

## Case Report

# Neovesical-Urethral Anastomotic Stricture Successfully Treated by Ureteral Dilatation Balloon Catheter

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Neovesical-urethral anastomotic stricture is a complication of orthotopic neobladder, with a reported incidence of 2.7% to 8.8%. Strictures of the neovesico-urethral anastomotic site can be treated with regular self-dilatation, but high-grade strictures require a surgical procedure involving incision by electrocautery or cold knife. Here we describe a grade III neovesical-urethral anastomotic stricture after an orthotopic bladder substitution that was successfully treated by use of a ureteral dilatation balloon catheter.

**Key Words:** *Balloon dilatation; Urinary bladder neck obstruction; Urinary bladder neoplasms; Urinary diversion*

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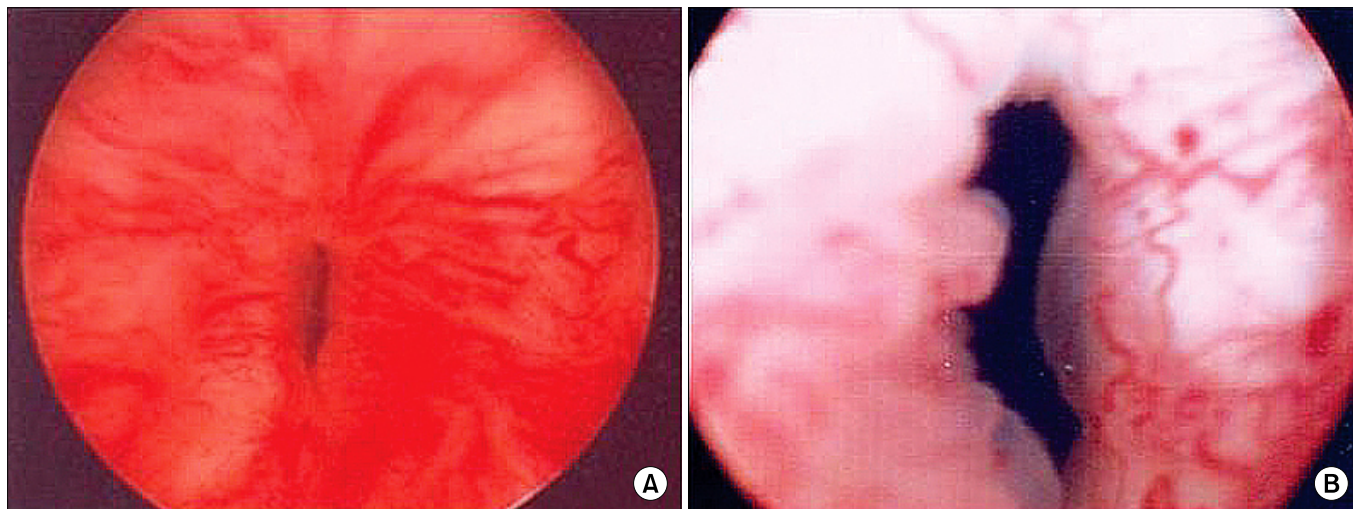
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The orthotopic neobladder is a natural extension of the continent cutaneous diversion anastomosed directly to the intact native urethra [1]. In many centers worldwide, orthotopic reconstruction has replaced the ileal conduit as the standard form of reconstruction [2]. Bladder neck contracture (BNC) at the neovesical-urethral anastomotic site is a complication, with a reported incidence of 2.7% to 8.8% [1,3-6]. Strictures of the neovesical-urethral anastomotic site can be treated with regular self-dilatation, but high-grade strictures require a surgical procedure involving incision by electrocautery or cold knife [1]. Here we describe a grade III neovesical-urethral anastomotic stricture after an orthotopic bladder substitution that was successfully treated by use of a ureteral dilatation balloon catheter.

## CASE REPORT

A 53-year-old male patient presented to our clinic with aggravation of straining to void and lower abdominal distention that had developed 1 month earlier. He had undergone a radical cystectomy and orthotopic ileal bladder substitution with afferent limb (Studer's neobladder) for invasive bladder cancer 13 months previously and had been periodically followed. Until this visit, he voided spontaneously, about 300-400 ml per episode, by increasing the intravesical pressure through a Valsalva maneuver and relaxation of the bladder outlet, with a little incontinence at

nighttime only. A physical examination showed that his lower abdomen was distended. A computed tomography (CT) scan showed no signs of tumor recurrence or hydronephrosis. His postvoid residual (PVR) was up to 700 ml. Cystoscopy (16 Fr) showed a pinpoint stricture at the neovesical-urethral anastomotic site, and the scope could not be passed through the stricture site (Fig. 1A). A grade III neovesical-urethral anastomotic stricture was diagnosed, and a balloon dilatation of the stricture site was planned. On cystoscopic inspection, a 0.038 inch ureteral guide wire was passed into the neobladder through the stricture site. A ureteral dilatation balloon catheter<sup>®</sup> (Cook, Spencer, IN, USA) was then advanced through the repositioned guide wire. After placing the balloon (length: 6 cm) precisely in the stricture site under cystoscopic inspection, it was inflated up to 22 atm for 3 minutes and was then removed. Thereafter, a 24 Fr cystoscopic sheath was freely advanced into the neobladder without any resistance and a 22 Fr indwelling urethral Foley catheter was placed. The patient tolerated the procedure well under local anesthesia (IM injection of 50 mg pethidine). We removed the urethral Foley catheter 1 week after the procedure. After removal of the urethral Foley catheter, the patient voided well in amounts of 300-400 ml per episode without hesitation and his PVR was 0 ml. At present, 24 months after the procedure, follow-up cystoscopy revealed a patent anastomotic site (Fig. 1B). The patient voided well except for slight incontinence



**FIG. 1.** (A) Cystoscopy showing a grade III neovesical-urethral anastomotic stricture. (B) Follow-up cystoscopy showing a well opened anastomotic site.

at nighttime, and his PVR remained at zero.

## DISCUSSION

Although orthotopic ileal neobladder is considered the gold standard after cystectomy, the most important factor affecting the quality of life of patients with orthotopic diversion is emptying failure of the reservoir [1,2]. Simon et al analyzed emptying failures in a single-center cohort of 655 male patients who received an ileal neobladder and reported that 11.1% of the patients had emptying failure during their follow-up period. Various causes were involved, such as strictures of the neovesical-urethral anastomotic site (3.5%), dysfunctional voiding (3.5%), urethral strictures (1.7%), local tumor recurrence causing neobladder outlet obstruction (2.0%), and obstructive mucosal valves (0.5%) [1].

The reported incidence of anastomotic BNCs after radical cystectomy is 2.7% to 8.8% [1,3-6]. The most common presentation of BNCs is voiding difficulty [6]. The diagnosis of BNC should be confirmed by cystoscopy, which allows for direct visualization of the bladder neck and a quantitative assessment of the degree of anastomotic stricture [1,6]. The degree of stricture is classified as grade I (> 17 Fr but < 22 Fr), grade II (< 17 Fr) and grade III (pinhole) [7]. The risk factors for strictures at the neovesico-urethral anastomotic site in patients with continent diversion have not yet been determined. We believe that the mechanism and risk factors for developing strictures at the neovesical-urethral anastomotic site are similar to the formation of BNC after radical retropubic prostatectomy (RRP). The mechanisms postulated for BNC after RRP include the disruption of healing at the neovesical-urethral anastomotic site, an inflammatory response from prolonged catheterization, and failure of apposition of the bladder neck mucosa to the urethral mucosa, which leads to poor healing and urinary extravasation soon after RRP [8,9].

The treatment options for BNC after orthotopic neobladder vary from conservative management with clean intermittent catheterization (CIC) or dilatation at the level of the bladder neck to transurethral resection (TUR) or transurethral incision (TUI) with a cold knife, electrocautery, or holmium laser [6]. In the series reported by Patel et al [6], interventions (TUI or dilation) in the operating room under anesthesia were needed in 4/4 of grade I, 5/6 of grade II, and all of grade III BNC cases after neobladder substitution. No patients had a significant change in continence after treatment; specifically, none developed de novo daytime or nighttime incontinence, and at the last follow-up, 9 of the 10 patients were undergoing CIC irrespective of the success of treatment.

We adopted balloon dilation using a commercially available ureteral dilation balloon catheter<sup>®</sup> (Cook, Spencer, USA) as the primary treatment of grade III neovesical-urethral anastomotic stricture after Studer's neobladder formation because we believe this procedure is less invasive. The procedure does not require the patient's admission or general or regional anesthesia, in contrast with other surgical options such as TUR or TUI with a cold knife. Although successful long-term results were achieved with balloon dilation of a high-grade neovesical-urethral anastomotic stricture, the best treatment for these patients is still unknown.

## Conflicts of Interest

The authors have nothing to disclose.

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