Uretero-Neocystotomy in Renal Transplantation


SUMMARY

Sixty-three cadaveric renal transplants have been carried out, using a method of uretero-neocystotomy. Three patients developed ureteric fistulae. There were no deaths, or loss of transplanted kidneys due to urological complications.


"The least satisfactory aspect of the surgical technique of kidney transplantation is the provision of urinary drainage."

Ureteric complications following renal transplantation may be the cause of death of the recipient, or may lead to the removal of an otherwise perfectly functioning kidney. Table I shows the high incidence of urological complications in renal transplantation.

TABLE I. UROLOGICAL COMPLICATIONS IN RENAL TRANSPLANTATION

<table>
<thead>
<tr>
<th>Author</th>
<th>No. of transplants</th>
<th>Complications (%)</th>
<th>Deaths due to complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starzl et al. 4</td>
<td>234</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Williams et al. 3</td>
<td>158</td>
<td>19</td>
<td>10</td>
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<td>Robson et al. 3</td>
<td>147</td>
<td>11,5</td>
<td>4</td>
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<td>Martin et al. 3</td>
<td>142</td>
<td>16</td>
<td>6</td>
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<td>Khastagir et al. 3</td>
<td>123</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>Prout et al. 3</td>
<td>93</td>
<td>10</td>
<td>2</td>
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<tr>
<td>Pletka et al. 3</td>
<td>65</td>
<td>25</td>
<td>10</td>
</tr>
<tr>
<td>MacKinnon et al. 4</td>
<td>59</td>
<td>33</td>
<td>9</td>
</tr>
<tr>
<td>Marshall et al. 4</td>
<td>58</td>
<td>22</td>
<td>?</td>
</tr>
<tr>
<td>Kelly et al. 3</td>
<td>57</td>
<td>38</td>
<td>?</td>
</tr>
<tr>
<td>Duke and Maclaurin 11</td>
<td>55</td>
<td>25</td>
<td>0</td>
</tr>
<tr>
<td>Brown 11</td>
<td>45</td>
<td>31</td>
<td>1</td>
</tr>
<tr>
<td>Palmer et al. 3</td>
<td>37</td>
<td>25</td>
<td>3</td>
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<tr>
<td>Wiggishoff and Jonasson 14</td>
<td>24</td>
<td>25</td>
<td>?</td>
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<tr>
<td>Present series</td>
<td>63</td>
<td>5</td>
<td>0</td>
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</table>

From May 1969 to December 1971 the Johannesburg Hospital Transplantation Unit has carried out 63 consecutive cadaver-kidney transplants, with 3 ureteric fistulae developing, but without any mortality from urological causes, by using the method of uretero-neocystotomy, with slight modification, described by the Edinburgh group of transplant surgeons. 12

OPERATIVE TECHNIQUE

After induction of anaesthesia, a Foley’s self-retaining catheter (size F20 - F22) is inserted into the bladder. The bladder is then washed out with a solution containing 500,000 units of bacitracin, 0.5 g of neomycin sulphate and 50 mg of amphotericin B in 250 ml of sterile water.

Approximately 100 ml of this solution is left in the bladder. A Meredith catheter bag is connected to the catheter. The solution is prevented from running out of the bladder by placing an arterial clamp across the collecting tube of the catheter bag where this tube enters the bag. The urine collecting bag is then allowed to lie on the floor next to the operating table.

The surgeon then proceeds with the transplant procedure. The kidney is placed in either iliac fossa of the recipient. After completing the vascular anastomoses, the uretero-neocystotomy is performed.

A longitudinal incision of 3 - 4 cm is made through the bladder musculature at the most convenient site on the bladder—usually the presenting vault or side wall of the bladder. The incision is carefully extended through the muscle until the bladder mucosa herniates freely along its whole length. The mucosa is then undermined from the bladder wall so that it can be easily depressed into the bladder cavity. An 0.5 cm incision is made into the bladder mucosa at the distal end of the first incision, and the solution previously left in the bladder is removed through this opening, by suction. The solution facilitates dissection of the mucosa by virtue of its distension of the bladder.

The ureter is then cut to a convenient length and the distal end spatulated. Stay-sutures of 4 x 0 chromicized catgut are applied through the full thickness of ureter and bladder mucosa at the apices of the triangle formed by the spatulation of the ureter. By using a continuous suture of 4 x 0 chromicized catgut on anatraumatic rounded-pointed needle, the full thickness of ureteric wall is anastomosed to the mucosa of the bladder. The incision in the bladder muscle is then closed over this anastomosis in 2 or 3 layers, by using a running suture of the same material. The distal 3 cm of the ureter thus come to lie in a submucosal tunnel.

The uretero-neocystotomy is not splinted. On completion of this anastomosis, the arterial clamp on the catheter collecting tube is released.
The operation wound is closed. In only 3 cases was wound drainage used—in 2 cases because of haemorrhagic oozing; and in 1 case because of a suspect ureteric anastomosis. In the remaining 60 cases, no form of drainage was used.

RESULTS

Sixty-three consecutive renal cadaver transplants in which this method has been used, have been carried out. The period of follow-up of graft function is shown in Table II. More than half the functioning kidneys have now survived for more than 6 months.

| TABLE II. FUNCTIONAL PERIOD OF TRANSPLANTS |
|-----------------|----------------|
| Months          | No.            |
| 0 - 3           | 14             |
| 4 - 6           | 10             |
| 7 - 9           | 8              |
| 10 - 12         | 7              |
| 13 - 18         | 16             |
| 19 - 24         | 4              |
| 25 - 30         | 2              |
| 30 +            | 2              |

Intravenous secretory urography is done at 3-monthly intervals in the first transplant year and thereafter every 6 months. To date, this investigation has shown ureters of normal calibre in all but 1 patient (vide infra), thus demonstrating a good functional result.

One patient showed a dilated lower third of his transplanted ureter on excretory urography. This was associated with a urinary tract infection. Voiding cysto-urography (VCU) demonstrated high pressure reflux into the lower third of the ureter. After control of the infection the VCU returned to normal. VCU has not been carried out as a routine investigation in this group of post-transplant patients. However, the fact that the majority of ureters show a normal calibre, does not support a pathological reflux.

Three patients developed urinary leaks in the postoperative period.

Case 1

This patient had a precipitous fall in urinary output on the eighth postoperative day. A mass was palpable in the rectovesical pouch, and intravenous secretory urography showed extravasation of the contrast material. At re-exploration, the lower 0.5 cm of ureter was necrotic. This was excised and the ureter re-implanted. The postoperative course was uneventful, the patient having good renal function.

Case 2

On the ninth postoperative day, this patient developed suprapubic tenderness, oedema of the abdominal wall, a decrease in urinary output, and an increase in blood urea. A urinary leak was diagnosed and the operative site re-explored. A hole 2 mm in diameter was found in the ureter 1 cm above the uretero-neocystotomy. The ureter was excised to a point above this hole, and re-implanted.

Case 3

On the second postoperative day, this patient developed oedema and induration of the anterior abdominal wall, with a fall in urinary output. VCU showed extravasation of the contrast material. The wound was re-explored and a slough of the distal end of the ureter was found. This portion of the ureter was excised and the ureter re-implanted. The postoperative course was uneventful.

All 3 excised portions of ureter showed evidence of necrosis on histological examination. These changes were probably ischaemic in origin.

In all 3 patients the excretory urograms were normal on follow-up.

DISCUSSION

Ureteric fistulae, or acute ureteric obstruction, may occur in the early post-transplant period. At a later stage, when the patient is well stabilized, the transplanted ureter may become obstructed, dilate, or allow reflux. By using the method of uretero-neocystotomy described here, only 3 major urological complications occurred in the early postoperative period. No death or kidney loss has been due to these complications. This compares rather favourably with other series (Table I).

Long-term follow-up has shown no case with obstruction or dilation. Although VCU has not been done as a routine, it can be assumed that even if vesico-ureteric reflux is present, it does not have a deleterious effect, in view of the fact that none of the ureters is dilated, and all show good function on secretory urography.

In addition to the low complication rate, this method has several major advantages over other methods of ureteric re-implantation used in renal transplantation. It is simple to carry out and takes only a short time. The time factor is important to a surgeon who has just completed venous and arterial anastomoses.

A minimal amount of dissection is required to expose the area of the bladder to be used for the ureteric re-implant. In patients on immunosuppressive therapy, and prone to infection, as few tissue planes as possible should be opened, in order to reduce the possibility of sepsis developing and spreading. The ureter is not splinted, and wound drainage is not used as a routine, thus reducing still further the danger of sepsis. No patient in this series developed wound sepsis.

A shorter length of ureter than that for the more commonly used Paquin or Leadbetter-Politano uretero-neocystotomy, is required. The blood supply to the distal end of the shorter ureter is less likely to be compromised than is the blood supply of a longer ureter.

The anteriorly lying ureter is extremely accessible should re-exploration of the patient for a urological complication become necessary. This is not the case where the ureter is re-implanted into the base of the bladder.
This method is a functional one and secretory urograms done at regular intervals, have shown ureters of normal calibre.

REFERENCES


Hormonale Behandeling van Benigne Prostaathiperplasie *

"N OORSIG


SUMMARY

The treatment of choice for benign prostatic hyperplasia — when treatment is indicated — is surgical removal of all hyperplastic prostatic tissue.

The present status of endocrine therapy of benign prostatic hyperplasia does not justify its application in the vast majority of cases. The results are unpredictable and the prospects of avoiding surgery in the long run very doubtful. The administration of progestational hormones has resulted in temporary improvement of prostatism in some patients. The inevitable delay in achieving results and the uncertainty of the outcome of endocrine therapy militate against its application even in the poor-risk case. Withholding surgical intervention in the hope that endocrine therapy may achieve the desired effect, may prove more dangerous to the patient than a well-planned surgical regimen even in the poor-risk case.

The reported results hold some hope for the future control of prostatic hyperplasia by endocrine means, and may indicate that this condition is partly hormone dependent.


Benigne prostaathiperplasie is baie algemeen onder bejaarde mans. Nadoodse onderzoek toon 'n toeneemende insidensiie van prostaathiperplasie met toenemende ouderdom. Dit is raar voor die ouderdom van 40 jaar, en bereik 'n piek in die 75-80% in die agste dekade. Dit word beweer dat prostaathiperplasie simptome van prostatisme in 30-40% van alle mans wat ouer as 60 jaar is, veroorsaak. Lytton en medewerkers berig dat die aantal mans wat 'n operasie vir prostaathiperplasie benodig, van 0,24 per 1 000 per jaar in die vyfde dekade tot 10,9 per 1 000 per jaar in die agste dekade, vermeerder. 'n Veertig jaar loop 'n 10% risiko om voor die ouderdom van 40 jaar 'n operasie ingee op voorligging of obstruktiewe prostaathiperplasie te benodig. Die meerderheid van pasiente wat 'n operasie vir prostaathiperplasie ondergaan, is in die sewende lewensdekade. Die chirurgiese verwydering van alle nodule prostaathiperplasie is die mees effektiewe behandeling