A rare complication of ureteroscopy: Ureteral avulsion

Ureteral avulsion during ureteroscopy is extremely rare, and it has been associated with blind basket extraction.\(^4\) Fortunately, despite the increasing number of ureteroscopies being performed, the incidence of ureteral avulsion remains low.\(^1\) The principle of management of ureteral avulsion caused by ureteroscopy is the same as that of ureteral injury due to trauma or external violence. The incidence of ureteral avulsion due to ureteroscopy was reported to be approximately <1%, and occurred in the upper third of the ureter more frequently because, in that segment, there is less muscular tissue support.\(^2,3\) In cases of ureteral avulsion during ureteroscopy, many urologists have attempted to repair the injury immediately. However, other urologists have recommended a delayed repair of the ureter after percutaneous nephrostomy for urinary diversion.\(^4,5\)

The treatment of choice depends on the location of the ureteral injury and the length of the viable ureter. If the devascularized part of the ureter is short, then an ureteroureterostomy is considered. The guidelines of repair suggest spatulation, lack of tension, ureteral stenting, adequate postoperative drainage, and watertight anastomosis with fine nonreactive absorbable suture.\(^4\) If the viable ureter is too short, a segment of ileum can be chosen to repair ureteral injury, or perform renal autotransplantation and transureteroureterostomy.\(^5,6\) If the ureteral injury is located on the lower third, a ureteral reimplantation can be performed using a psoas hitch or Boari flap.\(^6\) When an immediate repair is difficult, delayed repair or even nephrectomy can be considered.\(^7\) Although the ureter can be approached at any level by surgery, the key points for the treatment of ureteral avulsion are confirmation of the location and the extent of ureteral injury, which, in turn, will influence the choice of skin incision (midline or high or low flank) and procedure of ureteral repair. If intraoperative ureteral avulsion is noted, it is important to stop moving the ureteroscope. Therefore, it would be easier to confirm the position and length of ureteral avulsion for immediate repair. During dissection of the ureter, it is important to avoid devascularizing the ureter. The orientation of blood vessels between the muscularis and adventitial sheath of the ureter is longitudinal. Therefore, to prevent ischemia of the ureter, dissecting the subadventitial plane should be avoided. If the ureter becomes ischemic, there is a high risk of ureteral stricture and fibrosis. Additionally, the successful repair of ureteral injuries is based on the use of well-vascularized tissue; therefore, the step of confirming ureteral viability after the removal of the nonviable segment is important for successful ureteroureterostomy.\(^5\)

In this issue, Tai et al reported on two cases of ureteral avulsion (page 161). Immediate surgical intervention was performed to maintain the ureteral continuity. After 1 year follow up, no loss of renal function or other complications were observed and the surgical outcome proved satisfactory. However, long-term follow up of renal function is recommended. In case of ureteral avulsion, it may be practical for an experienced surgeon to perform an immediate surgical intervention to maintain ureteral continuity instead of delaying repair if the location of ureteral avulsion and the length of the viable ureter can be confirmed. However, some principles should be kept in mind when performing ureteroscopy, such as limiting ureteroscopy duration, the use of safety guidewire, and careful use of a basket.\(^4\)

Conflicts of interest

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References


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