TITLE: GreenLight Laser for the Treatment of Benign Prostatic Hypertrophy: Clinical and Cost-Effectiveness, and Safety

DATE: 29 May 2013

RESEARCH QUESTIONS

1. What is the evidence for the clinical effectiveness of photoselective vaporization of the prostate with GreenLight laser for the treatment of benign prostatic hypertrophy?

2. What is the evidence for the improved safety of photoselective vaporization of the prostate with GreenLight laser for the treatment of benign prostatic hypertrophy compared with transurethral resection of the prostate?

3. What is the evidence for the cost-effectiveness of photoselective vaporization of the prostate with GreenLight laser for the treatment of patients with benign prostatic hypertrophy compared with transurethral resection of the prostate?

KEY MESSAGE

Six systematic reviews and meta-analyses, eight randomized controlled trials, and two economic studies were identified regarding the use of photoselective vaporization of the prostate with GreenLight laser for the treatment of benign prostatic hypertrophy.

METHODS

A limited literature search was conducted on key resources including PubMed, The Cochrane Library (2013, Issue 5), University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. No filters were applied to limit the retrieval by study type. The search was also limited to English language documents published between May 1, 2010 and May 15, 2013. Internet links were provided, where available.

The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.

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RESULTS

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials, non-randomized studies, and economic evaluations.

Six systematic reviews and meta-analyses, eight randomized controlled trials, and two economic studies were identified regarding the use of photoselective vaporization of the prostate with GreenLight laser for the treatment of benign prostatic hypertrophy. Because of the large volume of relevant literature, non-randomized studies have been included in the appendix.

OVERALL SUMMARY OF FINDINGS

Six systematic reviews and meta-analyses, 1-6 nine randomized controlled trials, 7-15 and two economic studies16,17 were identified regarding the use of photoselective vaporization (PVP) of the prostate with GreenLight laser for the treatment of benign prostatic hypertrophy (BPH).

As compared to transurethral resection of the prostate (TURP), 1-4,7,9-13 holmium laser enucleation, 8 and diode laser vaporization 14 PVP was associated with:

TURP
- less perioperative blood loss1,10,13
- fewer blood transfusions1,3,4
- less capsular perforation1,4
- significantly lower risk of transurethral resection syndrome4
- shorter catheterization time1-4,7,10,12,13
- shorter hospital stay1-4,7,9,12,13
- no significant difference in IPSS scores between groups1,2,4,7,8,10-13
- no significant difference in Q(max) between groups1,2,4,7,9-14
- no significant difference in quality of life between groups1,2,7,8,10,12
- no significant difference in post void residual urine between groups1,2,4,7,10,13
- longer operative time1-4,10
- shorter operating time7
- higher re-intervention rate1,2,4,13
- fewer intraoperative complications7,13
- similar overall complication rate between groups10,12

Holium laser enucleation8
- similar catheterization time
- similar operating time between groups
- inferior functional results as compared to the holmium laser group

Diode laser vaporization14
- no significant difference in IPSS scores between groups
- no significant difference in Q(max) between groups
- no significant difference in quality of life between groups
- no significant difference in post void residual urine between groups
One meta-analysis compared TURP to various other minimally invasive surgical therapies including GreenLight laser PVP. All treatments were statistically comparable in terms of efficacy and overall morbidity. Another systematic review comparing PVP and other minimally invasive surgical procedures to TURP was included, but no outcomes information was provided in the abstract.

One cost-minimization analysis undertaken in Australia compared the costs of PVP and TURP for BPH and determined that there were no significant cost differences between the two treatments when accounting for equipment, training, and re-intervention costs. A comparative cost analysis compared the cost of PVP with a 120W GreenLight laser to TURP from both the Greek National Health Service and public insurance perspectives. From the health service perspective, PVP was preferred over TURP for prostate volumes between 40 cc and 70 cc. From the public insurance perspective, PVP was less costly than TURP only if the patient was part of the workforce, because they could return to work more quickly after the PVP procedure.
REFERENCES SUMMARIZED

Health Technology Assessments
No literature identified.

Systematic Reviews and Meta-analyses


Randomized Controlled Trials


**Economic Evaluations**


APPENDIX – FURTHER INFORMATION:

Costing Report


Non-Randomized Studies


PubMed: PM20562795

Safety

PubMed: PM21834657

PubMed: PM20522311

Review Articles

PubMed: PM23671400

PubMed: PM22026624

PubMed: PM21438974

Additional References

PubMed: PM21381906