Ultrasound Diagnosis of Urethral Calculi

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A 35-year-old man presented to the emergency department (ED) for acute urinary retention and penile pain for 4 hours. The patient denied any significant medical history or history of trauma. Physical exam revealed testicles that were nontender, without masses. However, a tender mass was felt at the distal end of the penis, adjacent to the urethral meatus. Placement of a Foley catheter resulted in a return of 700 cc of clear yellow urine and immediate resolution of the patient's suprapubic and penile pain.

During the ED course, the Foley catheter was removed with a subsequent trial of voiding. Initially, the patient was able to void 15 cc of urine until the normal stream was abruptly cut off. The patient then complained of extreme penile pain, near the urethral meatus. A small, circular and firm mass was again palpated in the distal penile shaft. Bedside emergency ultrasound (EUS), performed with a 10 MHz linear array probe placed along long axis of penis, revealed a hyperechoic, dense and round structure with characteristic acoustic shadowing at the distal end of the urethra, with obstruction of the urinary flow (Video). The object, a 9 mm stone, was removed with forceps. Following stone removal, the patient experienced immediate pain relief and was able to spontaneously void.

While urethral imaging has traditionally been performed with retrograde urethrography (RUG), more recently ultrasound has been used to minimize the pain associated with RUG and to provide clinicians more detailed information about urethral pathology.[2] As demonstrated in this case, EUS allowed a prompt diagnosis of the patient's condition with appropriate rapid treatment and removal of the urethral stone.

Video. Ultrasound of dorsal surface of penis with 10 MHz linear transducer demonstrating urethral calculus at urethral meatus (audio narration included).

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