

Voiding in a Man with Bladder Diverticulum

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BRIEF HISTORY

A 73 year-old man suffered from frequency, incomplete voiding and residual urine sensation for 1 year. He had undergone transurethral resection of the prostate (TUR-P) for his lower urinary tract symptoms (LUTS) 5 years previously, however, the frequency and residual urine sensation still bothered him. The LUTS was refractory to antimuscarinic agents or alpha-adrenergic blockers. Transrectal sonography of the prostate revealed a small prostate with a wide open bladder neck and urethra. Maximum flow rate was 10 mL/s at a voided volume of 120 mL and the postvoid residual volume was 100 mL. In order to understand the cause of his LUTS, a videourodynamic study was arranged.

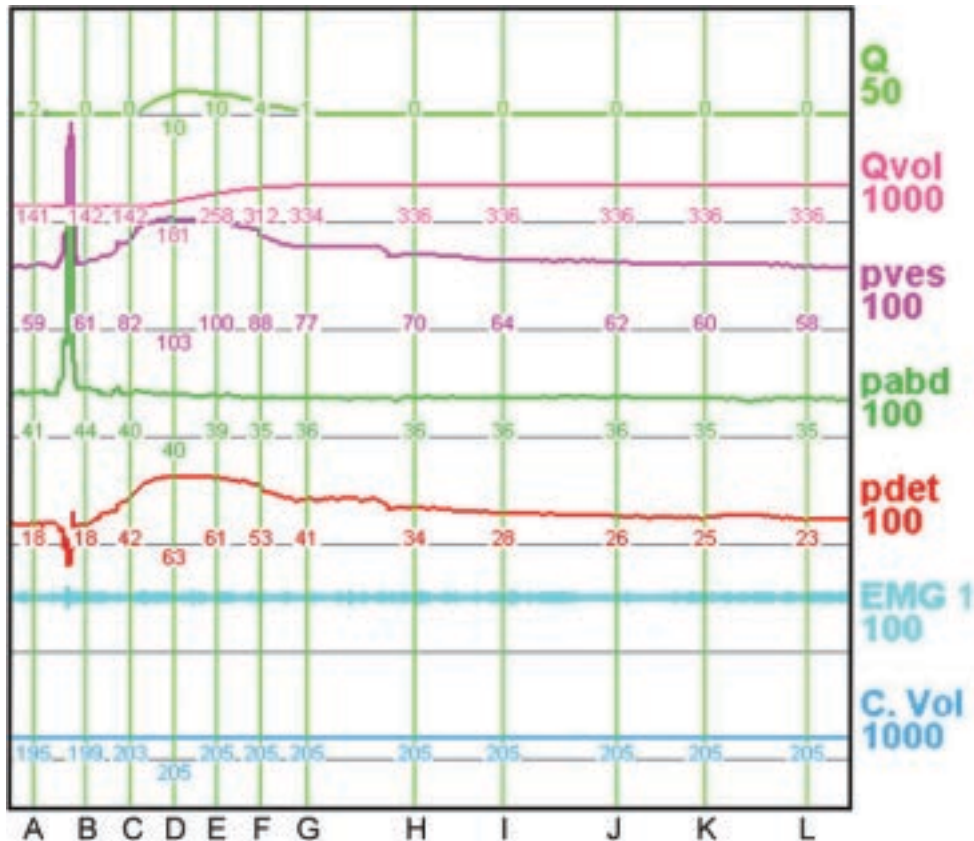
VIDEOURODYNAMIC FINDINGS

Videourodynamic study was performed using a 6 Fr double-lumen catheter and infused with 20% urographin containing normal saline at the rate of 30 mL/min. A bladder diverticulum was noted during the filling phase at the right bladder wall (A). The diverticulum remained the same size as the bladder filling up to bladder capacity. When the patient felt the urge to void, the detrusor pressure increased and the

diverticulum started to gradually increase in size (B,C). During the initial voiding phase, the detrusor pressure remained constant as urine started to flow, and the diverticulum still remained the same size (D,E) until the bladder was emptied and the detrusor pressure began to decrease (F,G). At the end of voiding, the intravesical pressure further decreased and the urine began to drain from the diverticulum to the bladder (H). The diverticulum decreased in size and the bladder was gradually re-distended (I-L). Patient felt voiding was incomplete and there was much postvoid residual.

COMMENT

This is a typical case of bladder diverticulum without bladder outlet obstruction. The diverticulum was formed before the patient underwent TUR-P and did not reduce in size with time. The diverticulum increased in size during bladder emptying and a large PVR was left in it although the bladder was completely emptied. The size of diverticulum changed with intravesical pressure. Therefore, the patient needed to void several times to completely empty his bladder. If the patient wished to solve this problem, electrocoagulation of the diverticulum or diverticulectomy might be necessary.



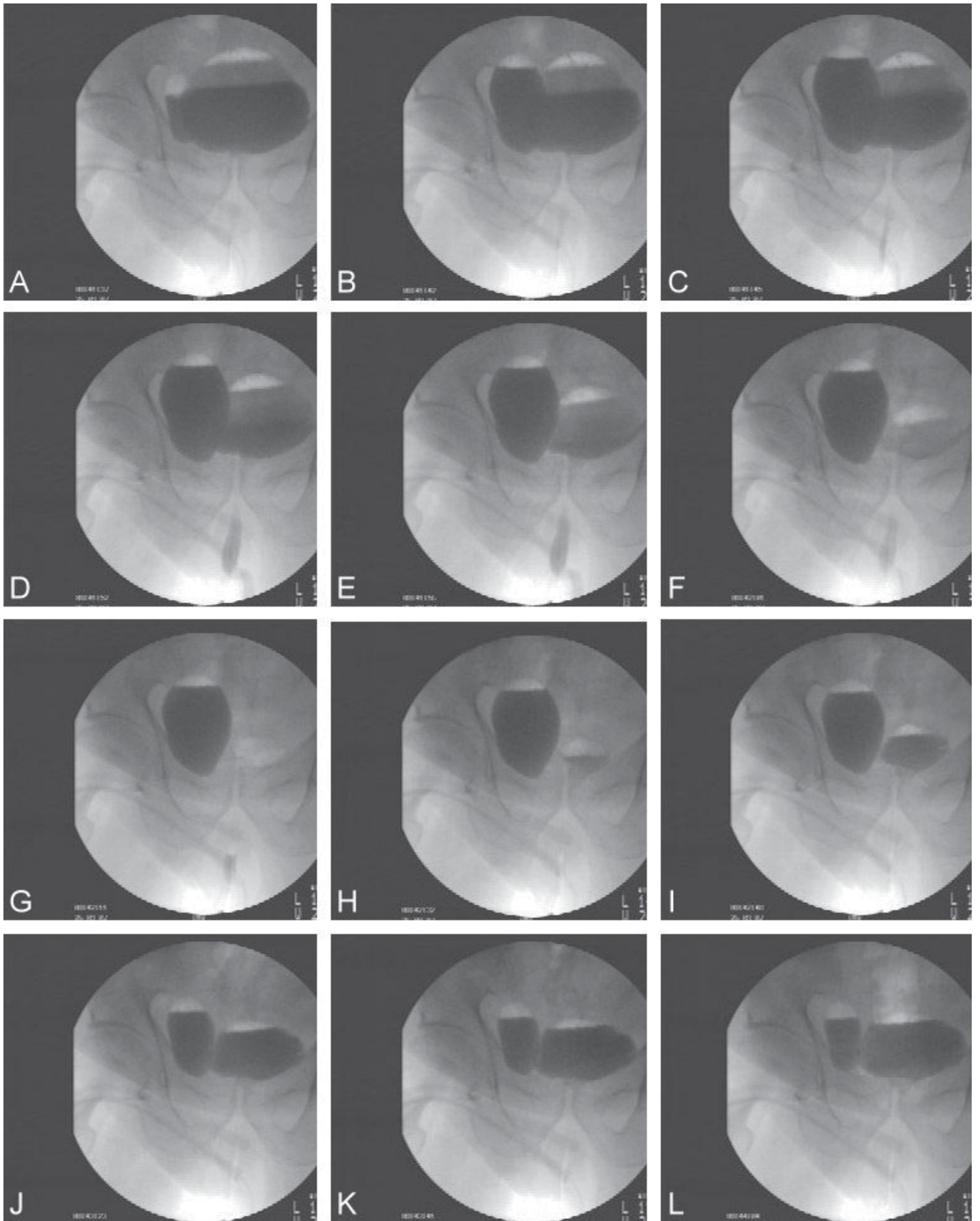


Fig. The pressure flow tracing and the corresponding voiding cystourethrogram at a single voiding time point.