A Modified Bladder Irrigation System after Transurethral Resection of Prostate

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Objective

- A prospective randomised study to evaluate effectiveness and safety of a modified bladder irrigation system after Transurethral Resection of Prostate (TURP)
Background

- The conventional system for continuous bladder irrigation after TURP consisted of:
  - 1-litre bags of normal saline on a drip running continuous inflow of irrigant,
  - with effluent collected by a 2-litre urine bag
  - that required regular and frequent reloading and emptying.
A: Conventional practice

Frequent reload irrigation bags

Frequent emptying of urine drainage bag
A: Conventional practice

Frequent handling of irrigation system
A modified irrigation system was designed

- utilising 3-litre bags of irrigation fluid,
- and a 10-litre clean canister to collect effluent.
B: Modified irrigation system

Modified 10-liter canister,

3-litre irrigation bags
B: Modified irrigation system

All equipments can be placed near bedside

Stock in treatment room
Patients and Method

- From April to May 2004, 47 consecutive patients who had undergone TURP were randomised into two groups:
  - Group A (22 patients) utilising conventional irrigation system
  - Group B (25 patients) utilising modified irrigation system
Parameters that were analysed included:

1. time intervals between
   - reloading of inflow irrigant
   - emptying of outflow system
2. number of patients having catheter blockage, and
3. urine culture of patient’s first void after catheter removal.
Results
Mean age, operating time, resected prostate weight and irrigation duration were **comparable** between two groups.

<table>
<thead>
<tr>
<th></th>
<th>Group A</th>
<th>Group B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years old)</td>
<td>52 - 85 (mean 71.8)</td>
<td>52 - 80 (mean 67.0)</td>
</tr>
<tr>
<td>Operation Time (minutes)</td>
<td>12 - 96 (mean 43.7)</td>
<td>16 - 96 (mean 39.6)</td>
</tr>
<tr>
<td>Resected Prostate Weight (gram)</td>
<td>0.9 - 68.4 (mean 25)</td>
<td>7.2 - 44.4 (mean 21.6)</td>
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<tr>
<td>Continuous bladder irrigation (hours)</td>
<td>16-45 (mean 30.8)</td>
<td>7.2-44.4 (mean 21.6)</td>
</tr>
</tbody>
</table>
The difference in Mean time intervals between reloading of irrigant and emptying of outflow is statistically significant.

<table>
<thead>
<tr>
<th></th>
<th>Group A</th>
<th>Group B</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean time intervals between reloading of irrigant (minutes)</td>
<td>39</td>
<td>108</td>
<td>0.001</td>
</tr>
<tr>
<td>Mean time intervals between emptying of outflow (minutes)</td>
<td>39</td>
<td>329</td>
<td>0.013</td>
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</table>
The difference in incidences of catheter blockage is statistically insignificant.
The difference in number of positive bacterial cultures is statistically insignificant

<table>
<thead>
<tr>
<th>Positive bacterial culture</th>
<th>Group A</th>
<th>Group B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td></td>
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Positive bacterial culture is defined as:
- $>10^4$ CFU/ml, and
- pyuria (leucocytes $>60/200x$ field) in first-void urine
Conclusion

- The modified irrigation system was
  - safe,
  - required less frequent reloading and emptying,
  - thereby saving costs in relation to consumable usage and manpower.
Thank You