

INTRAVESICAL URETHROTOMY: A NOVEL SOLUTION AFTER FAILED YOUNG-DEES-LEADBETTER BLADDER NECK REPAIR

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ABSTRACT

Ischemia is a rarely encountered complication of Young-Dees-Leadbetter bladder neck repair. In such a circumstance, a catheterizable stoma is usually recommended to patients. In the present case, we performed an open intravesical urethrotomy and removed a button of tissue for the first time. The outcome was quite acceptable.

Key Words: Bladder Neck Repair, Ischemia, Exstrophy-Epispadias Complex.

BAŞARISIZ YOUNG-DEES-LEADBETTER MESANE BOYNU ONARIMI SONRASI YENİ BİR ÇÖZÜM: İNTRAVEZİKAL ÜRETROTOMİ

ÖZ

İskemi, Young-Dees-Leadbetter mesane boynu onarımının nadir karşılaşılan bir komplikasyondur. Böyle bir durumda hastaya genellikle kateterize edilebilir bir stoma önerilir. Biz bu olguda ilk defa açık intravezikal üretrotomi yaptık ve doku parçası çıkarttık. Sonuç oldukça kabul edilebilirdi.

Anahtar Kelimeler: Mesane Boynu Onarımı, İskemi, Ekstrofi-Epispadyas Kompleksi.

INTRODUCTION

Young-Dees-Leadbetter bladder neck repair has been used for the management of incontinence due to either neurogenic or anatomic causes for some time. Outcome of this procedure is quite favorable, with success rates of 75% and 81% in female and male patients, respectively. Obliteration of the reconstructed bladder neck following this procedure may occur due to ischemia very rarely. If there is no available tissue left for a repeat reconstruction after this complication, there is no solution reported in the literature other than catheterizable abdominal stoma. Here, we present a novel approach in such a rare condition.

CASE REPORT

A 4-year-old girl was referred with a diagnosis of total urinary incontinence due to bladder exstrophy. Her bladder and urethra had been closed when she was 3 months of age elsewhere. A bilateral vertical iliac osteotomy, pubic approximation with a No. 1 nylon horizontal mattress suture, and spica cast had been also performed synchronously at the same institution without any postoperative complications. Her physical examination revealed a 1 cm urethra and bifid clitoris. During the cystogram, a bilateral Gr IV vesico-urethral reflux and divergent symphysis pubis were recognized. Bladder capacity was found to be 30 ml with a gravity cystogram. Therefore, a synchronous ileocystoplasty was also planned during the Young-Dees-Leadbetter bladder neck reconstruction.

During the operation a bladder capacity of 30 ml was confirmed with a gravity cystogram under general anesthesia. A midline incision was made and the tissue layers were dissected until the bladder was reached. The bladder was set free of adhesions from the lateral sides and the posterior aspect of the pubic bone with a radical dissection and opened vertically. Bilateral cephalotrigonal ureteral reimplantation was done. A 15 mm wide and 30 mm long posterior strip of mucosa was incised with the scalpel and the neourethra was created over an 8 F stent with interrupted sutures of 5-0 polyglycolic acid, starting at the cephalic end of the strip (Figure 1a). Muscle triangles lateral to the mucosal strip were denuded from the mucosa. These muscular flaps were overlapped with interrupted sutures of 4-0 polyglycolic acid after incising medially at the cephalad border where they join at the floor of the bladder (Figure 1b and c). Minute arterial bleeding on the right side was cauterized. Since the remaining bladder tissue was inadequate for closure, 25 cm of ileum was removed, opened on its antimesenteric border, reconfigured in a U shape, and anastomosed to the remaining bladder template (Figure 1d). No leakage was recorded through the urethra and augmented bladder with a 30 cm gravity cystogram (Figure 1e). The urethral stent was removed after the bladder neck reconstruction was completed. Ureteral stents in the reimplanted ureters and a 16 F suprapubic tube through the ileal

patch were placed. After 4 weeks postoperatively, the suprapubic tube was clamped and a voiding trial was done but was unsuccessful. A No. 8 Fr Foley catheter could not be placed under anesthesia. Methylene blue was instilled through the suprapubic tube and urethroscopy was performed. An 8 F pediatric urethroscope was introduced until 2.5 cm away from the meatus and a complete occlusion was encountered.

MANAGEMENT

During the second operation, which was held 4 months after the first, the appendix was anastomosed to the augmented ileum with the Le Duc technique and the cecal end was brought to the umbilicus as a catheterizable stoma. Since the parents were very insistent on urethral voiding, an 8 F metal sound with a curved tip was introduced through the external urethral meatus and the invaginated bladder mucosa over the metal sound was incised with the scalpel and a small button was removed. A 10 F Foley catheter was placed in situ for 4 weeks and then removed. The patient voided with a low flow rate by the aid of Valsalva maneuvers and no significant residual urine was recorded. Since the parents were reluctant about clean intermittent catheterization through the catheterizable stoma, the patient was still voiding through the urethra in the same manner after one-year follow-up. The upper urinary

system was normal according to USG during follow-ups. Her parents complained about enuresis nocturna and rare diurnal incontinence. She voided 150-200 ml each time with a low flow rate.

DISCUSSION

One aspect of the management of exstrophy-epispadias complex is the achievement of urinary continence. Continence in this group of patients is defined as dry intervals of at least 4 h when the patient is compliant with a catheterization or voiding regimen after reconstructive surgery (1). This is achieved most of the time with the reliable technique of Young-Dees-Leadbetter bladder neck reconstruction (2). The current form of this technique was arrived at after many contributions made by various surgeons since the original description by Young in 1922 (3,4). In Young's original description of the technique, a portion of the anterior wall of the prostatic urethra and bladder was excised and then the bladder neck was reapproximated in the midline to the size of a silver probe. Subsequently, in 1949, John E. Dees excised more tissue up to the level of the trigone, leaving a central strip of mucosa to line the neourethra, denuded the muscularis of the bladder lateral to the neourethra, and wrapped the urethra in the midline with the denuded muscular flaps (5). In 1964, Guy Leadbetter completed the procedure

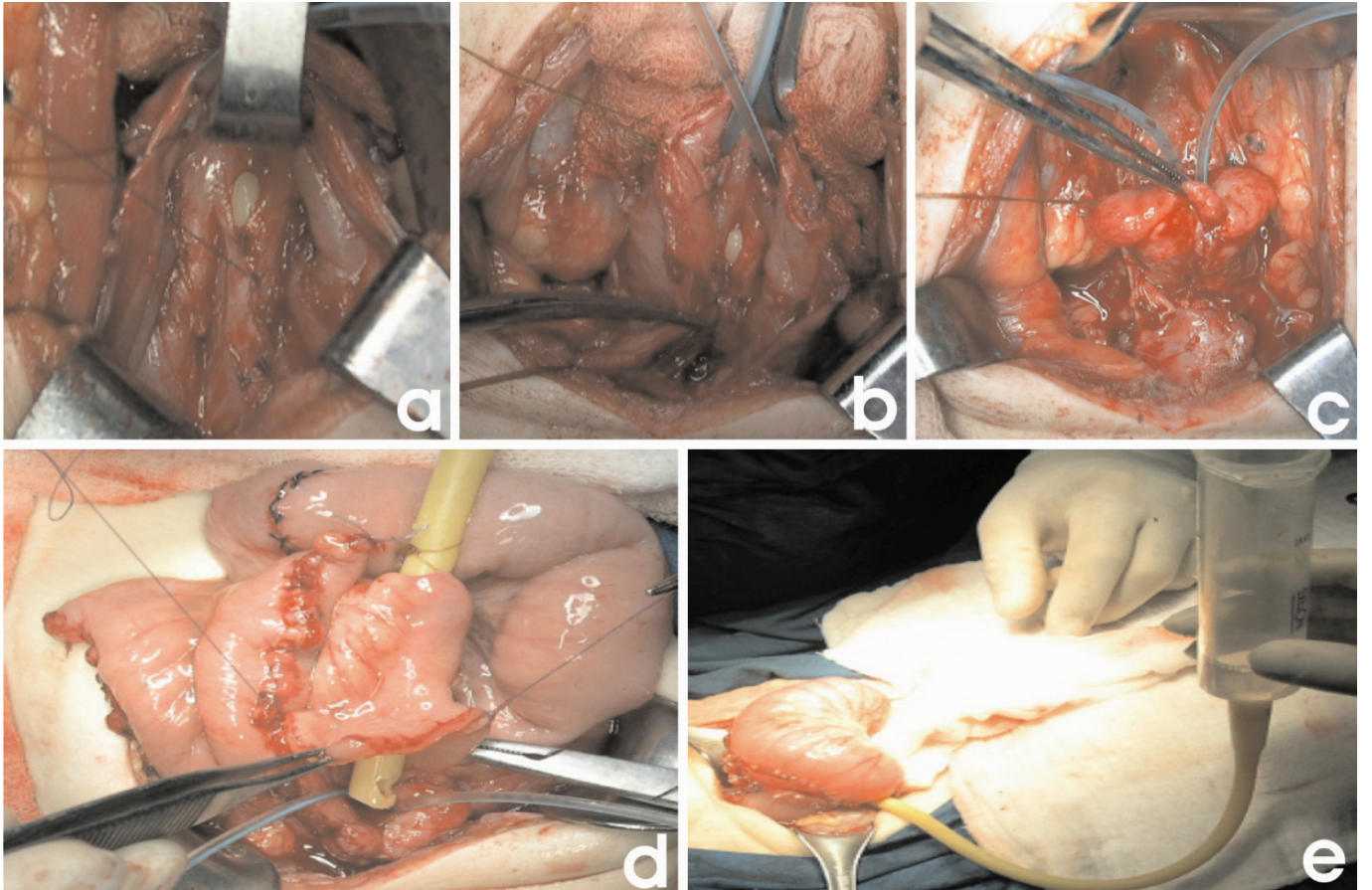


Figure 1a: Reconstruction of 15 mm wide and 30 mm long neourethra, b and c, incising and overlapping muscle triangles, d, anastomosing reconfigured ileum to the bladder neck, e, 30 cm H₂O gravity cystogram revealing no leak through the anastomosis and urethra.

by reimplanting the ureters higher in the bladder to lengthen the neourethra (6).

Bladder capacity is the major determinant of the surgical procedure, whether an augmentation cystoplasty should be done synchronously with the bladder neck reconstruction or not. It should be measured under anesthesia with a gravity cystogram. Although it was formerly claimed that 60 ml or higher bladder capacity was necessary to plan bladder neck reconstruction (7), an 85 ml capacity is necessary to achieve complete dryness (2). In our case, since the bladder under general anesthesia was 30 ml, ileocystoplasty was also done.

Bladder neck reconstruction failure is generally perceived as the persistence of urinary incontinence after a reasonable time interval. In such cases, options for management are repeat bladder neck reconstruction, augmentation cystoplasty with catheterizable abdominal stoma (with or without bladder neck division/closure), an artificial urinary sphincter device, and collagen injection (1,8,9). Obliteration of the reconstructed bladder neck due to ischemia is another complication of this surgery albeit very rare. This dramatic complication usually occurs when the lateral muscle triangles are incised medially at the cephalad border where they join at the floor of the bladder, as in our case (9). Performing several small incisions on the denuded lateral muscle triangles, not a transverse incision, may prevent this complication. Since no available bladder tissue was present for the repeat procedures, the creation of a catheterizable abdominal stoma was the last resort for this patient. Although there was no alternative, the family insisted on her urethral voiding. During the operation, after opening the augmented bladder, an 8 F metal sound with a curved tip was inserted through the external meatus into the bladder. Since the tissue layer over the palpated tip of the sound was less than 0.5 cm we incised and removed a small piece of it. This intervention carried the risk of continuous incontinence but did not occur postoperatively. The length of the bladder neck reconstructed during the first operation was quite satisfactory and the ischemic region was possibly the internal os which was incised during the second operation. That is why the patient was not totally incontinent. The patient still urinates through her urethra with a low flow rate after 3 months of follow-up although she had a catheterizable non-refluxing appendicovesicostomy. Since there is no detrusor muscle, the patient voids with the aid of Valsalva maneuvers.

Most authors dealing with bladder neck reconstruction do not leave a urethral catheter in place postoperatively to prevent breakdown of neourethra by the pressure effects (10). Our experience convinced us of the need for catheter placement through the reconstructed neourethra to keep it patent, at least when a long incision is made during muscular flap preparation. Minute arterial bleeding during the incision might indicate future flap ischemia and in such a situation a urethral catheter may be left in place.

In girls with exstrophy-epispadias complex, a previously reconstructed urethra before bladder neck reconstruction will allow the application of a metal sound through the urethra in retrograde fashion when an ischemia occurs; thereby a passage can be created through the inside of the bladder by excising obliterating scar tissue under the guidance of the sound.

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