

## ORIGINAL ARTICLE

**A Prospective Analysis of Hyponatremia in Transurethral Resection of Prostate**AFTAB AHMED<sup>1</sup>, SAJID REHMAN<sup>2</sup>, SHAHJEHAN<sup>3</sup>, TAUHEED FARID<sup>4</sup>, FAROOQ MALIK<sup>5</sup>, ATHAR MAHMOOD<sup>6</sup><sup>1</sup>Senior Registrar Urology AJK Medical College, Urologist Shaikh Khaleefa Bin Zaid Hospital/CMH Muzaffarabad AJK<sup>2</sup>Senior Registrar Urology, Pakistan Kidney And Liver Institute, Lahore<sup>3</sup>Assistant Professor Urology Fatima Jinnah Medical University Lahore, Sir Ganga Ram Hospital Lahore<sup>4</sup>Assistant Professor Urology, Pak International Medical College/ Peshawar Institute Of Medical Sciences Peshawar<sup>5</sup>Senior Registrar, Sir Ganga Ram Hospital, Lahore<sup>6</sup>Assistant Professor Urology Services Institute Of Medical Sciences

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**ABSTRACT****Introduction:** Transurethral resection of prostate (TURP) is one of the most common urological procedures performed.**Objectives:** The main objective of the study is to find the hyponatremia in transurethral resection of prostate.**Materials and Method:** This prospective study was conducted in Shaikh Khaleefa Bin Zaid Hospital/CMH Muzaffarabad AJK, Ganga Ram Hospital Lahore and PKLI Lahore, from May 2020 to April 2021. 60 male patients aged 45 – 75 years presented for TURP were enrolled in the study with ASA classification of grade I and IV. Informed and written consent was obtained from all study subjects.**Results:** The mean of all study subjects was reported to be  $71.58 \pm 7.76$  years. The majority of the patients had grade I or III. Spinal anesthesia was given to 31 patients (62%) and 19 (38%) patients were subjected to general anesthesia. The mean duration of procedure was  $72.42 \pm 24.77$  min. The mean size of the resected prostate was  $54.82 \pm 25.04$  g with the minimum and maximum size being 21.4 g and 131 g. Blood transfusion was done in only 5 patients (10%).**Conclusion:** It is concluded that hyponatremia is a common finding in patients undergoing TURP. We observed that duration of operation is one of the deciding factor to determine the level of hyponatremia.**Keywords:** Serum Sodium; Transurethral resection of prostate; Hyponatremia, TURP.**INTRODUCTION**

Transurethral resection of prostate (TURP) is one of the most well-known urological techniques performed. Notwithstanding presentation of a few insignificantly intrusive choices like Holmium Laser Enucleation and Holmium Laser Ablation, TURP is as yet thought to be the highest quality level for careful administration of Benign Prostatic Obstruction (BPO) [1].

Intricacies after TURP are regular [2]. Early difficulties of TURP incorporate dying, sepsis, TUR condition, incontinence, and urinary maintenance. The occurrence of early inconveniences of TURP has diminished extensively throughout the course of recent many years. This is generally inferable from normalization of the methodology, better perioperative administration [3], and better sedative strategies [4]. Draining requiring bonding, intense kidney injury, and transurethral resection condition are the difficulties of TURP in early postoperative period that significantly impact grimness of the system and may try and prompt mortality [5].

TUR disorder has turned into an uncommon occasion lately with better enthusiasm for pathophysiology and progresses in innovation. A few changes have prompted diminished frequency of this entanglement. Among these are improvement of persistent stream resectoscopes, use of "nonhemolytic" arrangements like glycine, sorbitol, and mannitol, utilization of bipolar hardware, and advances in preparing procedures [8]. TUR disorder was viewed as in just 1% of patients in a new multicenter study [9]. Certain gamble factors are known to be related with expanded hazard of TUR condition including volume and kind of irrigant utilized, resection time, weight of tissue resected, and utilization of monopolar diathermy [10].

Nearly at each TURP technique is consumed sure measures of water system liquid through the prostatic venous sinuses (20 ml/minutes to a few liters). Entrance of one liter water system liquid available for use for a time of 1-hour coordinate with an intense decrease in serum sodium grouping of 5-8 mmol/L, and it recommends that there is a gamble of side effects related with retention [11]. Intense hyponatremia with serum grouping of sodium (115-120 mEq/L) is a possibly difficult condition. Hyponatremia and plasma hypo-osmolality, may result in intravascular hemolysis prompting expansion in serum potassium. Hyperkalemic cardio harmfulness increments with hyponatremia

and acidosis. Cardiovascular changes during TURP disorder is because of a mix of Hyponatremia and hyperkalemia [12].

**Objectives:** The main objective of the study is to find the hyponatremia in transurethral resection of prostate.**MATERIALS AND METHOD**

This prospective study was conducted in Shaikh Khaleefa Bin Zaid Hospital/CMH Muzaffarabad AJK, Ganga Ram Hospital Lahore and PKLI Lahore, from May 2020 to April 2021. 60 male patients aged 45 – 75 years presented for TURP were enrolled in the study with ASA classification of grade I and IV. Informed and written consent was acquired from all study subjects. Informed and written consent was gotten from all study subjects.

Following the fasting routine convention for every patient, preoperative appraisal and assessment was finished after routine examinations. Patients with the historical backdrop of electrolytes lopsidedness, weakened renal or hepatic capacity, cardiovascular breakdown, and patients going through treatment with diuretics were barred from the review. Checking of hemodynamic boundaries was completed according to ASA standard observing. Systolic pulse (SBP), diastolic circulatory strain (DBP), Heart rate (HR), oxygen immersion and respiratory rate (RR) was recorded during and after technique. 1.5% glycine was utilized as water system liquid at 60cm level. Preoperative serum sodium was estimated one day preoperatively and one hour from the finish of the strategy.

Data was entered and analyzed using the Statistical Package for Social Sciences (SPSS version 21.0). The statistical significance was significant at p-value < 0.05.

**RESULTS**

The mean of all study subjects was reported to be  $69.88 \pm 7.76$  years. The majority of the patients had grade I or III. Spinal anesthesia was given to 31 patients (62%) and 19 (38%) patients were subjected to general anesthesia. The mean duration of procedure was  $72.42 \pm 24.77$  min. The mean size of the resected prostate was  $54.82 \pm 25.04$  g with the minimum and maximum size being 21.4 g and 131 g. Blood transfusion was done in only 5 patients (10%) (Table 1).

19 patients (38%) were reported with normal range of serum sodium, 29 (58%) had mild hyponatremia and 2 patients (4%) had

an asymptomatic moderate hyponatremia, with an insignificant difference ( $p$ -value>0.05) statistically. No patient developed severe hyponatremia or TURP Syndrome (Table 2).

Table 1: General characteristics

Variables	Mean	SD	Minimum	Maximum
Age (Yrs)	69.88	7.76	54	86
ASA				
I	11 (22%)			
II	24 (48%)			
III	13 (26%)			
IV	02 (4%)			
Types of Anesthesia				
General Anesthesia	19 (38%)			
Spinal Anesthesia	31 (62%)			
Size of Prostate	54.82	25.04	21.4	131
≤ 60 g	39 (78%)			
≥ 60 g	11 (22%)			
Duration of Surgery	72.42		30	120
Duration	22 (44%)			
≤ 60 minutes	28 (56%)			
≥ 60 minutes				

Table 2: Grades of hyponatremia

Variables	N (%)
Normal (135 – 145)	19 (38%)
Mild (134 – 130)	29 (58%)
Moderate (129 – 125)	2 (4%)
Severe (≤ 124 )	0

Table 3: Change in serum sodium level

Parameter	Symptomatic (n=60)	P-value
Continuous irrigation fluid drainage	23 (38.3%)	<0.001
0.5% Bupivacaine, ml	2.5 ± 0.4	0.117
Resection weight, g	47.5 ± 29.6	<0.001
Operation time, min	108 ± 35	<0.001
Infusion volume, ml	909 ± 508	<0.001
Infusion and transfusion volume, ml	1107 ± 609	<0.001
Diuretics	7 (11.7%)	<0.001
Sodium chloride	1 (1.7%)	0.143

## DISCUSSION

TURP is a common surgical intervention being done in males aged above 60 years. At this age, guys are generally revealed with different comorbidities. It has been seen that diuretics are normally utilized in this age bunch that can bring about lack of hydration and lack of fundamental electrolytes like potassium, sodium, and calcium. During Endourology medical procedure, ingestion of intravesical water system liquid foundationally is one of the serious intraoperative complexities [11].

Our review showed a tremendous change in serum sodium (hyponatremia) connected with the term of the activity. Technique over 1 hour is related with more significant level of hyponatremia. With over an hour and a half span of TURP, higher dreariness and mortality was noticed [12].

Various strategies are proposed to decrease the peril of fluid assimilation, however nothing is absolutely successful in wiping out issues. The level of retention of liquid (utilizing ethanol observing and gravimetric estimation) is checked while activity permitting the better command over the liquid adjusts [13]. More up to date methods like bipolar resectoscope and vaporization of tissue are viable in lessening the liquid assimilation and its ramifications [14].

Postoperative serum sodium levels were inspected 3 h after the finish of a medical procedure. None of the patients got postoperative diuretics or sodium chloride. Postoperative serum sodium levels recuperated moderately effectively [15]. As water system liquid contains no electrolytes, the ingestion of this liquid into the blood from the bladder can prompt hyponatremia. Water fundamentally channels into pee consequently in postoperative patients. In any case, a patients experienced decreases in sodium levels because of strange volume shift. Our past investigation discovered that nonstop seepage of water system liquid through a suprapubic cystostomy was a significant gamble factor for TURP disorder in more seasoned patients [16].

## CONCLUSION

It is concluded that hyponatremia is a common finding in patients undergoing TURP. We observed that duration of operation is one of the deciding factor to determine the level of hyponatremia.

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