



FEASIBILITY OF EARLY CATHETER REMOVAL FOLLOWING TRANSURETHRAL PROSTATECTOMY: A CASE SERIES

General Surgery

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ABSTRACT

Introduction: Benign prostatic hyperplasia (BPH) is a benign growth of the prostate that develops as a strictly age-related phenomenon in nearly all men from about age 40. Transurethral prostatectomy remains the gold standard. Postoperative care for transurethral resection of the prostate (TURP) includes bladder irrigation with prolonged case immobilisation. Traditionally, catheters are removed approximately 4 days after TURP. This study evaluates the feasibility and safety of early (day 1) catheter removal after transurethral resection of the prostate. **Materials And Methods:** It is a prospective study. A total of 35 patients who underwent Trans-Urethral Resection of Prostate (TURP) for benign prostatic hyperplasia (BPH) who fulfilled the inclusion criteria. Patients were randomised by simple random sampling technique and were divided into two groups. 18 cases were assigned for early removal group and their catheter was removed on POD-1 of surgery. 17 cases were taken as control (late removal) group, their catheter was removed on the 4-5th day of surgery as conventionally done. Data of both groups were compared and analysed for statistical significance using Chi square test and Student 't' test. **Result:** We set up that early junking of urethral catheter redounded in statistically significant reduction in length of post-operative sanitarium stay which indicate early mobilisation of the case, lower post-operative pain, early discharge and reduced cost burden on the sanitarium. Also, there was reduced prevalence in urinary tract infections in early junking group which may indicate reduced threat of urethral strictures in future.

KEYWORDS

INTRODUCTION

Benign prostatic hyperplasia (BPH) is a benign growth of the prostate that develops as a strictly age-related phenomenon in nearly all men from about age 40. Transurethral prostatectomy remains the gold standard. In the 1986 National Health Survey, 96% of patients had a TURP when they had surgery done for BPH[1].

Postoperative care for transurethral resection of the prostate (TURP) includes bladder irrigation with prolonged case immobilisation. The presence of the catheter for these days increases the likelihood of infection, stenotic structures, and also handicap the routine conditioning of the case. Traditionally, catheters are removed approximately 4 days after TURP but there is little or no information in the literature regarding the exact duration of catheter placement after TURP[2].

This study evaluates the feasibility and safety of early (day 1) catheter removal after transurethral resection of the prostate.

AIMS:

To have an observational study of feasibility of early Catheter Removal following Transurethral Prostatectomy based on post-operative findings and duration of hospital stay.

OBJECTIVES:

1. To study the decision to remove the catheters based on normal vital signs, adequate urine output, absence of clots and acceptable colour of the catheter effluent.
2. To study the mean indwelling catheter time and the mean length of hospital stay after surgery.

MATERIALS AND METHODS:

It is a prospective study. A total of 35 patients who underwent Trans-Urethral Resection of Prostate (TURP) for benign prostatic hyperplasia (BPH) who fulfilled the inclusion criteria. Patients were randomised by simple random sampling technique and were divided into two groups. 18 cases were assigned for early removal group and their catheter was removed on POD-1 of surgery. 17 cases were taken as control (late removal) group, their catheter was removed on the 4-5th day of surgery as conventionally done. Data of both groups were

compared and analysed for statistical significance using Chi square test and Student 't' test.

METHOD OF COLLECTION OF DATA:

Symptomatic patients of benign prostatic hyperplasia attending to and operated with Trans-Urethral Resection of Prostate (TURP) in the Department of Surgery at Mahatma Gandhi Hospital were included in this study.

Patients were evaluated as per the symptoms and a detailed history, complete physical examination was done. All routine investigations including renal function tests, urine analysis and culture, ultrasonography to evaluate prostate size and post void residual volume and pre-anaesthetic check were done.

TURP was performed with a 26F resectoscope with routine precautions to achieve maximum hemostasis. The mean volume of prostate tissue resected (18.89 gm) in our study was advanced than that reported by Gordon et al (12.5 gm). still, it was lower to a study by Chander et al [3] which reported a mean resection weight of 22.1g.

At the end of surgery, a 20/22F three-way Foley's catheter was placed and bladder irrigated with normal saline (0.9%). Post operatively patients were monitored for vital parameters, colour of catheter effluent and presence of clots.

Catheter was removed if the criteria for removal of catheter were met on postoperative day 1 after surgery. Patients who voided satisfactorily were discharged after a 24 hour observation period.

Factors such as patient's age, co-morbid conditions, grams of resected tissue, length of post-operative stay, re-catheterisation for inability to void or bleeding and hospital discharge with catheter, post-operative complications were compared in patients in both groups.

CRITERIA FOR EARLY REMOVAL OF CATHETER:

On the day of catheter removal, patients with :

- Normal vitals
- Adequate urine output,
- Acceptable character of catheter effluent.

- Absence of blood clots were considered.

Inclusion Criteria:

- Patient scheduled for elective TURP
- Patients of age group 18-85 years
- Body weight 50 to 90Kgs
- Patient's written and informed consent

Exclusion Criteria:

- HIV, HBsAg, Anti HCV positive patients
- Non-consenting patients
- Covid-19 patients

Complications Of Removal Of Catheter :

- Urinary retention
- Hematuria

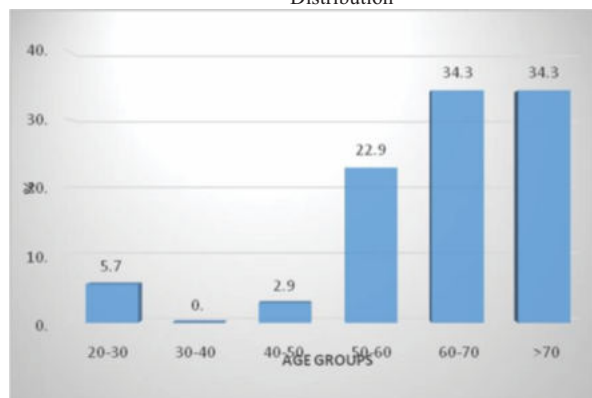
OBSERVATIONS AND RESULTS

A prospective cohort study consisting of 35 cases of Benign Prostatic Hyperplasia who have undergone Trans-Urethral Resection of Prostate (TURP) between December 2020 to December 2022 at Mahatma Gandhi Hospital, Jaipur were included in the study to assess the "Feasibility of Early Catheter Removal following Transurethral Prostatectomy".

Age

Age	Frequency	Percent
20-30	2	5.7
30-40	0	0
40-50	1	2.9
50-60	8	22.9
60-70	12	34.3
>70	12	34.3
Total	35	100.0
mean±SD	65.17±13.48	Range (20-86)

Distribution



The age group in the study included patients between 20 and 86 years. The youngest patient in the study was of 20 years and oldest was 86 years. The outside prevalence of the complaint was in the age group of 61- 70 times. The mean age of incidence is 65.1 years which is comparable with Gordon et al[4] and Mamo GJ et al[5].



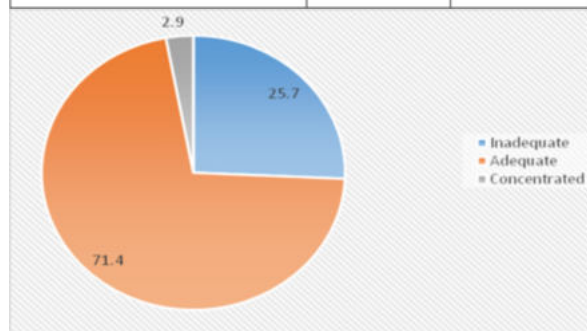
Vitals

	Early removal		Late removal	
	Frequency	%	Frequency	%
Bradycardia	0	0	1	2.9
Stable	17	48.57	17	48.5

As compared to no patients in early removal group, 01 (2.9%) patient in late removal group developed bradycardia post operatively, among the 35 patients that were included in the study.

Urine output

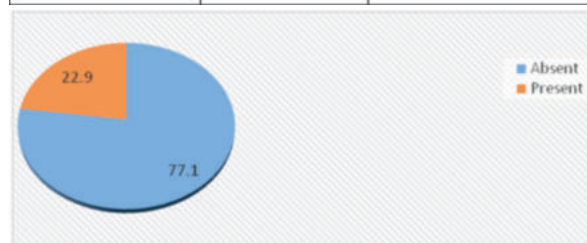
	Frequency	Percent
Inadequate	9	25.7
Adequate	25	71.4
Concentrated	1	2.9
Total	35	100.0



As compared to no patients in early removal group, 10 (28.6%) patients in late removal group developed either inadequate or concentrated urine output post operatively, among the 35 patients that were included in the study.

Blood clots

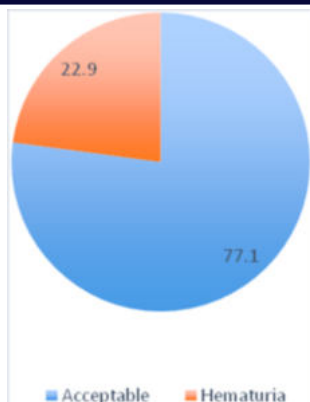
	Frequency	Percent
Absent	27	77.1
Present	8	22.9
Total	35	100.0



Patients showing blood clots in urine output - 08 (22.9%) were not selected for early catheter removal and had the conventional delayed catheter removal on POD-4 or POD- 5.

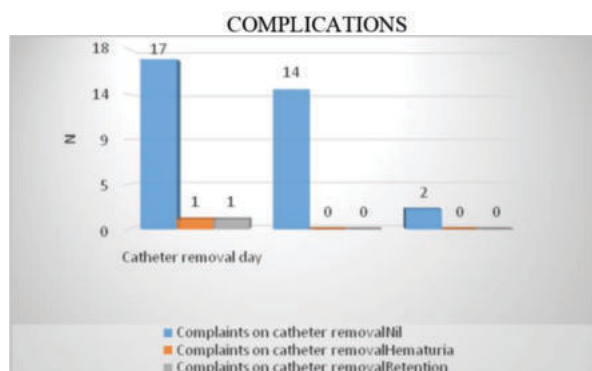
Catheter effluent color

	Frequency	Percent
Acceptable	27	77.1
Hematuria	8	22.9
Total	35	100.0



As compared to no patients in early removal group, 08 (22.9%) patients in late removal group developed hematuria post operatively, among the 35 patients that were included in the study.

		Catheter removal day			Total
		1.00	4.00	5.00	
Complaints on catheter removal	Hematuria	1	0	0	1
	Nil	17	14	2	33
	Retention	1	0	0	1
Total		19	14	2	35



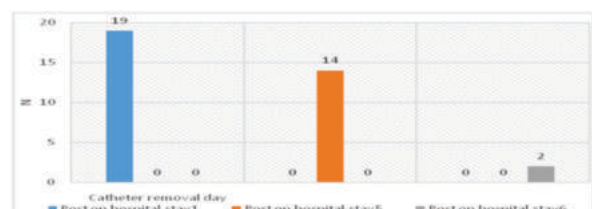
01 (2.86%) patient in early removal group and no patients in late removal group needed re-catheterization due to urinary retention post operatively.

01 (2.86%) patient in early removal group required re-catheterization for haematuria in the post-operative period, whereas no patients in late removal group needed re-catheterization for haematuria post operatively. Except for recatheterization, there were no significant early complications noted in our study. Recatheterization was demanded in 11.42 cases in our study, which was similar with 11.76 of cases in a study by Srinivasan et al (1), 12 – 14, in the study by Dodds et al [6].

DURATION OF HOSPITAL STAY AFTER SURGERY

		Catheter removal day			Total
		1.00	4.00	5.00	
Post op hospital stay	1.00	19	0	0	19
	5.00	0	14	0	14
	6.00	0	0	2	2
Total		19	14	2	35

P value=0.001 (S)



In our study, the mean time of stay of hospital after surgery for early removal group was 3.72 days which was significantly lower than that of late removal group with 5.23 days. Kirollos(7) carried out a departmental inspection of the factors affecting the inpatient stay for optional transurethral resection of the prostate. In his study the mean sanitarium stay was 6.4 days.

The duration of catheterization after TURP depended primarily on the colour of the catheter effluent. As there was either a clear or smoothly pigmented effluent at the end of TURP, the duration of catheterization was 1 days in 18 cases. This is similar to the study by Srinivasan et al (1) in which the mean duration was 48 hours and lower than the results in the study by Kaplan et al [8] in which the mean duration of catheterization was 67.4 hours.

CONCLUSION:

1. Length of post-operative hospital stay was significantly shorter in cases who had early catheter removal post TURP. This could be restated into early mobilisation of cases, reduction in hospital costs.
2. Shortening the duration of postoperative catheterisation appeared to result in reduced incidence of UTI, which may in turn reduce the chances of stricture urethra formation in future.
3. Our study found out that there was no significant increase in the rate complications like post-operative urinary retention, urinary tract infections, need for re-catheterisation, and discharge with catheter in situ in patients with early catheter removal.
4. Overall, our data indicate that early catheter removal on postoperative day-1 is safe, with no significant increase in complication rates.
5. Early catheter removal appears to be justified because it does not jeopardize the interest and safety of the patients, but increases convenience and decreases recovery time of the patient along with reducing the cost burden on the hospital.

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