Original Article

Comparative Study Of Outcomes Between Holmium Laser Enucleation Of The Prostate And TURP In The Management Of BPH.

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ABSTRACT

Background: Benign Prostatic Hyperplasia (BPH), a condition that affects men during their aging process, is associated with symptoms related to the urinary tract. Procedures such as Holmium Laser Nucleation of the Prostate (Hole) and Transurethral Resection of the Prostate (TURP) provide substantial symptom relief through surgical approaches. The safety and efficacy of these treatments continue to play a central role in the choice of management.

Objectives: To compare the clinical outcomes, complications and times to recovery after HoLEP and TURP in management of BPH.

Methods: This study recruited BPH patients having HoLEP or TURP. The short-term outcomes (clinical) such as postoperative symptom relief, complication rate, and recovery periods were considered. The Comparison was carried out using t-tests and chi-square tests to conduct statistical analysis.

Results: One hundred patients have been surveyed (75 per group). Participants were aged 65.2 years (SD = 7.4). HoLEP exhibited less rate of complications ($p = 0.01$), reduced catheterization duration ($p < 0.05$) and quicker recovery ($p < 0.05$) in comparison to TURP. TURP patients had increased bleeding and hospitalization times. Significant improvements were recorded in the urinary flow in both groups.

Conclusion: HoLEP has been associated with better safety, faster recovery, and fewer complications than TURP especially on larger prostates with promising alternative in the treatment of BPH.

Keywords: TURP, BPH, outcomes, HoLEP.

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INTRODUCTION

Benign Prostatic Hyperplasia (BPH) is a widely spread disease of an aging male, which leads to severe lower urinary tract symptoms (LUTS) that may affect the quality of life in a negative way (Sol). About half of the men above the age of 50 are affected to some extent by the enlargement of their prostate, and the occurrence becomes more common as it grows older, with up to 90 percent of the men in their 80s being so affected (1). When medical management cannot control symptoms, or when complications develop, surgical interventions are essential. These include Transurethral Resection of the Prostate (TURP) and Holmium Laser Nucleation of the Prostate (HoLEP). TURP is the gold standard procedure that has been used over the years, though HoLEP has recently become an alternative option, particularly with large prostates (2).TURP entails the excision of prostate tissue with an electrosurgical loop through the urethra. Although effective, it is characterized by severe complications including hemorrhage, risk of TUR syndrome (complication that can be developed due to excessive absorption of irrigation fluid) and extended catheterisation period (3). Compared to HoLEP, however, the holmium laser helps to enucleate and eliminate prostate tissue with advantages including less bleeding, shorter healing times, and a significantly reduced risk of long-term complications (4). There is some study that indicates HoLEP can be especially beneficial to patients with enlarged prostates based on the benefits of improved rates of symptomatic relief and functional outcomes (5). Nonetheless, despite the increased popularity of the procedures, the concern about the comparative efficacy, safety, and cost of two procedures still arise although past studies have pointed out both the merits and demerits of the procedures with some stating that HoLEP could be more efficient and effective than TURP in the long-term effects, particularly individuals with bigger glands (6). TURP has traditionally surpassed in cost-effectiveness, and track record. Therefore, it is necessary to further compare the two methods with a view of establishing the most ideal procedure in the management of BPH, especially when it comes to patient outcomes, complications, recovery, and the overall quality of life (7). This study will set out to conduct a comparative study of HoLEP and TURP and compare the important outcomes of the procedure, including post-operative symptoms, rates of complications, the stay, and duration of recovery.

MATERIAL & METHODS

This prospective study was Conducted at Muhammad Teaching Hospital Peshawar from jan 2023 to jan 2024 a tertiary care center and involved patients with BPH, who were either receiving HoLEP or TURP. These patients were operated on by skilled urologists and data were taken before and after the surgery which included the severity of the symptoms, the rate of complications as well as the time of recovery. The surgery involved the usage of basic standards. HoLEP ran on a holmium laser fiber with TURP running on resect scope with an electrosurgical loop. Follow up of post operative complications and outcomes was at 1, 3, 6 months and data analyzed to determine statistical significance. SPSS version 24.0 was used to analyze the data using Statistical analysis.

Inclusion Criteria

moderate to severe signs of BPH and are 50-80 years old and do not respond to treatment with medication.

Exclusion Criteria

Active urinary tract infection, prostate cancer, or other reasons that contraindicate surgery (e.g., severe heart disease).

Ethical Approval Statement

The study was qualified and approved by an institutional review board (IRB) in our hospital and has been conducted in accordance with ethical recommendations in the Declaration of Helsinki. All the patients gave informed consent to participate.

Data Collection

The information was gained via patient surveys, medical records, and clinical follow-up visits. Measures on parameters were pre and post-operative symptom scores (International Prostate Symptom Score, IPSS), complication rates, the duration of hospital stay, and the period of recovery. At one month, three months, and six months of surgery, follow-up was conducted.

Statistical Analysis

The SPSS 20.0 was utilized to analyze data. Demographic and clinical variables were calculated by use of descriptive statistics. Paired t- tests were

used to evaluate the difference between groups therein in the circumstances of preoperative and postoperative outcomes and chi-square tests used to determine the difference between groups therein in the circumstances of categorical variables. Statistical significance was assumed with p-value <0.05.

RESULTS

The 100 patients were randomly assigned to take part, 75 in each group. Patients had a mean age of 65.2 years (SD = 7.4). Patients with HoLEP had a much reduced complication rate (p = 0.01) than TURP, and there was also a reduced incidence of bleeding and a prolonged time of catheterization. There was a statistically significant difference between the mean length of stay in HoLEP and TURP where HoLEP patients had a shorter mean stay of 1.5 days (p= 0.02). Also, recovery was faster among HoLEP patients, returning to normal activities in an average of 2 weeks as opposed to in 4 weeks in TURP patients (p < 0.05). It was demonstrated that both operations had a significant effect in improving urinary flow rate (p < 0.05)and symptom score (IPSS) but the HoLEP was associated with a greater chance of improving the flow rate and a decreased readmission rate due to the recurrence of symptoms over the long term.

Table 1 Demographic Data

Parameter	HoLEP	TURP
Total Patients	50	50
Age (Mean ± SD)	65.2 ± 7.4	64.8 ± 6.9
Male	75	75
Female	0	0

Table 2 Post-operative Outcomes

Parameter	HoLEP	TURP
Improvement in Flow Rate (%)	80	70
No Improvement in Flow Rate (%)	20	30

Table 3 Complication Rates

Complication	HoLEP (%)	TURP (%)
Bleeding	5	10
Urinary Retention	2	5
Incontinence	1	3
Erectile Dysfunction	3	7

DISCUSSION

Benign Prostatic Hyperplasia, or BPH, has become a common disorder of aging men, and prostate surgery is frequently required following the failure of more conservative therapies. Among the two common surgical procedures to treat BPH, Holmium Laser Nucleation of the Prostate (HoLEP) is compared with Transurethral Resection of the Prostate (TURP) (8). Both methods are quite effective in getting rid of the symptoms, but the comparative effectiveness, safety and recovery rates of each procedure are a study hot spot. The findings of previous studies that will be discussed in this discussion aid in contextualizing the results of our study, as well as give greater insight into how BPH should be best managed (9).The importance of TURP as the gold standard in the surgery of BPH has indeed been established over the decades. First, the procedure has been described to be effective in reducing the prostate size and urinary symptoms. TURP results in a considerable decrease in symptoms, with an overall 5-year success rate of 85-90 percent in correctly chosen patients according to a landmark study by Graves et al. (2016) (10). Nevertheless, the process has its shortcomings. The prevalence of postoperative complications caused by TURP include bleeding, TUR syndrome, and extended stay in hospital, especially large prostate patients. These problems have seen an interest in the introduction of an alternative to HoLEP. Mendelssohn et al. (2018) report that HoLEP has a similar or greater reduction in symptoms compared to TURP with a significantly reduced complication profile (11). In HoLEP the laser technology enables precise nucleation of the prostatic tissue, limiting the occurrence of bleeding and alleviating intrusiveness of prolonged catheterization. Mendelssohn et al. (2018) conclude that HoLEP was associated with an absolute relative risk reduction of postoperative bleeding complications when compared to TURP of 50%, which is supported by Deleon et al. (2019), who reported that blood transfusions were less common in HoLEP compared to TURP (12). Besides, Mendelssohn et al. observed less catheterization time, a catheter on a HoLEP patient on average took 24

hours to be removed, in comparison to 48-72 hours on TURP patients (13). Similarly, these results are in tandem with those of the present study, which also recorded less hospitalization and catheterization duration amongst patients who underwent HoLEP.A major factor in the decision to adopt HoLEP procedure instead of TURP is on the size of the prostate gland. TURP is still an option where the prostates are below 60-80 grams, but HoLEP usually receives the most preference where the prostates are larger (14). In a comparative study by Liu et al. (2020), patients who received HoLEP on a prostates larger than 80 grams demonstrated considerably improved long-term symptom relieve and reduced recurrence rates in contrast to receiving TURP (15). This paper has also highlighted how TURP can still be used with smaller glands but not with larger prostates and this is where HoLEP comes in as a broader solution to the problem.Under the functional outcomes, HoLEP has been seen to lead in terms of symptom relief and improvement of post-operative results in terms of improving flow rates of urine. Patients who received HoLEP showed superior improvement in both the International Prostate Symptom Score (IPSS) and maximum urinary flow rate (Qmax) compared to TURP (16). Our study provided further evidence of this, with results showing that improvement in urinary flow and symptom scores after the use of HoLEP was more beneficial than TURP (17).However, the technical difficulty of HoLEP, as well as the equipment used, makes it not easily available in certain environments. Some studies have indicated that HoLEP is associated with a longer learning curve in physicians than TURP. One study of Boulanger et al. (2019) showed that surgeons doing HoLEP took an average of 30 cases to reach a proficiency level similar to TURP (18-20). This technical challenge can restrain the theory of the wide implementation of HoLEP, especially in settings that cannot access sophisticated laser system and training of surgeons.

Limitations

The limitations of this study are that it was non-randomized, its size was limited, and it had a short follow-up. Limited generalizability of the results is also denoted by the absence of long-term data and a direct cost comparison, especially in the case of a lower-resource setting.

Conclusion

The benefits of HoLEP include safety, shorter recovery and long-term relief of symptom burden in comparison to TURP, especially in those with larger prostates. The two procedures demonstrate a high degree of symptom improvement, yet the ability of HoLEP to reduce bleeding and by far faster recovery rates has made it an appealing alternative to many patients with BPH.

Future Findings

Comparative studies and trials need to be conducted in future where analysis is based on multi-center randomized controlled trials with longer durations of follow-up aimed at determining the long term outcomes and cost effectiveness of HoLEP and TURP. There is also an opportunity to study the patient-specific factors that determine whether to undergo a procedure that could be useful in developing personalized treatment strategies.

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Authors Contribution

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