ORIGINAL ARTICLE
TRANSURETHRAL RESECTION OF PROSTATE: EARLY VERSUS DELAYED REMOVAL OF CATHETER

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Background: Transurethral resection of prostate is the gold standard operation for bladder outflow obstruction due to benign prostatic enlargement. However, catheter removal day is variable. The objective of this study was to compare early and delayed catheter removal groups in terms of length of hospital stay, weight of resected prostate, duration of resection, peri-operative blood transfusion, and postoperative complications. Methods: This randomized controlled trial was carried out in Urology Unit-B, Institute of Kidney Diseases Peshawar from 1st September 2009 to 31st July 2011. Patients were selected by simple random sampling technique after taking informed consent and divided into two groups: Group A-standard catheter removal group and Group B-early catheter removal group. The study excluded patients with large post-void urine volume, simultaneous internal urethrotomy and transurethral resection of prostate, co-morbidity and intra-operative complications. Patients were discharged after removal of catheter if they voided successfully. In Group-A the catheters were kept for more than one day according to the standard protocol of our ward. The data were analysed using SPSS-17. Results: The study included 320 patients, 163 in Group-A and 157 in Group-B. Mean weight of resected tissue in Group-A was 46.67±9.133 grams; it was 45.22±7.532 grams in group B. Mean catheter removal day was 4.13±1.65days in Group-A; and 1.23±0.933 days in Group-B. Mean length of hospital stay was 3.57 days±1.028 in Group-A and 1.29 days±1.030 in Group-B (p-value<0.05). Length of hospital stay strongly correlated with the day of catheter removal. There was no significant difference between the two groups in terms of postoperative complications. Conclusion: Removal of catheter on first postoperative day after transurethral prostatectomy does not increase the postoperative complications and results in shorter hospital stay.

Keywords: Transurethral resection of prostate, urinary catheterization, postoperative complications

INTRODUCTION
Lower urinary tract symptoms due to benign prostatic enlargement are very common in the elderly patients. The treatment options for benign prostatic enlargement range from watchful waiting, medical treatment, minimally invasive surgery, transurethral resection of prostate to open prostatectomy. Each option has its merits and demerits. Transurethral Resection of Prostate (TURP) is considered as a reference standard treatment for patients with bladder outflow obstruction due to benign prostatic enlargement. However, in contrast to minimally invasive techniques, an important drawback of TURP is that it usually requires stay in the hospital. Time of removal of urethral catheter after TURP is variable and ranges from the night of operation to 5 days. Many authors report that early catheter removal shortens postoperative stay in hospital and is more cost effective than delayed removal of catheter; patients return to work earlier. However, some studies report higher re-catheterization rate and clot retention after early removal of catheter.

The objectives of this study were to compare early catheter removal and delayed catheter removal groups in terms of age, hospital stay, weight of resected prostate, duration of resection, peri-operative blood transfusion, urinary retention after catheter removal and postoperative complications.
RESULTS

The study included 320 patients. There were 163 patients in Group-A (standard/conventional catheter removal group) and 157 patients in Group-B (early catheter removal group). Mean age was 71.32±5.94 years.

Mean weight of resected prostate tissue in Group-A was 46.67±9.133 grams; it was 45.22±7.532 grams in Group-B. Mean duration of resection was 53.05±10.057 minutes. Blood transfusion was required in 20 (6.2%) cases in the peri-operative period. Out of these 13 (4.06%) cases required transfusion in the preoperative period, they had preoperative haemoglobin of less than 10 gm/dl. Seven (2.1%) patients had bleeding in the immediate postoperative period requiring transfusion.

Mean catheter removal day was 4.13±1.65 days in standard catheter removal group (A); it was 1.23±0.933 days in early catheter removal group. In Group-B catheter was not removed on first postoperative day in 6 (3.8%) because they did not meet the early catheter removal criteria. Mean length of hospital stay in group A was 3.57±1.028 days and in group B it was 1.29±1.03 days. In Group-B, 12 (7.6%) cases were not discharged on first postoperative day. In group A, 15 (9.2%) cases were discharged with catheter and asked to come for catheter removal after few days. There was no significant difference between the two groups in terms of postoperative complications. (Table-I) Trial without catheter failed in 15 (9.2%) cases in Group-A and in 10 (6.4%) cases in Group-B. These patients required catheterization.

Five patients developed mild dilutional hyponatremia, three in Group-A and two in Group-B. They recovered with treatment. However, their discharge from hospital was delayed. Emergency readmission was seen in 5 cases in Group-A and 2 in

http://www.ayubmed.edu.pk/JAMC/26-1/Sadia.pdf
cases in Group-B. Secondary bleeding with clot retention and urinary tract infection were the main causes of re-admission. These patients required re-catheterization, continuous bladder irrigation, intravenous antibiotics. Blood transfusion was required in cases of readmission. Re-operation, clot evacuation and diathermy of bleeding/oozing points were required in 3 (0.9%) case in Group-A and one 0.3% in Group-B. There was no mortality in this study.

**Table 1: Postoperative Complications**

<table>
<thead>
<tr>
<th>Postoperative Complications</th>
<th>Group A</th>
<th>Group B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failed TWOC</td>
<td>15</td>
<td>4.7</td>
</tr>
<tr>
<td>Re-catheterization</td>
<td>15</td>
<td>4.7</td>
</tr>
<tr>
<td>Clot retention</td>
<td>14</td>
<td>4.4</td>
</tr>
<tr>
<td>Urinary tract infection</td>
<td>6</td>
<td>1.9</td>
</tr>
<tr>
<td>Diastolic hyponatraemia</td>
<td>3</td>
<td>0.9</td>
</tr>
<tr>
<td>Epididymoorchitis</td>
<td>2</td>
<td>0.6</td>
</tr>
<tr>
<td>Haemorrhage</td>
<td>9</td>
<td>2.8</td>
</tr>
<tr>
<td>Atrial fibrillation and CCF</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Re-admission</td>
<td>5</td>
<td>1.6</td>
</tr>
<tr>
<td>Re-operation</td>
<td>3</td>
<td>0.9</td>
</tr>
</tbody>
</table>

Group A=Conventional catheter removal group, Group B=Early catheter removal group, TWOC=Trial without Catheter

**DISCUSSION**

The time of removal of catheter after TURP varies considerably. In our ward, it is a standard practice to remove the catheter on 4th or 5th postoperative day. Most of our patients belong to far-flung areas where proper health care facilities are not available; nearest hospitals are at 12–24 hrs distance so the patients usually do not want to be discharged early. However, many studies report that early catheter removal is not only safe but also cost-effective.\(^3\,5\,11\) Some authors even carry out TURP as day case surgery.\(^10\) A study by Mueller et al reported that the mean cost saving of early catheter removal after TURP was $829 and $1406 for patients aged <70 and >70 years, respectively.\(^7\)

Aslan et al reported that in 79.6% patients catheter was removed on first postoperative day and mean hospital stay was 1.4 days in these patients.\(^11\) Nakagawa et al reported that in 96.3% patients catheter was removed on first postoperative day, 80% of these patients were discharged on the same day. The author suggested that the difference in the percentage of catheter free patients on first postoperative day between their study and other studies might be due to improvement in anaesthesia technique and more meticulous hemostasis.\(^3\)

In our study, catheter was removed in 96% of cases in early catheter removal group. Strong correlation was seen between the time of catheter removal and discharge from hospital. Length of hospital stay was significantly reduced in the early catheter removal group. Several risk factors have been identified as predictors of delayed catheter removal and hence delayed discharge from hospital. A study by Nakagawa et al suggested that age, postoperative bleeding and comorbidities predicted delayed catheter removal.\(^3\)

Weight of resected prostate tissue and duration of resection have also been reported by many studies as important risk factors for delayed catheter removal.\(^6\,12\) In a study by Kirollos MM, mean weight of resected prostate tissue was 31.6±22.9grams and it strongly correlated with length of hospital stay.\(^12\) In our study, mean weight of resected tissue was higher than in most of western studies. This difference in the weight may be due to late presentation of our patients. Most of the patients delay the hospital visit and surgery because of poor socioeconomic condition or lack of awareness. Mean weight of resected tissue is similar to that of studies from Romania, Eastern Europe and other local studies.\(^2\,13\,17\)

Retention after catheter removal was not significantly different between the two groups. Under contractility of the aged detrusor, caused by axonal and muscular degeneration or persistent urethral obstruction after TURP, are believed to be responsible for postoperative retention.\(^2\,18\)

In short, early catheter removal shortens the length of hospital stay, which reduces the burden on health care system. This is especially beneficial in our setup as there is shortage of beds in the hospitals. Short hospital stay is also advantageous for patients as most patients belong to villages, are underprivileged and cannot afford long leave from work. Short follow up and small sample sizes were the major limitations of our study.

**CONCLUSION**

Removal of catheter on first postoperative day after transurethral prostatectomy in selected patients does not increase the postoperative complications and results in shorter hospital stay.

**REFERENCES**


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