

# Point of Technique

## Diverticulocystoplasty in a Case with Decreased Bladder Capacity

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### Introduction

Bladder diverticula are often asymptomatic, but in some cases they become symptomatic and lead to calculus formation, urinary tract infection, vesicoureteral reflux, and urethral obstruction. Surgical intervention and diverticulectomy is required in such cases.<sup>(1)</sup> We described our experience in the treatment of a patient with large diverticulum.

### Case Report

A 17-year-old boy with a chief complaint of discomfort in hypogastrium and urinary retention was evaluated. He had a history of frequency, urgency, and nocturia, without urinary infection or incontinence. Physical examination revealed a relatively large palpable mass, in the lower abdominal area, from the umbilicus to the pelvis. Biochemical laboratory studies were normal. Ultrasonography showed normal kidneys, but a thickened bladder wall and a cystic mass with smooth wall containing liquid. The bladder was longitudinally stretched and had a large diverticulum in VCUG (fig. 1). Vesicoureteral reflux was not present. A large amount of residual urine in the diverticulum was seen in the post void film. Cystoscopy was performed and showed a severe trabeculated and low-capacity bladder. Furthermore, 2 cm above the right ureteral orifice a diverticulum opening measured 1.5 cm × 1.5 cm was seen.

Cystometry was not applicable due to low capacity bladder which was influenced by diverticulum pressure and the resultant pop off mechanism. Indwelling urethral could not reduce the size of



**FIG 1.** Low capacity bladder with a large diverticulum on its right side (VCUG)

the diverticulum.

Due to the lowered bladder capacity, we decided to perform augmentation cystoplasty using diverticulum. The bladder was accessed with a lower midline incision. The bladder was opened longitudinally and 500<sup>CC</sup> urine was drained from the diverticulum. Afterwards, the bladder and diverticulum were incised longitudinally on the adjacent walls and they were sutured to each other preceding by cystostomy and urethral catheter fixation. Finally, a spherical vesicle was achieved.

The patient was discharged after two weeks. Urethral catheter was removed after three weeks. Urinary residue was checked following proper voiding which was not significant; thus, the cystostomy was removed too. VCUG was done three months later (fig. 2). Follow-up has been continued



**FIG 2.** VCUG three months after diverticulocystoplasty

every six months by renal and vesical ultrasonography, and biochemistry studies. The patient has been using intermittent catheterization in order to drain urine since then.

### Discussion

Most bladder diverticula in young adults are single and associated with a small bladder. Voiding disorders are common in bladder diverticulum.<sup>(1)</sup> They are often located laterally above the ureter orifice. Diagnosis is made by cystography, particularly with post void film. Surgery is warranted if recurrent infection, urethral and ureteral obstruction, or reflux develops. Diverticulum can be secondary to obstructive neurogenic bladder. Several treatments have been introduced for diverticula including laparoscopic, endoscopic, and open surgical approaches.<sup>(2-4)</sup> Izquierdo and colleagues per-

formed urodynamic studies in 11 cases with congenital bladder diverticulum of whom 8 had vesicoureteral dysfunction. Urodynamics were normal in all following operation, so that they concluded that functional changes were due to diverticulum and reflux.<sup>(5)</sup>

Because of urinary retention and a large mass in the pelvis and abdomen, surgical approach was necessary in this patient. On the other hand, diverticulectomy could possibly lead to higher bladder pressure, incontinence, and upper tract damages since the bladder had a lowered capacity and thickened trabeculated wall. Hence, we decided to perform augmentation using diverticulum itself, taking into account its advantages compared to intestinal tissue. To our knowledge, we have reported the first case of diverticulocystoplasty, and according to the last follow-up outcomes, it was successful.

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