



Case Report

Successful treatment of ureteral stricture after total hysterectomy: An antegrade ureteroscopic approach facilitates the insertion of a guidewire for endoscopic dilation

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Abbreviation & Acronym

Ho:YAG = holmium yttrium aluminum garnet

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Introduction: Iatrogenic ureteral injury is sometimes seen in daily clinical practice, and gynecological surgery carries the highest risk of ureteral injury among iatrogenic surgical ureteral injury.

Case presentation: A 61-year-old woman was referred to our department for right ureteral stricture and hydronephrosis after total hysterectomy. We initially attempted ureteral stenting, but hydronephrosis redeveloped 1 month after ureteral stent removal. We performed ureteroscopy via an antegrade approach and successfully incised and dilated the ureter.

Conclusion: We encountered a case of severe ureteral stenosis after total hysterectomy that was successfully treated endoscopically using ureteroscopy via an antegrade approach.

Key words: balloon dilation, hydronephrosis, metallic ureteral stent, ureteral injury, ureteral stricture.

Keynote message

An antegrade ureteroscopic approach might be useful for performing balloon dilation for relieving ureteral stricture in patients in whom a retrograde approach fails.

Introduction

Iatrogenic ureteral injury is sometimes seen in daily clinical practice and gynecological surgery showed the top risk of ureteral injury.¹ We encountered a difficult case of ureteral stenosis after iatrogenic ureteral injury that was successfully treated by antegrade ureteroscopic incision in combination with balloon ureteral dilation.

Case presentation

A 61-year-old woman was referred to our department for right ureteral stricture and hydronephrosis after total hysterectomy (Fig. 1). She received ureteral stent insertion for the purpose of post total hysterectomy ureteral stenosis. Five months after surgery, the ureteral stent was removed, but 1 month after removal, ultrasonography revealed hydronephrosis due to ureteral stricture. We attempted ureteral stent insertion again, but this failed because of the severe stricture of her ureter (Fig. 2a). Ureteroscopy was tried in order to perform ureteral stenosis incision. However, this approach failed to reach the ureteral stenosis lesion because of the crooked shape of her ureter. Three months after surgery, we attempted ureteroscopy again but again failed to reach the stenosis site. We, therefore, created a nephrostomy, inserted an 11-/13-Fr ureteral access sheath, and performed ureteroscopy via an antegrade approach (Figs 2b and 3a). Through this procedure we were able to reach the stenosis site,

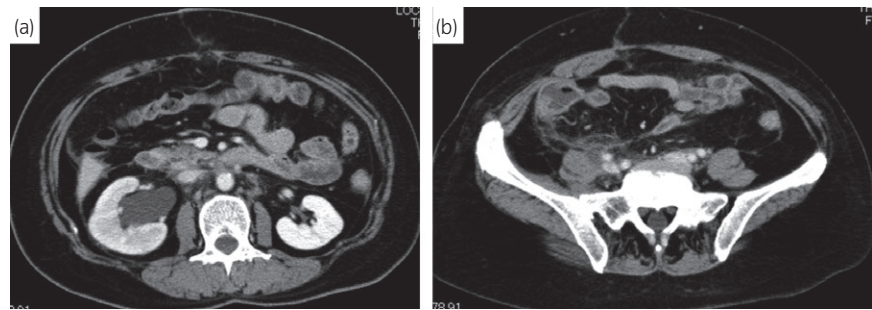


Fig. 1 (a) Postoperative right hydronephrosis and (b) ureteral stenosis was observed.

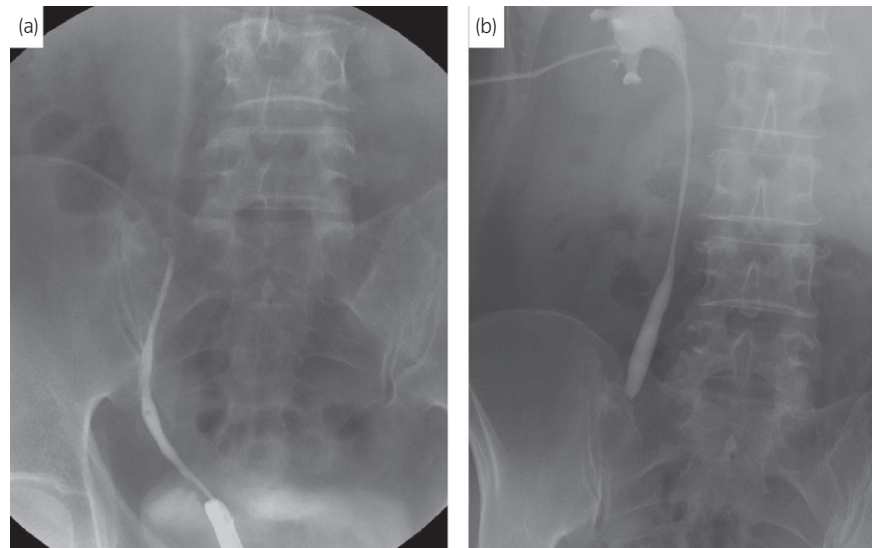


Fig. 2 Ureterostenosis was observed by (a) retrograde pyelography and (b) antegrade pyelography.

where we inserted a guidewire to manage the stenotic lesion. When we searched for this site through a retrograde approach, the guidewire was identified and removed via the external ureteral orifice. We then incised the stenosis site using a Ho:YAG laser to access the lower ureter. After performing ureteroscopy via the ureteral stenosis site, we dilated the ureter using a high-pressure balloon dilator (X-force; BARD, Covington, GA, USA) and successfully performed ureteral stenting (Fig. 3b–f). Due to the high risk of ureteral restenosis, a metal stent was inserted 3 months after ureteral dilation.

Discussion

Due to recent advances in laparoscopic surgery, laparoscopic total hysterectomy is now a standard treatment for uterine cancer. While the low invasiveness of this procedure is a benefit, iatrogenic ureteral injury occurs as a complication about 35 times more often than with open total hysterectomy.^{2,3} To avoid ureteral injury, preoperative ureteral stenting is sometimes performed. Shirk *et al.* revealed the usefulness of preoperative stenting for severe adhesion cases.⁴ However, Wood *et al.* suggested that preoperative ureteral stenting is not needed for all patients undergoing laparoscopic hysterectomy.⁵ Recent studies have described the usefulness

of preoperative ureteral stenting to avoid iatrogenic ureteral injury for selective cases.^{6,7}

Ureteral stenting is easily tried as an initial temporally approach. When temporary stenting does not resolve the stenosis, scheduled stenting may be needed to avoid ureteral stent encrustation.⁸ Treatment strategies include balloon ureteral dilation, uretero–uretero anastomosis, and ureteroscopic resection of ureteral stenosis, but no long-term follow-up outcomes have yet been reported. Due to the low surgical invasiveness, ureteral catheterization and balloon dilation are usually selected as the first-line strategy.⁹ However, despite these benefits, we occasionally encounter restenosis or difficulty with ureteral stenting due to complete ureteral obstruction.^{10–12}

In this case, an antegrade ureteral approach was useful for resolving such severe ureteral stenosis. We hypothesize that the ureter tends to be bent in patients with hydronephrosis; thus, an antegrade approach might contribute to the success of ureteral stenting in patients with severe hydronephrosis. Based on this case, an antegrade approach might be considered when a retrograde ureteroscopic approach is planned and the initial approach of ureteral stenting under radiographic guidance fails.

Conflict of interest

The authors declare no conflict of interest.

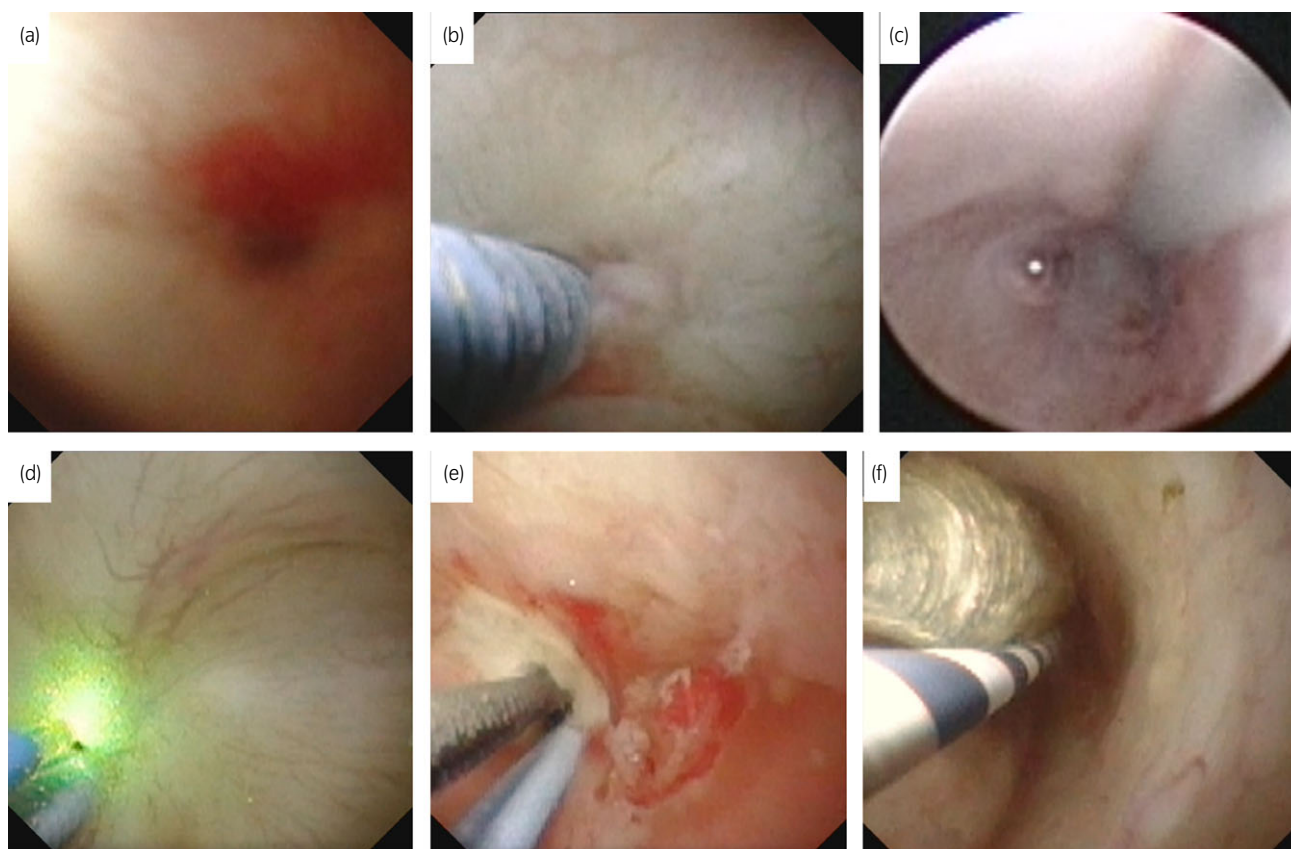


Fig. 3 (a) Ureteroscopy via an antegrade approach showed severe stenosis. (b) Guidewire was inserted via an antegrade approach. (c) Guidewire insertion was confirmed by a retrograde ureteroscopic approach. (d) Ureteral stenosis incision using a Ho:YAG laser and (e) inserted safety guidewire beside the initial guidewire. (f) Dilating the ureter using high-pressure balloon dilator.

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