

STONE DISEASE

Ureteral avulsion during contemporary ureteroscopic stone management: “the scabbard avulsion”

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Ureteral avulsion during ureteroscopic stone management is extremely rare. To date, many publications reporting avulsion have been associated with “blind basket extraction” under fluoroscopy and the use of the Dormia stone basket. Fortunately, despite the significant rise in the numbers of ureteroscopic cases being performed, the rate of ureteral avulsion remains low. This is likely in part because of improvements in ureteroscopy technology and stone manipulation devices. We present three recent cases of ureteral avulsion referred to our center for further management. To our knowledge, these cases represent the first published description of avulsion where the ureteroscope became wedged in the intramural ureter, resulting in full-length avulsion of the ureter. The avulsion occurs both proximally and distally with a resultant length of ureter left attached to the ureteroscopy. We dub this mechanism the “scabbard” avulsion. We describe the most likely mechanism of this injury, with suggestions on how to prevent it and how to release the ureteroscopy should it become wedged in the intramural ureter.

Editorial Comment

The authors have identified a new mechanism of injury to the ureter during semi-rigid ureteroscopy. The authors propose that excessive upward force on the semi-rigid ureteroscopy lead to impaction of the scope in the intramural ureter. Withdrawal of the scope then led to avulsion of the intramural ureter at the bladder, followed by avulsion of the UPJ with further extraction of the scope, leaving the ureteral segment as a “scabbard on a sword”. The authors discuss the potential that this complication could occur with the use of larger ureteral access sheaths. They comment that the hydrophilic coating may prevent such an injury. However, it is feasible that if the ureteral access sheath is “tight” on the way up, by the end of a lengthy procedure at which point the hydrophilic coating may no longer be “wet”; significant resistance may be encountered on withdrawal of the sheath. The authors propose that the use of a safety wire may help prevent “impaction” of the scope in the ureter. They propose liberal use of a flexible ureteroscopy above the iliac vessels, and lubrication of the proximal shaft of the semi-rigid ureteroscopy if plans are to advance it beyond the iliac vessels. The authors also emphasize that excessive upward force with the semi-rigid ureteroscopy should be avoided. Lastly, they propose that if an impacted ureteroscopy is encountered, one attempt placement of a second endoscope alongside it to utilize a holmium laser to incise the ureteral orifice.

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