Retrograde stenting of transplant ureters using a ureteral access sheath

Kishore Visvanathan, MD,[1] Jeff Warren, MD[2]

[1]Department of Urology, University of Saskatchewan, Saskatoon, Saskatchewan, Canada
[2]Department of Urology, University of Ottawa, Ottawa, Ontario, Canada

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Changing chronic ureteral stents in patients with kidney transplants may be technically difficult because of the site of ureterocystostomy. The technique described simplifies this procedure.

Key Words: ureteral, stent, transplant, kidney, procedure

Technical considerations

In patients with normally placed ureteric orifices, cystoscopic stent change is usually straightforward. The tip of the cystoscope can be placed immediately adjacent to the ureteric orifice, thus minimizing the length of unsupported wire that can flex and "bowstring". Patients with renal transplants typically have ureteroneocystostomies near the bladder dome. If chronic ureteric stenting becomes necessary for management of postoperative ureteric stenosis, stent change may be technically challenging. As it can be difficult to bring the tip of the cystoscope close to the reimplanted orifice, there is an excess length of unsupported guidewire in the bladder that can bowstring and pull out of the transplant ureter, thereby losing access.

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Address correspondence to Dr. Kishore Visvanathan, 537 - 750 Spadina Crescent East, Saskatoon, Saskatchewan S7K 3H3 Canada

Case reports

A 51-year-old female underwent cadaveric renal transplantation into the left iliac fossa. An extravesical ureteroneocystostomy was performed. The ureteric stent was removed 1 month postoperatively. Four months postoperatively, she underwent nephrostomy insertion for transplant hydronephrosis and reduced renal function. A nephrostogram showed a long, midureteric stricture. She underwent antegrade balloon ureteroplasty and stent insertion. Hydronephrosis recurred after stent removal. Further antegrade ureteroplasty and retrograde ureteroscopy with laser ureterotomy were unsuccessful in managing the stricture. A single ureteric stent proved ineffective in draining the transplant so a second stent was inserted alongside the first. With both stents in place, her renal function has remained stable. After discussing options of open reconstruction, chronic percutaneous nephrostomy and chronic ureteric stent, she elected intermittent stent changes due to concern that open reconstruction may risk loss of the renal graft.

A 58-year-old female received a renal transplant

with the same surgical technique as the above patient. She developed distal structuring of the transplant ureter 9 years postoperatively and underwent percutaneous nephrostomy and antegrade balloon ureteroplasty with stent insertion. She also elected chronic stent placement to maintain graft function.

In both patients, changing the stents cystoscopically proved technically challenging because of the location of the transplant ureteric orifice on the anterolateral bladder wall near the dome. When using a Seldinger technique to change stents emerging from normally placed ureteric orifices, the tip of the cystoscope can be placed adjacent to the orifice, thus minimizing the length of unsupported guide wire that can "bowstring" when a new stent is pushed over it. In these patients, it was not possible to bring the cystoscope close enough to the ureteric orifice to prevent this bowstring effect, resulting in the wire migrating out of the transplant ureter.

Technique

Grasp the distal tip of the indwelling ureteric stent with endoscopic grasping forceps and bring the tip just out of the urethral meatus, leaving the proximal stent in the transplant renal pelvis. Under fluoroscopic control, pass an Amplatz guide wire through the stent and into the renal pelvis. Remove the stent and pass a ureteral access sheath (10/12 Fr., 45 cm ACMI Snap & Peel introducer sheath) over the wire until the tip is engaged in the ureteric orifice. It is not necessary to pass the access sheath further up the ureter. Remove the tapered obturator while keeping gentle pressure on the sheath so its tip remains at the ureteric orifice. Pass the new ureteric stent over the guide wire and through the sheath. The sheath prevents the guide wire from bowstringing. This directs the surgeon's push on the stent forward rather than laterally, making it easier to pass a ureteric obstruction. Use the stent pusher to position the tip of the stent in the renal pelvis. Withdraw the wire enough to allow the proximal curl to form in the renal pelvis. Remove the ureteral access sheath. Use fluoroscopy at the level of the pubic symphysis to position the distal curl in the bladder while removing the guide wire.

In the patient with two stents in the transplant ureter both stent tips were brought out of the urethra, wires were passed up each stent and then the stents were removed. The ureteral access sheath technique was then used over each wire in turn.

Comment

A similar technique has been described to simplify stent insertion after flexible ureteroscopy.[1] Gerrard et al[2] describe their techniques for achieving guide wire access to transplant ureters, also indicating the ease with which ureteric access can be lost. The technique described here could easily be incorporated into the algorithms in Gerrard's paper, possible improving the success rate of retrograde stent insertion and obviating the need for (and risk of) antegrade access and instrumentation.

In the two patients reported here, standard stent exchange technique was very difficult and required 60 minutes or more of operating time with repeated wire displacement. Using the ureteral access sheath, the stents were changed simply in 10-15 minutes. The technique of maintaining ureteral access by inserting a wire through an in situ stent works well in females. However, given the longer male urethra and short transplant ureter, the proximal stent may slip out of the ureter when the distal end is pulled to the urethral meatus. In this case, the techniques suggested by Gerrard et al can be used to reestablish ureteral access. □

References

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