

# Images in medicine

## The cobra head sign

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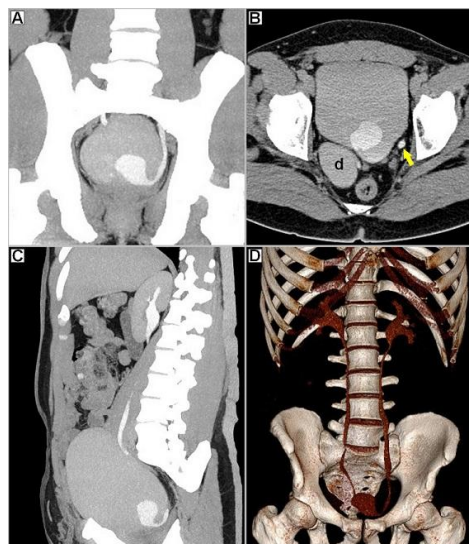
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## Image in medicine

A 39-year-old man presented with complaints of long standing lower abdominal pain and episodic left renal colic, associated with urgency, frequency and dysuria. His physical exam, urinalysis and blood tests were unremarkable. Images from the contrast enhanced computed tomographic (CECT) scan of abdomen demonstrated the "cobra-head sign"(A,B), consistent with diagnosis of intravesical ureterocele. Endoscopic incision of the ureterocele was successfully performed and complete resolution of symptoms achieved. Ureteroceles result from incomplete dissolution of the primitive membrane separating the ureteric bud from the developing urogenital sinus. Intravesical ureterocele is defined as a cystic out-pouching of the distal ureter within the bladder, arising from a ureter with a normal insertion into the trigone-"orthotopic ureterocele". This type of ureterocele is usually diagnosed in adults; hence, it is also called adult-type ureterocele. Most intravesical ureteroceles are incidental findings in asymptomatic adult patients, but may cause infections or calculi. Larger ones may cause bladder neck obstruction, along with obstruction of the ipsilateral ureter, which seems to have happened in our patient (B, C). However, he had neither hydronephrosis nor delay in the function of the left kidney (D). On contrast studies, they appear as a bulbous dilatation within the bladder, surrounded by a radiolucent halo-the 'cobra-head sign'. The lucent rim represents the combined thickness of the ureteral wall and prolapsed bladder mucosa, outlined by contrast material within bladder lumen. Also known as the "spring onion sign", this cobra-head deformity is seen in only 50% of cases. It is important to distinguish ureterocele (with thin and well defined lucent rim) from a pseudo-ureterocele (with thick, irregular, or less well-defined lucent rim), as the latter can be caused by distal ureteric obstruction from a tumor or impacted calculus.



**Figure 1:** A): CECT scan of abdomen-coronal section showing cystic out-pouching of the distal left ureter. This appearance mimics the cobra's head protruding into the urinary bladder (UB) lumen, with the upstream ureter serving as the snake's body, consistent with diagnosis of intravesical ureterocele; B): CECT scan of abdomen-axial section showing an ureterocele surrounded by a thin and well defined radiolucent halo seen within the contrast-filled UB. In addition, there is moderate left hydronephrosis (yellow arrow) and large bladder diverticulum (d) seen on the right side of the bladder; C): CECT scan of abdomen-parasagittal section showing intravesical ureterocele within a distended urinary bladder, D): CECT scan of abdomen-volume rendering format showing neither hydronephrosis nor delay in the function of the left kidney