

A Study on the Outcome Parameters of Benign Prostate Hyperplasia Patients with Prostatic Inflammation after Turp

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ABSTRACT

Aim: To assess the outcome parameters of benign prostate hyperplasia patients with prostatic inflammation

Material and methods: An observational study was conducted on 60 patients at different centres including Urology Unit, Waseem Medical Centre Batkhaila District Malakand, KPK and Department of Surgery, DHQ Hospital Mardan, KPK in the duration from October, 2022 to March, 2023. Patients presented with BPH with prostatic inflammation undergoing TURP were assessed for various clinical parameters. Paired samples T test was applied to assess pre and postoperative clinical parameters.

Results: The mean age of the patients was 64.88±6.48 years. Significant improvement was observed in the outcome clinical parameters before and after surgery using the paired samples T test.

Conclusion: Transurethral resection of the prostate in patients with BPH with prostatic inflammation yields significantly improved post-operative outcomes.

Keywords: Transurethral resection of the prostate, Benign prostatic hyperplasia, prostatic inflammation.

INTRODUCTION

Lower urinary tract problems in males are sometimes caused by benign prostatic hyperplasia (BPH), which is the nonmalignant expansion or hyperplasia of prostate tissue. Disease rates are known to rise as populations' age. At autopsy, the histologic prevalence of BPH is as high as 50% to 60% in men in their 60s, and it rises to 80% to 90% in those beyond the age of 70^{1,2}.

When characterizing BPH, the literature offers a number of different definitions. Lower urinary tract symptoms (LUTS), benign prostatic enlargement, and blockage of the bladder outlet are examples³. Histological abnormalities are referred to as benign prostatic hyperplasia (BPH), enlarged gland size is referred to as benign prostatic enlargement, and flow restriction is referred to as bladder outlet obstruction^{3,4}. Benign prostatic obstruction is the medical term for men with benign prostatic enlargement who exhibit with bladder outlet obstruction⁵.

Although testicular androgens do not directly induce BPH, dihydrotestosterone interacts directly with the prostatic epithelium and stroma^{6,7}. Dihydrotestosterone, which accounts for 90% of total prostatic androgens, is derived from testosterone by 5-alpha-reductase 2 in prostate stromal cells⁸. The Cell proliferation and apoptosis are both influenced by DHT, which has direct effects on prostate stromal cells, paracrine effects on neighboring prostatic cells, and endocrine effects on cells throughout the body⁹.

Numerous studies have investigated the link between BPH and histological prostatic inflammation in the context of LUTS¹⁰. Chronic inflammatory infiltrates in the prostate were associated with an increased risk of BPH and acute urinary retention when compared to the absence of such infiltrates at baseline¹¹. When it comes to treating LUTS brought on by BPH, anti-inflammatory medicines may offer something no other treatment can. BPH is the leading cause of (LUTS) in men. Urinary and storage symptoms are examples of LUTSs that can have a major effect on one's standard of living¹².

In addition, BPH increases the risk of UTIs and acute urinary retention. Although the cellular and molecular reasons of BPH are unknown¹³, variations in androgen levels and tissue remodeling due to aging have been considered key factors to homeostasis disruptions in the prostate. Chronic inflammation and metabolic syndrome and have also been identified as possible contributors to the onset and progression of BPH¹⁴.

Despite its widespread occurrence and economic impact, little is known about the causes of BPH. For instance, the reasons why some men get a 40-g prostate and others have a 200-g

prostate remain unexplained. In this article, we will discuss the pathogenesis and clinically relevant characteristics of BPH. In addition, other pathomechanisms that contribute to LUTS include changes in the urothelium and bladder ultrastructure, pelvic ischaemia, and receptor status of the anticholinergic system. The current study aimed to assess the outcome parameters of benign prostate hyperplasia patients with prostatic inflammation after TURP

MATERIAL AND METHODS

We conducted this observational study at the different centres including Urology Unit, Waseem Medical Centre Batkhaila District Malakand, KPK and Department of Surgery, DHQ Hospital Mardan, KPK in the duration from October, 2022 to March, 2023 after obtaining ethical clearance from the hospital. A total of 60 patients were recruited for study, patients were presented with BPH with prostatic inflammation undergoing transurethral resection of the prostate having age between 55 to 75 years. International prostate symptom score (IPSS) questionnaire was used to assess the pre and post surgery IPSS score of the patients along with various clinical parameters like Qmax, voided volume and post-residual volume. Histopathological analysis of chronic prostatic inflammation was ranked according to its severity (as measured by the number of lymphocytes present) and location distribution. All the data was recorded on a pro-forma which was later converted to data sheets in SPSS.

All the statistical analysis were performed using SPSS version 24. We analyzed the numerical data such as age, Qmax, IPSS, voided volume and void-residual volume using mean and standard deviation while age distribution was analyzed using frequencies and percentages. Paired samples T-test was applied keeping P values less than 0.05 for assessing the pre and postoperative numerical parameters.

RESULTS

We conducted this study on 60 patients presenting with BPH with prostatic inflammation. The mean age of the patients was 64.88±6.48. The age distribution can be seen in figure 1. The pre surgery IPSS was 28.12±3.20 while 4.50±1.17 IPSS was recorded after surgery yielding a statistically significant different (P = 0.0001). The mean pre surgery Qman score was 5.90 ml/sec and post surgery the Qmax score was 16.85±0.79 ml/sec, the difference was statistically significant (P = 0.0001). The pre

surgery voided volume recorded was 115.55±12.04 ml while post surgery voided volume recorded was significantly greater 304±19.37 ml (P = 0.0001). The pre surgery post-void residual volume was 120±3.18 ml and after surgery the post-void residual volume was 13.26±1.58 which was again significantly improved after surgery (P = 0.001).

Table 1: Comparison of various parameters before and after surgery

		Mean	N	Std. Deviation	P value
Pair 1	IPSS before surgery	28.12	60	3.205	0.0001
	IPSS after surgery	4.5500	60	1.17061	
Pair 2	Qmax before surgery(ml/s)	5.9000	60	1.55901	0.0001
	Qmax after surgery(ml/s)	16.8500	60	.79883	
Pair 3	Voided volume before Surgery (ml)	115.5500	60	12.04712	0.0001
	Voided volume after Surgery (ml)	304.0000	60	19.37148	
Pair 4	Post-void residual volume before (ml)	120.3833	60	3.18413	0.0001
	Post-void residual volume after (ml)	13.2667	60	1.58239	

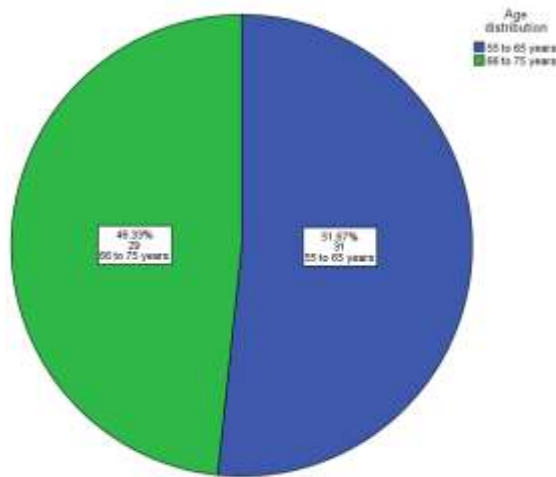


Figure 1

DISCUSSION

Prostate stromal and gland hyperplasia (BPH) is a frequent benign tumor in males older than 50. Both LUTS and blocked bladder outlets have been used as primary indicators of BPH. More than half of men over the age of 50 are thought to experience LUTS due to an enlarged prostate gland, despite the fact that LUTS is a non-specific symptom and can be considered as a manifestation of numerous systemic disorders¹⁴. Prostatic inflammation may play a role in the development of LUTS and BPH, according to epidemiological and histological investigations, however the exact pathophysiology of BPH remains unknown. Surgical treatment, such as TURP, can be explored for people with moderate to severe LUTS to alleviate symptoms. However, post-operative improvements in clinical indicators do not always have the same magnitude from case to instance. LUTS caused by mechanical obstruction and functional obstruction can be alleviated in patients with severe inflammation if inflamed areas are removed during transurethral resection of the prostate.¹⁵

Numerous previous research have established that prostatic inflammation is frequently linked to BPH and plays a significant role in prostatic cell expansion. The severity of prostate inflammation has been linked to lower urinary tract symptoms¹⁶.

The severity of symptoms, the likelihood of urine retention, and the need for surgical intervention are all linked to prostate inflammation. Evidence from studies suggests an autoimmune link to BPH. Prostate tissue repair and stromal expansion may result from an antigenic-induced persistent inflammatory response. Damage to the prostatic tissue from inflammation causes a continuous wound healing process that triggers the hyperproliferative process in BPH.¹⁷ These inflammatory mechanisms may promote prostate growth or inhibit prostate cell death, both of which contribute to enlarged prostates. It has been speculated that a combination of factors causes inflammation in the prostate. Bacterial infections, chemical inflammation from urinary tract reflux, dietary variables, hormones, the immune system, and/or a combination of these have all been proposed as potential causes of kidney disease.¹⁸

We recruited 60 patients presenting with BPH with prostatic inflammation. The mean age of our patients was 64.88±6.48 years. All the patients underwent TURP. We recorded various parameters before and after surgery and compared them. In our study we observed that the IPSS score, Qmax, voided volume and post void residual volume had significant improvement after TURP surgery.

Our results are comparable to a study which reported significant reduction in IPSS score after surgery, similar findings have been reported by various studies which demonstrated significant decrease in IPSS score after TURP surgery in patients presenting with BPH with prostatic inflammation.^{19, 20}

Our study showed that the Qmax volume and void volume significantly increased in patients after surgery, these findings are in agreement with a study which showed that Qmax and void volume were significantly associated with the degree of inflammation¹⁶.

The transurethral resection of the prostate (TURP) is a safe, effective, and minimally invasive surgical method for the treatment of benign prostatic hyperplasia (BPH). Because of its ability to relieve prostatic blockage, TURP is widely regarded as a successful treatment.¹⁸

CONCLUSION

From our study we conclude that the transurethral resection of the prostate in patients with BPH with prostatic inflammation yields improved post operative outcomes. When inflamed sites are removed during transurethral surgery of the prostate, patients with BPH not only experience relief from the LUTS brought on by mechanical obstruction, but also from the functional obstruction that has developed as a result of the inflammation.

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