**ISOLATION OF URETERS AND POSTERIOR PERITONEAL TUNNEL**

After incising the avascular line of Toldt lateral to the colon, the surgeon immediately isolates both ureters with vessel loops.

**FIGS. 6-1 AND 6-2.** The incision is extended from around the cecum up the mesenteric root, allowing the surgeon to mobilize the donor ureter more easily.

In essence, this maneuver allows for a shorter posterior parietal peritoneal tunnel for the donor ureter (2 on Fig. 6-1); it also permits the surgeon to inspect the tunnel more easily to ensure that the angulation is gradual and wide.

**FIGS. 6-3 AND 6-4.** In addition, with this maneuver the surgeon can locate the inferior mesenteric artery, which could potentially obstruct the donor ureter.1
PERFORMANCE OF A SUCCESSFUL TRANSURETEROURETEROSTOMY

The surgeon must consider four factors:
1. Preservation of the intrinsic vascularity of the donor ureter.
2. Proper mobilization of the donor and recipient ureters to ensure a gradual angulation of the transureteral anastomosis.
3. Creation of a wide posterior parietal peritoneal tunnel without a sharp angulation.
4. Extra-wide anastomosis of the two ureters.

Donor Ureter

FIG. 6-5. The donor ureter should be freed up to the lower pole of its kidney. The ureteral adventitia should be intact and thick to ensure sufficient vascularity.

If the ipsilateral gonadal vessel appears to hold or cause a sharp angulation of the donor ureter, then it should be divided.

Before the recipient ureter is prepared, the donor ureter can be clipped at its free end to dilate the ureter by hydronephrosis. This maneuver facilitates the anastomosis and prevents ureteral twisting.

Recipient Ureter

FIG. 6-5. To ensure a gradual angulation of the ureteral anastomosis, it may be necessary to free a segment of the recipient ureter. Some investigators have emphasized that the recipient ureter should not be disturbed; but we, in agreement with Hodges, have not seen any complications with this maneuver. When either the recipient or donor ureter is mobilized, it is critical that the surgeon leave the adventitia on the ureter rather than denuding it.

At times, it may even be necessary to divide the gonadal vessels on the recipient side to allow gradual angulation for the ureteral anastomosis.

Ureteral Anastomosis

This should be a large side-to-oblique (recipient ureter to donor ureter) anastomosis rather than a side-to-end anastomosis. It should be at least 2 cm wide.

The hydronephrotic donor ureter should be tunneled through the parietal peritoneum to check for a proper anastomotic site. After ureterotomy and ureteral spatulation, the first three vertex stitches (4-0 Vicryl) are placed.
FIG. 6-6. After the back wall of the ureteral anastomosis is completed, the following is performed: one end of the stent is placed down into the recipient ureter and into the bladder. The other end goes up into the donor ureter on the contralateral side.

We prefer to use Bard (6 or 8 Fr) ureteral diversionary stents, which are long and can be brought through the bladder and fixed to abdominal skin.

The surgeon threads the guidewire into a newly cut hole in the middle of the stent going to the distal open ends. Then the stent guidewire is passed into the bladder via the recipient ureter.

Extra holes are cut into the stent at the anastomotic site and slightly below to ensure drainage from both kidney units. The guidewire is now rethreaded through a cut hole into the other end of the stent and passed into the donor ureter and up to the kidney.

FIG. 6-7. On the bladder end, a small cystostomy is made, and the stent is brought out through the bladder and fixed to the bladder wall with a 4-0 chromic stitch. This stent is then brought out through a separate stab wound and fixed to the skin.

Drains adjacent to the anastomosis are left in place and a Foley catheter or suprapubic tube is left in the bladder.
An incision is made lateral to the colon to isolate the ureter.

The incision is carried around the cecum and up the mesenteric root.

The inferior mesenteric artery is located.

The surgeon ensures that the parietal peritoneal tunnel is wide and has a gradual angle.

The donor ureter with adventitia is freed to the lower pole of the kidney and clipped at its distal end for dilatation.

The gonadal vessel is divided if necessary.

The ureter is tunneled through and checked for the best position for anastomosis.

The recipient ureter is mobilized, and the gonadal vessel is divided if necessary.

The donor ureter is spatulated and an anastomosis of at least 2 cm is performed.

The two ureters must have a gradual angulation such that it is a large side-to-oblique (recipient ureter to donor ureter) anastomosis.

After the three vertex stitches have been made and the back wall of the anastomosis is complete, the stent is placed.

The stent is inserted into bladder via the recipient ureter.

Extra holes are cut in the stent at the anastomosis junction.

The guidewire is inserted into cut hole, threaded to the proximal end of the stent, and passed up to the donor kidney.

Drains and a suprapubic tube or Foley catheter are placed.

Excessive angulation of donor ureter: Check the donor ureter for full mobilization to the kidney → check to see if the posterior peritoneal tunnel is adequately wide → check the ipsilateral gonadal vessel division → check for inferior mesentery artery syndrome (ureter trapped under the artery) → check recipient ureter mobilization and gonadal vessel ligation.

Difficulty placing one stent: Use two small stents (4 Fr) to each kidney unit.

REFERENCES

