thermal therapy”, “water vapor thermal therapy”, Rezūm, Rezum, “temporary implantable nitinol device”, iTind, “transperineal laser ablation”, TPLA;

Anaesthesia/delivery: “local anaesthesia”, “local anesthesia”, “local anaesthetic”, “local anesthetic”, lidocaine, lignocaine, “in-office”, “office-based”, outpatient, ambulatory, “day-case”, “day case”.

The three concepts were combined using Boolean operators as (Condition) AND (Intervention) AND (Anaesthesia/delivery). Database-specific controlled vocabulary and syntax were used where appropriate. Searches were restricted to English-language publications. Reference lists of included studies and relevant review articles were manually screened to identify additional eligible studies. The Cochrane Library search identified no additional eligible studies beyond those identified through PubMed/MEDLINE and Embase.

Participant or population Adult men with benign prostatic obstruction undergoing minimally invasive surgical therapy.

Intervention UroLift®, Rezūm®, iTind® and transperineal laser ablation performed predominantly under local anaesthesia.

Comparator Alternative anaesthetic techniques where reported (including conscious sedation or general anaesthesia) or no comparator for single-arm studies.

Study designs to be included Randomised controlled trials, prospective and retrospective cohort studies, and comparative observational studies.

Eligibility criteria Eligible studies included randomised controlled trials, prospective and retrospective cohort studies and comparative observational studies evaluating contemporary minimally invasive surgical therapies for benign prostatic obstruction performed predominantly under local anaesthesia. Conference abstracts, editorials, narrative reviews, case reports, animal studies and cadaveric studies were excluded. Studies evaluating obsolete procedures, prostate artery embolisation or procedures routinely performed under general anaesthesia or intravenous sedation were also excluded.

Information sources PubMed/MEDLINE, Embase, Cochrane Library (CENTRAL), reference lists of included articles and relevant systematic reviews.

Main outcome(s) Primary outcomes included changes in International Prostate Symptom Score (IPSS), maximum urinary flow rate (Qmax), post-void residual volume (PVR) and procedural tolerability (pain scores or visual analogue scale) at the latest reported follow-up or at 12 months if available.

Additional outcome(s) Sexual function, complications, local anaesthetic techniques and patient satisfaction.

Data management Search results were imported into Rayyan for management and duplicate removal. Titles, abstracts and full texts were screened independently by two reviewers against predefined eligibility criteria. Data were extracted using a standardised electronic data extraction form.

Quality assessment / Risk of bias analysis Search results were imported into Rayyan for management and duplicate removal. Titles, abstracts and full texts were screened independently by two reviewers against predefined eligibility criteria. Data were extracted using a standardised electronic data extraction form.

Strategy of data synthesis Clinical and methodological heterogeneity between studies, including differences in study design, interventions, anaesthetic techniques and outcome reporting, precluded formal meta-analysis. Therefore, findings were synthesised narratively and presented according to intervention type.

Subgroup analysis Outcomes were synthesised according to intervention (UroLift®, Rezūm®, iTind® and TPLA) and anaesthetic pathway where possible.

Sensitivity analysis No formal sensitivity analyses were planned because quantitative meta-analysis was not performed.

Language restriction English.

Country(ies) involved United Kingdom.

Other relevant information This systematic review was completed prior to registration. Post-study registration was undertaken during peer review in accordance with the journal's editorial requirements. The registration therefore documents the methodology used for the completed review and should be interpreted as retrospective rather than prospective protocol registration.

Keywords benign prostatic hyperplasia; local anaesthesia; Rezūm; UroLift; iTind.

Dissemination plans Findings will be submitted for publication in a peer-reviewed urology journal.

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