

Shifting Trends in Prostate Treatment: A Systematic Review Comparing Transurethral Resection of the Prostate and Holmium Laser Enucleation of the Prostate

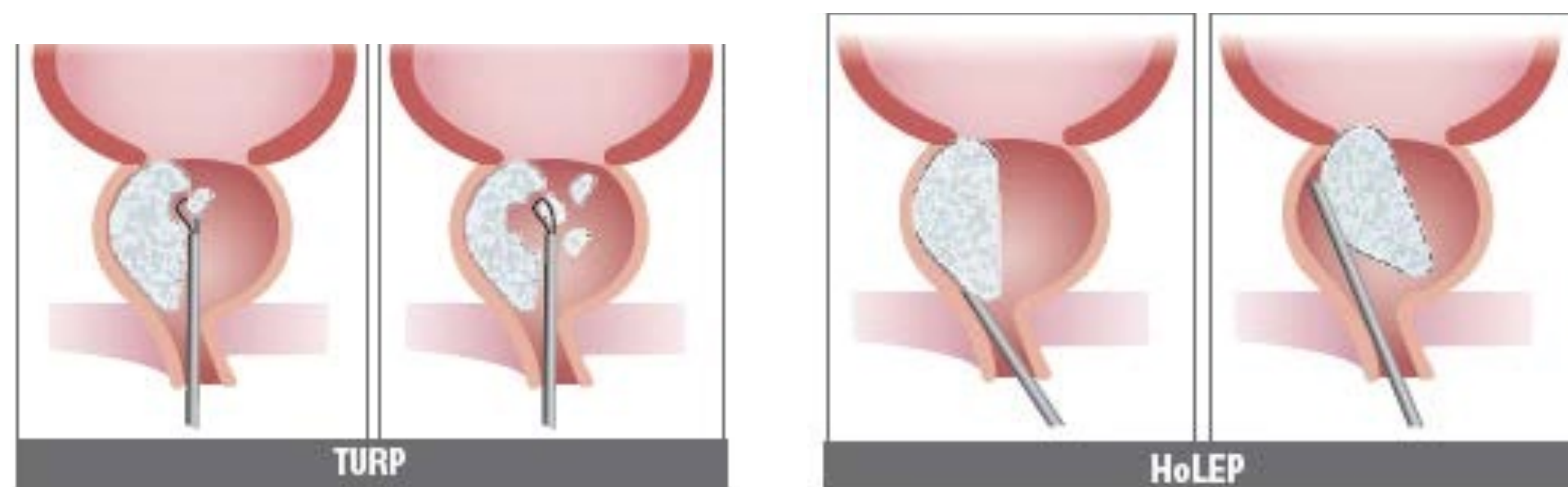
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Introduction

- BPH involves the increase in prostatic glandular and stromal cells in the prostate's transition zone.
- Clinical BPH results in lower urinary tract symptoms (LUTS) and can lead to bladder outlet obstruction (BOO) with potential damage to the bladder and kidneys.
- BPH is highly prevalent in aging men, affecting around 70% of men aged 60-69 and 80% of men above 70 in the United States.
- Various treatment options are available, including lifestyle changes, medications, and surgical procedures.
- Surgical interventions, such as TURP, are considered when conservative treatments are ineffective, or symptoms persist.
- TURP, including variations like monopolar (M-TURP) and bipolar (B-TURP), has been the traditional gold standard treatment for BPH.
- Emerging BPH treatment techniques offer alternatives to traditional surgery, including laser therapies and minimally invasive procedures.
- HoLEP has gained prominence as an alternative approach, offering benefits such as shorter hospital stays, improved postoperative outcomes, and reduced bleeding complications.



Methods

1.Literature Search: Conducted a systematic search on PubMed and Cochrane CENTRAL databases for relevant studies published between 2015 and 2023.

2.Study Selection: Screened titles and abstracts, followed by full-text screening, with disagreements resolved by discussion and third-party consultation.

3.Inclusion/Exclusion Criteria: Included RCTs and observational studies meeting criteria, excluded studies with incomplete data, overlapping populations, or specific conditions (neurogenic bladder, prostatic malignancy, previous prostate surgery).

4.Data Extraction and Outcomes: Employed the PICOS approach for data extraction, focusing on authors, study design, participant details, outcomes, and complications.

5.Risk of Bias Assessment: Evaluated study quality using the Cochrane collaboration risk of bias assessment tool, considering various types of bias (selection, performance, detection, attrition, reporting, other).

Table 1: PICO Approach for defining inclusion criteria

Population	Male patients with BPH of age 45-85 years (BPH is rare before age of 45 years)
Intervention	Holmium Laser Enucleation of the Prostate (HoLEP)
Comparison	Transurethral resection of the prostate (TURP)
Outcomes	<ul style="list-style-type: none"> Postoperative IPSS Post void residual (PVR) volume Maximum flow rate (Qmax) Change in sexual function

Results:

- This systematic review assessed the effectiveness of Holmium Laser Enucleation of the Prostate (HoLEP) compared to transurethral resection of the prostate (TURP) for the treatment of benign prostatic hyperplasia (BPH). A total of 12 studies were included, involving 1438 male patients aged 45-85 years.

Operative Time and Hospital Stay:

- HoLEP resulted in a shorter hospital stay in multiple studies, including Jefferson et al. (median 1.45 vs 3.1 days, $p < 0.001$), Elshal et al. (median 1 vs 2 days, $p < 0.001$), and others.
- HoLEP also reduced operative time in several studies, as reported by Song et al. ($p < 0.01$), Shah et al. (mean 63.35 vs. 74.91 min, $p = 0.047$), and more.
- However, in some studies, HoLEP had longer operative times compared to TURP, including Jhanwar et al., Sinha et al., and Bai et al.

Postoperative International Prostate Symptom Score (IPSS):

- HoLEP led to improved mean postoperative IPSS in some studies, such as those by Xiaofeng et al., Hassan et al., and El-Hawy et al.
- In contrast, no significant difference was observed in mean postoperative IPSS when comparing HoLEP with TURP in studies conducted by Jefferson et al., Song et al., Jhanwar et al., and Elshal et al.

Maximum Flow Rate (Qmax):

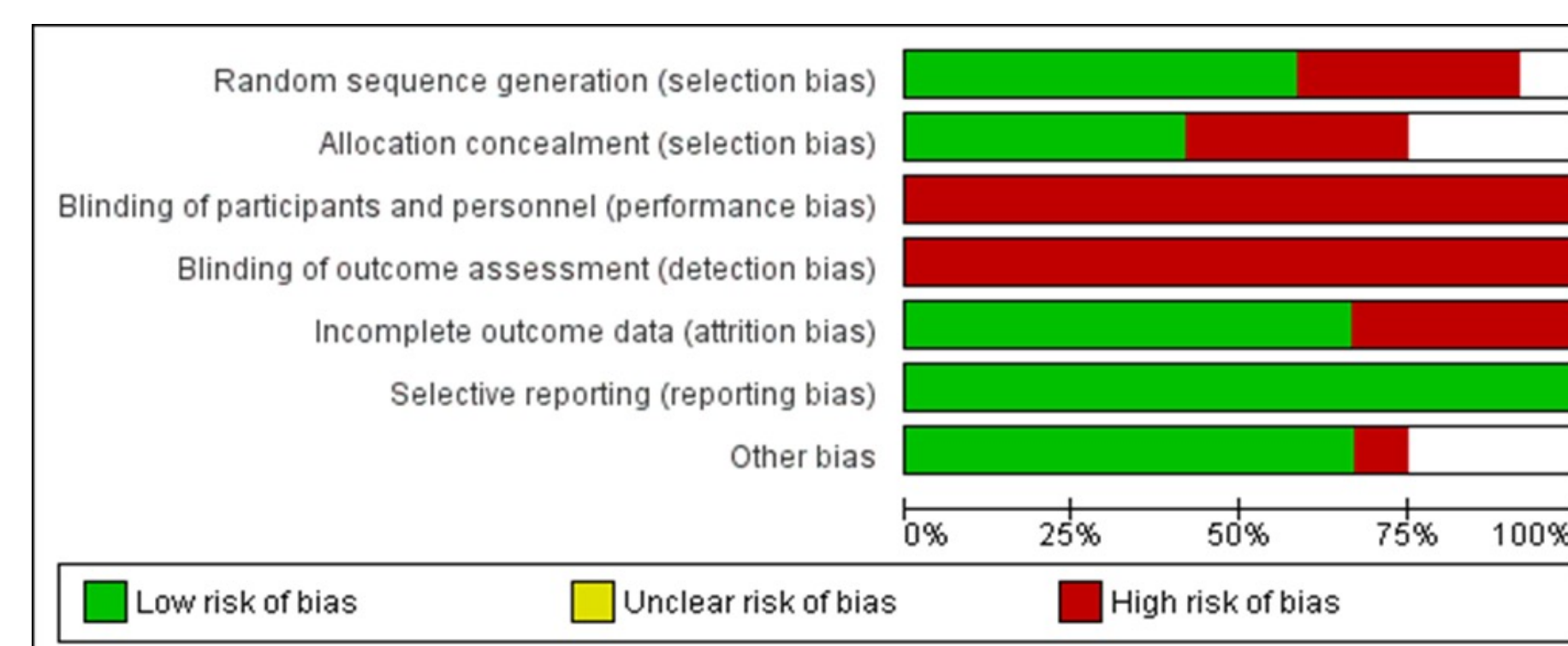
- HoLEP resulted in an improved maximum flow rate (Qmax) in the postoperative period in several studies, including those by Xiaofeng et al., Shah et al., Jhanwar et al., and more.
- However, some studies found no significant difference in Qmax scores following HoLEP compared to TURP, such as Song et al. and Prudhomme et al.

Post Void Residual (PVR) Urine Volume:

- Post void residual (PVR) urine volume was improved in patients following HoLEP in some studies, including Xiaofeng et al., Shah et al., and Hassan et al.
- However, no significant change was observed in PVR urine volume in patients following HoLEP compared to TURP in studies conducted by Jhanwar et al., Elshal et al., and El-Hawy et al.

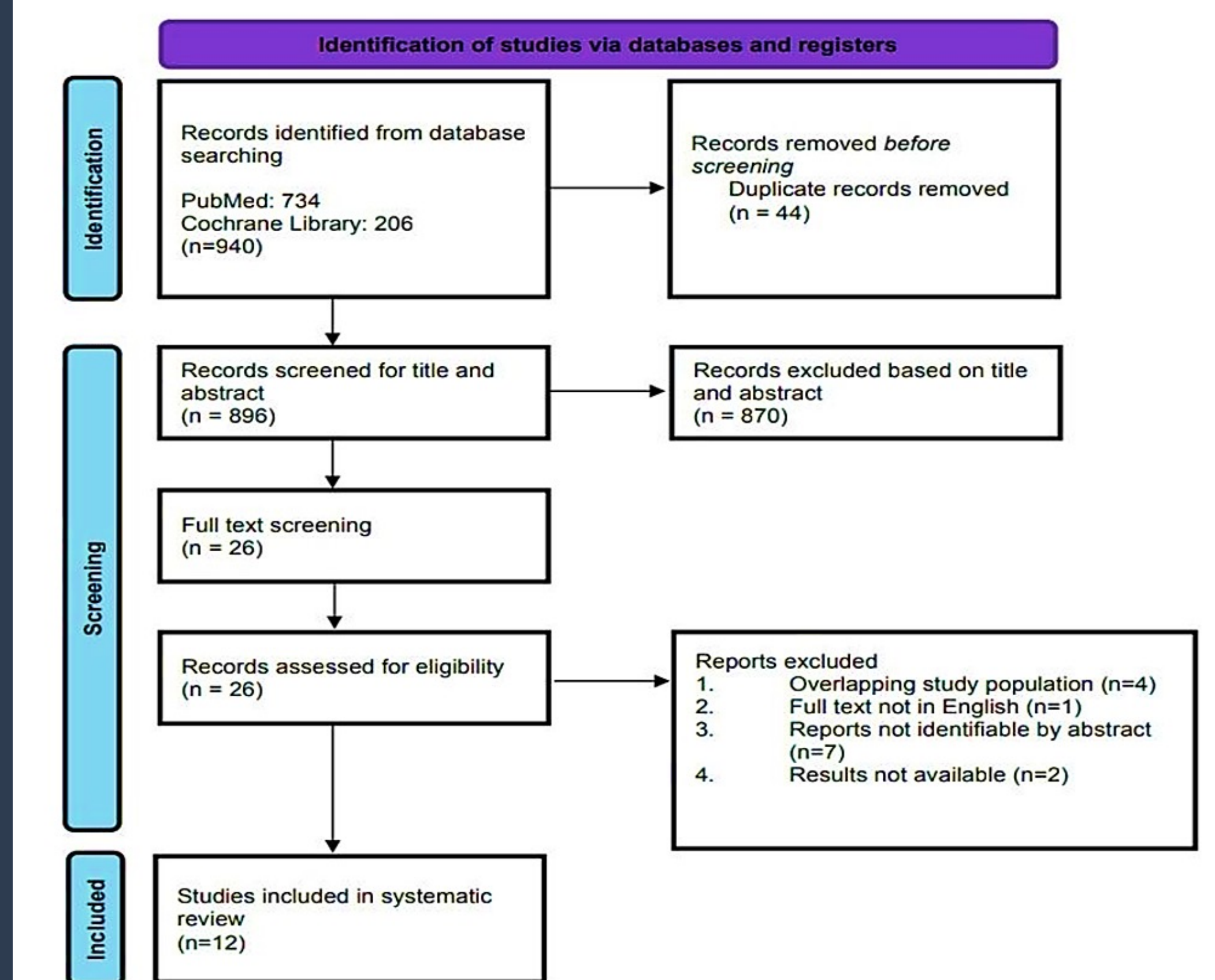
Changes in Sexual Functions:

- Some studies reported a significant reduction in the mean orgasm score in patients following monopolar or bipolar TURP compared to HoLEP, as reported by Elshal et al.
- Mean ejaculatory score was reduced in patients following both HoLEP and TURP, but no significant change in erectile function, intercourse satisfaction, and overall satisfaction score was observed in the study by Elshal et al.
- Other studies found no significant difference in sexual function scores between the two groups in the postoperative follow-up.



Outcomes

Outcome	Findings
Operative Time	HoLEP generally reduced operative time in several studies. However, in some studies, HoLEP had longer operative times compared to TURP.
Hospital Stay	HoLEP resulted in a shorter hospital stay in multiple studies.
Postoperative IPSS	HoLEP led to improved mean postoperative IPSS in some studies. No significant difference in mean postoperative IPSS in other studies.
Maximum Flow Rate (Qmax)	HoLEP resulted in improved Qmax in the postoperative period in several studies. No significant difference in Qmax scores following HoLEP compared to TURP in some studies.
Post Void Residual (PVR) Urine Volume	Improvement in PVR urine volume following HoLEP in some studies. No significant change in PVR urine volume in patients following HoLEP compared to TURP in some studies.
Changes in Sexual Functions	Reduction in mean orgasm score in patients following TURP compared to HoLEP (Elshal et al.). Mean ejaculatory score was reduced in patients following both HoLEP and TURP, but no significant change in erectile function, intercourse satisfaction, and overall satisfaction score was observed in the study by Elshal et al. No significant difference in sexual function scores between the two groups in the postoperative follow-up.



Conclusion

Conventionally, TURP has been used as the gold standard treatment in the management of BPH despite being associated with a higher risk of morbidity and mortality. HoLEP is better in efficacy in reference to the peri- and post-operative complications, improvement in patients' symptoms and long-term changes in the sexual function. Therefore, it has now replaced TURP as the new size-independent gold standard treatment for benign prostatic hyperplasia management.