The Timing of Surgery in Urinary Tract Tuberculosis—can it predict Renal salvage?

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Role of Modern Chemotherapy

1. Urine sterile in two weeks.
2. Good concentration in urinary tract.
3. Penetrate tubercular cavities.
Facts about Urinary Tuberculosis

- 15-20% of patients with urinary tuberculosis develop renal tuberculosis.
- In India 20% patients with pulmonary tuberculosis had lesions in the urinary tract that required surgery.
- Genito-urinary tuberculosis is rare in children.
Timing of Surgery

- In a significant number of patients drug therapy alone does not control the disease.
- How does one identify the patient who will need surgery?
- How early should one operate?
Diagnostic Criteria

1. Clinical diagnosis
   Plus
2. Strong radiologic / cystoscopic evidence
   Plus
3. Microbiologic and / or histologic evidence.
### Long Term Follow Up 103 Patients

<table>
<thead>
<tr>
<th>Treatment</th>
<th>No: of Patients</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immediate Sx &amp; Chemotherapy</td>
<td>27</td>
<td>Cured</td>
</tr>
<tr>
<td>Chemotherapy Alone</td>
<td>76 - 43 33</td>
<td>Cured Worse (Needed Sx)</td>
</tr>
</tbody>
</table>
Outcome in 33 Who Had Chemotherapy

- All became worse.
- 24/33 showed radiologic and/or biochemical deterioration.
- 2/33 developed sinus in the loin.
- 1/33 converted from Urine AFB Negative to AFB Positive.
Radiologic Classification

- MAJOR RENAL LESIONS
  - Non-functioning kidney, PUJ obstruction,
  - Infundibular stenosis, calcified kidney
- MINOR RENAL LESIONS
  - Calyceal irregularity/distortion/spasm
Radiologic Classification

- **GROUP A**: Major renal lesion
- **GROUP B**: Unilateral/Bilateral Ureteric lesion +/- Minor renal lesion
- **GROUP C**: Bladder lesions and Unilateral/Bilateral Minor/ Major renal lesion.
<table>
<thead>
<tr>
<th>Treatment</th>
<th>No: of Patients</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immediate Sx &amp; Chemotherapy</td>
<td>14</td>
<td>Cured</td>
</tr>
<tr>
<td>Chemotherapy Alone</td>
<td>11</td>
<td>Renal Function Worsened – Nephrectomy</td>
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</tbody>
</table>
Follow up group B-12 Patients

<table>
<thead>
<tr>
<th>Treatment</th>
<th>No: of Patients</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immediate Sx &amp; Chemotherapy</td>
<td>04</td>
<td>Cured</td>
</tr>
<tr>
<td>Chemotherapy + Ureteric Dilatation</td>
<td>03</td>
<td>Cured &amp; Sx - 01</td>
</tr>
<tr>
<td>Chemotherapy Alone</td>
<td>05</td>
<td>Cured (02) Sx (03)</td>
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</tbody>
</table>
## Follow Up Group C-66 Patients

<table>
<thead>
<tr>
<th>Treatment</th>
<th>No: of Patients</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immediate Sx &amp; Chemotherapy</td>
<td>09</td>
<td>Cured</td>
</tr>
</tbody>
</table>
| Chemotherapy Alone               | 57              | Cured – 39
Sx- 18; 11/18 Renal Function worsened |
Criteria For Early Surgery

- **GROUP A**: Non functioning kidney, Infundibular stenosis calcified kidney
- **GROUP B**: Ureteric stricture with dilated upper tracts.
- **GROUP C**: Major renal lesion with bladder involvement.

  - Contracted bladder
  - Gross vesicoureteric reflux.
Having now identified when to operate, can we predict which are the renal units we can salvage?
Factors Studied

- IVU:
- Cavitation, Infundibular Stricture,
- PUJ Stricture, Ureteric Stricture,
- Bladder involvement, Multiple sites.
- Ultrasound
- Hydronephrosis.
- GFR
- MEAN SERUM CREATININE.
Materials and Methods

- No. of Patients- 119.
- Average follow up- 2 1/2 years.
- Patients with upper tract obstruction- 35
- Patients with documented obstruction underwent intervention.
- Functional status reassessed after 4-12 weeks.
Total No: Renal Units Affected
-41

- LEFT -14
- RIGHT -15
- BILATERAL -12 (6 PATIENTS)

INTERVENTIONS
- DJ STENTING -25
- PCN -16
Ultimate Outcome

- WORSENED----17(41%)
- IMPROVED----24(59%)
<table>
<thead>
<tr>
<th>Factors</th>
<th>Improved</th>
<th>Worsened</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cavitation</td>
<td>1/24</td>
<td>6/17</td>
<td>0.01</td>
</tr>
<tr>
<td>Ureteric Stricture</td>
<td>24/24</td>
<td>11/17</td>
<td>0.002</td>
</tr>
<tr>
<td>GFR &lt; 20</td>
<td>0/5</td>
<td>6/9</td>
<td>0.03</td>
</tr>
<tr>
<td>Gross hydro</td>
<td>1/5</td>
<td>9/13</td>
<td>0.001</td>
</tr>
</tbody>
</table>
## Factors which did not influence outcome

<table>
<thead>
<tr>
<th>Factors</th>
<th>Improved</th>
<th>Worsened</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infundibular stricture</td>
<td>02</td>
<td>02</td>
<td>0.86</td>
</tr>
<tr>
<td>PUJ stricture</td>
<td>01</td>
<td>02</td>
<td>0.55</td>
</tr>
<tr>
<td>Bladder involvement</td>
<td>01</td>
<td>02</td>
<td>0.55</td>
</tr>
<tr>
<td>Multiple sites</td>
<td>02</td>
<td>05</td>
<td>0.10</td>
</tr>
<tr>
<td>Mean Creat.</td>
<td>1.62</td>
<td>1.12</td>
<td>0.07</td>
</tr>
</tbody>
</table>
## Results

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Improved</th>
<th>Worsened</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>DJ Stenting</td>
<td>17</td>
<td>08</td>
<td>25</td>
</tr>
<tr>
<td>PCN</td>
<td>07</td>
<td>09</td>
<td>16</td>
</tr>
</tbody>
</table>
Conclusions

- Majority (59%) of kidneys can be salvaged.
- Cavitation, gross hydronephrosis,
- GFR < 20 ml/mt predicted poor outcome.
- Ureteric stricture predicted good outcome.
- Type of intervention did not influence outcome.
Scoring System To Predict Salvage

- HYDRONEPHROSIS
  - Nil-0, Mild-1, Moderate-2, Gross- 3
- CAVITATION
  - Nil-0, <1cm-1, 1-2 cms-2, >2cms-3
- URETERIC STRICTURE
  - Nil-0, Passable-1, Not Passable-2,
- GFR
  - >20ml/mt-1, <20ml/mt-2