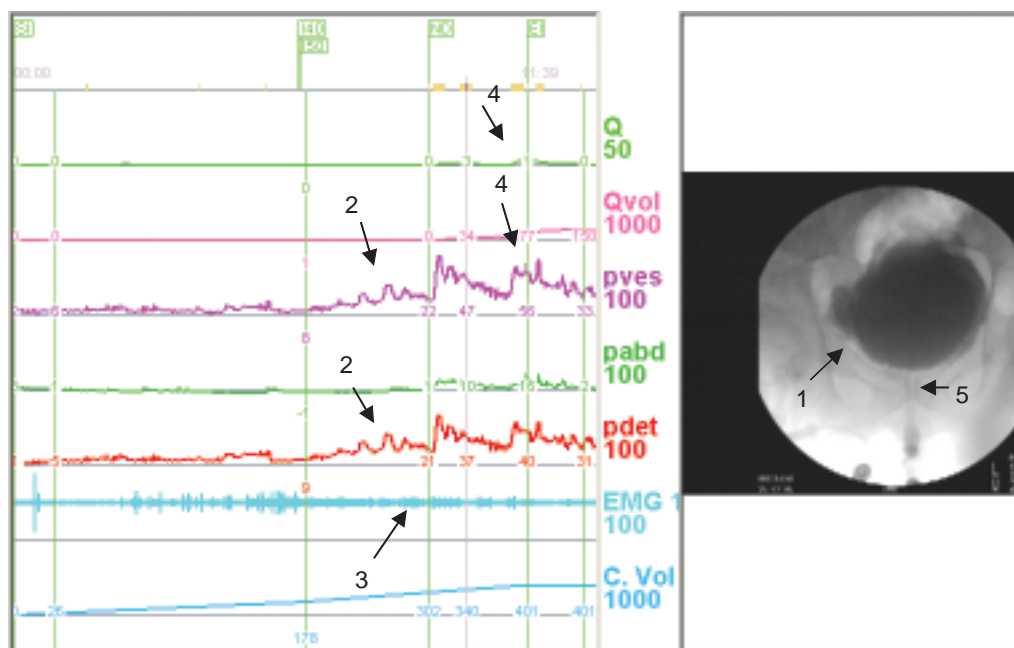


## Detrusor Sphincter Dyssynergia in Spinal Cord Injury

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### BRIEF HISTORY

The patient was a 55-year-old man with complete T6 spinal cord injury (SCI) and paraplegia for 20 years. He had had symptoms of urgency and difficult urination since the SCI and used abdominal tapping to void. Frequent urinary tract infection (UTI) made him change to clean intermittent self-catheterization (CISC) to evacuate his bladder four times a day with voided volume of around 500 mL. However, occasional urine leakage was noted whenever his bladder was full. Chronic constipation was also a big problem for him. Therefore, he was transferred for further investigation and management.

### CLINICAL INVESTIGATION

Physically, he had anesthesia below the T6 dermatome and hyperreflexia of his lower extremities. The bulbocavernosus reflex was intact and his anal tone was tight. Urine leakage was noted during transferring of his body and periodic urine expulsion was noted on lower abdominal tapping. Urinalysis revealed pyuria but he was afebrile. Renal sonography revealed normal renal contour without evidence of hydronephrosis.

### URODYNAMIC STUDY

Videourodynamic study was performed using a 6 Fr double-lumen catheter, 8 Fr rectal balloon catheter and perineal surface patch electromyography (EMG) with an infusion rate of 30 mL/min. During the filling phase, the bladder was contracted with trabeculation (1).

Frequent uninhibited detrusor contractions were noted (2) and he felt a strong desire to void at a volume of 302 mL with increased sphincter EMG activities (3). Then abdominal tapping was used to relax his urethral sphincter. Urination started after serial abdominal tapping and the voiding pressure (Pdet) was 32 to 35 cm water (4). The detrusor contraction was not sustained, however. During the voiding phase, the bladder neck and external sphincter were narrow but no vesicoureteral reflux was noted (5).

### DIAGNOSIS AND MANAGEMENT

This is a typical case of type 2 detrusor sphincter dyssynergia (DSD) manifesting with intermittent detrusor contractions, hyperactive sphincter activities and relaxation. As the voiding pressure was not very high, the patient did not develop upper tract deterioration. However, because of neuropathy and functional bladder outlet obstruction, the bladder became contracted and he had urgency sensation during bladder filling. Oral antimuscarinic agents, such as tolterodine, might be helpful in decreasing uninhibited detrusor contractions during the filling phase, and oral alpha-adrenergic blocker plus skeletal muscle relaxant, such as baclofen, might reduce his bladder neck dysfunction and urethral sphincter dyssynergia. Another treatment is botulinum toxin A injected into the detrusor or into the urethral sphincter. The former may increase bladder capacity and decrease episodes of urinary incontinence; the latter may decrease urethral resistance and improve voiding efficiency. Regular follow-up of upper urinary tract function and controlling of UTI are mandatory to prevent renal scarring due to high intravesical pressure and large post-void residue.