
Vesicoscopic Cross-Trigonal Ureteral Reimplantation: A Minimally Invasive Option for Repair of Vesicoureteral Reflux

Stephen J. Canon,* Venkata R. Jayanthi and Ashay S. Patel

From the Section of Urology, Columbus Children's Hospital, Ohio State University, Columbus, Ohio

Purpose: Cross-trigonal ureteral reimplantation is a commonly performed procedure for the correction of vesicoureteral reflux. Most previously described laparoscopic techniques have used an extravesical approach. A "vesicoscopic" technique is analogous to standard open cross-trigonal repair in principle, except that 3 ports with insufflation of the bladder are used to perform the ureteral reimplantation.

Materials and Methods: A retrospective review was performed of patients treated for primary vesicoureteral reflux with either vesicoscopic or open ureteral reimplantation. For patients with vesicoscopic reimplantation a 5 mm port is placed in the dome of the bladder and 2, 3 mm ports are placed laterally. The ureters are mobilized transvesically, cross-trigonal submucosal tunnels are made and the ureters are sutured in place with intracorporeal suturing. The bladder ports are closed and a urethral catheter is left indwelling for 36 hours. Among the open reimplantation group 38 patients underwent cross-trigonal ureteral reimplantation, 2 underwent extravesical ureteral reimplantation and 2 were excluded due to insufficient records. Followup imaging for both groups included ultrasonography at 1 month and voiding cystography at 3 months postoperatively.

Results: A total of 52 consecutive children underwent vesicoscopic ureteral reimplantation with 1 patient converted to open intravesical reimplantation, and 40 consecutive controls underwent open ureteral reimplantation. Postoperative vesicoureteral reflux resolution rates for the vesicoscopic and open groups were 91% (42 of 46 patients) and 97% (31 of 32 patients), respectively. Mean patient age and mean maximal grade of vesicoureteral reflux in the vesicoscopic and open groups were 5.7 and 4.0 years ($p = 0.001$), and 2.8 and 3.2 ($p = 0.036$), respectively. Mean operative times for vesicoscopic and open procedures were 199 and 92 minutes, respectively ($p = 0.001$). While the average length of hospital stay of 2 days was similar between the groups ($p = 0.122$), less oral and intravenous analgesia was needed postoperatively in the vesicoscopic group ($p = 0.001$ and $p = 0.005$, respectively). Complications of vesicoscopic ureteral reimplantation included urinary leakage in 1 child, bladder stones in 1 and bilateral ureteral obstruction in 1. There were no complications in the open group.

Conclusions: There is an ever increasing trend toward minimally invasive surgery. Our preliminary results indicate that vesicoscopic ureteral reimplantation is an effective procedure with minimal morbidity. Although success rates for vesicoureteral reflux resolution were slightly lower in the vesicoscopic group in this study, the favorable results of other series and the improvement in postoperative discomfort observed here suggest that this technique may be a reasonable option in the management of vesicoureteral reflux. Further refinement of the technique and critical analysis of the long-term outcomes are needed to understand fully its place in the treatment of vesicoureteral reflux.

Key Words: vesico-ureteral reflux, ureter, laparoscopy, replantation, cystostomy

The options for surgical management of VUR have expanded in recent years with the application of dextranomer/hyaluronic acid injection and the introduction of laparoscopic extravesical ureteral reimplantation. Recent studies aimed at determining parental preferences have shown that parents are more apt to choose minimally invasive techniques to treat VUR when intervention is necessary.^{1,2}

Gill et al originally described a technique of vesicoscopic cross-trigonal ureteral reimplantation using glycine irrigation in a small series of patients, with 2 of 3 exhibiting resolution of VUR.³ Yeung et al subsequently developed a

novel technique of vesicoscopic cross-trigonal ureteral reimplantation under CO₂ pneumovesicum.⁴ That series demonstrated excellent results, with 96% of 16 patients having resolution of reflux. The aim of this study was to describe our initial experience with VR in a larger group of children, and to compare the outcomes to a control group undergoing OR.

MATERIALS AND METHODS

We retrospectively reviewed the records of all children undergoing correction of reflux via a vesicoscopic approach at our institution. A control group of consecutive patients with a history of primary VUR and OR was reviewed for comparison. Indications for surgery for both groups included breakthrough urinary tract infections during antibiotic prophylaxis, persistent VUR after observation with medical treatment for 4 to 5 years, especially in association with

Submitted for publication October 21, 2006.

* Correspondence: Section of Urology, Columbus Children's Hospital, 700 Children's Dr., Columbus, Ohio 43205 (e-mail: canons@chi.osu.edu).

significant renal scarring, and/or persistent VUR after injection therapy. Families were given the options of dextranomer/hyaluronic acid injection, open reimplantation and vesicoscopic reimplantation. The VR technique is similar to that described by Yeung et al,⁴ with minor variations.

Positioning

The VR procedure is performed with the patient in the standard dorsal lithotomy position, with the perineum and abdomen in the sterile field. This approach allows access to the urethra, as needed, throughout the operation. Careful positioning and padding are ensured to prevent nerve palsy.

Bladder Wall Fixation and Port Placement

Cystoscopy using CO₂ bladder distention filled to 10 to 15 mm Hg is performed to assess the anatomy and to allow for percutaneous fixation of the bladder to the anterior abdominal wall. Sequentially, at the dome and the lateral walls an 18 gauge spinal needle is passed into the bladder, through which a 2-zero polydioxanone suture is passed. A stone basket is then placed through an adjacent puncture to snare the suture and extract it. The sutures are then tied, fixing the anterior bladder wall to the abdomen. A 5 mm port is placed in the dome and 3 mm ports are placed laterally. A 30-degree lens is placed through the dome port and vesicoscopy is performed (fig. 1).

Ureteral Dissection

Feeding tubes (3.5Fr) are placed through the urethra into the bladder, passed up each orifice and fixed in place with 5-zero polydioxanone suture. The affected ureters are then mobilized with a hook electrode at a low power setting, or with a combination of blunt and sharp dissection using scissors or graspers (fig. 2, A). After sufficient ureteral mobilization the defect in the detrusor muscle is closed with interrupted 4-zero polydioxanone suture (fig. 2, B).

Tunnel Creation

Cross-trigonal tunneling is then performed with a combination of sharp and blunt dissection in the submucosal plane. Maryland graspers are used to elevate the mucosa, and fine scissors are used to initiate and develop the submucosal plane from either direction (fig. 3). The length of tunnel created spans from the initial hiatus across to the opposite



FIG. 1. Port placement in vesicoscopy

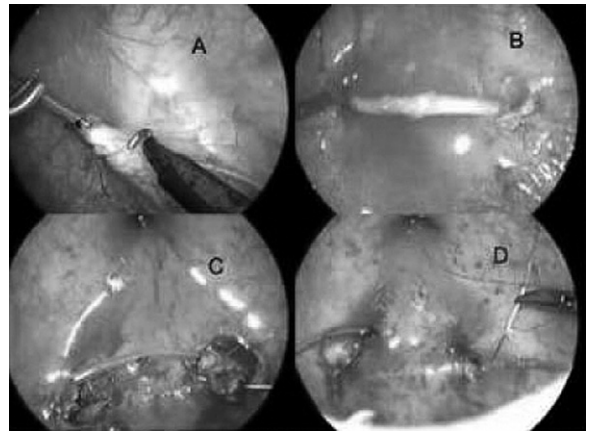


FIG. 2. Bilateral procedure. A, ureteral dissection is performed with hook electrode at low power setting. B, as in open repair, ureter is freed until enough length is gained to transpose to other side. C, left ureter has been placed in its submucosal tunnel with neomeatus to be placed near original location of right meatus. D, completed repair before removal of ureteral catheters.

hiatus. The feeding tubes are passed through the tunnels to aid in transposition of the ureters (fig. 2, C). The ureter is fixed into position with 5-zero polydioxanone interrupted sutures (fig. 2, D). The remaining mucosal defects are closed with absorbable suture, and the feeding tubes are removed.

Bladder Port Closure

To maintain the pathway through the incision into the bladder, a feeding tube is placed through each tract before removal of the port. By passing spinal needles through the incisions and avoiding the fascia, each bladder port is closed in a manner analogous to the abdominal wall fixation. After placing all bladder sutures a Foley catheter is inserted for decompression. The original bladder-anterior abdominal wall fixation sutures are removed, allowing the bladder to fall away from the abdominal wall. The bladder port closure sutures are then carefully tied, and the skin incisions are subsequently closed.

Postoperatively, all patients in both groups were given intravenous ketorolac for 24 hours unless contraindicated. Acetaminophen with codeine (1 mg/kg every 4 hours), intra-



FIG. 3. Tunnel creation. Lifting mucosa allows submucosal plane to be identified. Tunnel is then created using sharp and blunt dissection.

Download English Version:

<https://daneshyari.com/en/article/3878558>

Download Persian Version:

<https://daneshyari.com/article/3878558>

[Daneshyari.com](https://daneshyari.com)