“Jet sign” in posterior urethral stricture - A radiological icon

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A 28-year-old adult male presented with complaints of slow gradual diminution of the urinary stream. He was found to be having normal urine parameters and an obstructive uroflow. There was no clinical and microbiological evidence of an active urinary tract infection. A retrograde urethrogram was done in the radiological suite under realtime fluoroscopy showed an acute narrowing of the membranous urethra and distal bulbar dilatation with a fountain jet spraying of the contrast directed towards the bladder lumen (Figure 1). On cystocopic evaluation a membranous urethral stricture with a small central annular pinpoint orifice (lumen) was found, that was negotiated by a Zebra™ 0.028 guide wire and a direct optical internal urethrotomy was performed successfully. Post operatively at three months he continues to void with a satisfactory uroflow rate.

We propose a “urethral jet sign” for diagnosis of annular urethral strictures. The “jet sign” has been described in several other conditions in the human body such as retrograde tricuspid regurgitant jets on echocardiography in coronary sinus dilatation, aortic jet signs in intimal tears and thoracic aortic dissections on gated magnetic resonance images, and absent ureteral jets on an antenatal color doppler ultrasound in women indicating ureteral obstruction. The scientific basis for a “jet sign” may be that due to the entry of a high pressure flow of contrast suddenly across a pin point area of narrowing with sudden turbulence occurring with increased flow in to a low pressure capacious reservoir (Bernoulli’s principle) such as the bladder in this case. The “jet sign” may be useful in diagnosing a posterior urethral stricture, bladder neck stenosis or cicatrized post prostatectomy bladder neck contracture.

REFERENCES


Figure 1: A retrograde urethrogram with a jet fountain spray of contrast suggestive of an annular urethral stricture.