CASE REPORT
Endourology

Doi: 10.4274/jus.galenos.2022.2021.0124
J Urol Surg, 2022;9(3):209-211

Migration of LAPRA-TY Clips in Ureter and Collecting System Mimicking Urinary Stones Following Laparoscopic Partial Nephrectomy

Ill Young Seo[1], Tae Hoon Oh[2]

[1]Department of Urology, Institute of Wonkwang Medical Science, Wonkwang University School of Medicine and Hospital, Iksan, Korea
[2]Department of Urology, Wonkwang University School of Medicine and Hospital, Iksan, Korea

Abstract

We present a rare case of the clip migration after laparoscopic partial nephrectomy in which the clips were misdiagnosed as urinary stones. A 57-years-old female presented with right flank pain 3 months after the surgery. A computed tomography scan showed a 4 mm stone in the left upper ureter and hydronephrosis. Another 3 mm stone was also detected in the left upper calyx. Rigid ureteroscopy and flexible ureterorenoscopy revealed two LAPRA-TY clips, which were embedded in the upper ureter and calyx. The clips were fragmented by holmium laser lithotripsy and removed with stone basket. Pain and hydronephrosis are resolved at follow-up.

Keywords: Nephrectomy, clip, urinary stone

Introduction

Laparoscopic and robotic partial nephrectomy (PN), which are minimally invasive surgeries, have become popular and established as standard treatments for localized renal cancer. These surgeries are still technically challenging. Especially, renorrhaphy is a stressful part to shorten warm ischemic time. LAPRA-TY clip (Ethicon Endosurgery, Cincinnati, OH, USA) is used to reduce the ischemic time and make the surgery easier because it secures the sutures quickly, unlike the conventional knot tying during renorrhaphy. However, the clips may be moved into the renal parenchyma and misdiagnosed as urinary stones.

Case Report

A 57-years-old female presented with a sudden right flank pain in emergency room. She had undergone laparoscopic PN 3 months earlier. The operation was performed for a 1.5 cm sized, totally endophytic tumor at mid pole. The tumor had been excised with anterior segmental arterial clamping. A small defect in the collecting system was repaired using a 3-0 vicryl. Tightness had been achieved by Lapra-ty clipping. The absorbable fibrin sealant product had been applied to the parenchymal bed. Continuous running sutures with 2-0 vicryl have been used for parenchymal and capsular closures. Operation and warm ischemic time was 80 min and 21 min. The bleeding amount had been about 100 cc, and the postoperative course had been uneventful. Pathologic result had been a 1.2x1 cm sized renomedullary interstitial cell tumor. Her flank pain was radiating to the right groin. Urinalysis showed microscopic hematuria and pyuria. Abdominopelvic computed tomography (CT) scan showed a 4 mm stone in the left upper ureter (hounsfield unit: 159) and grade 2 hydronephrosis (Figure 1). Another 3 mm stone was also detected in the left upper calyx. The two stones were radiolucent on plain X-ray. Rigid ureteroscopy revealed LAPRA-TY clip, which were embedded in the upper ureter and misdiagnosed as urinary stones (Figure 2). The clip was fragmented using Holmium laser lithotripsy and removed with a stone basket. Additional flexible ureterorenoscopy revealed another LAPRA-TY clip in the upper calyx. It was also taken out using a stone basket. The removed clips were broken but not calcified. The operation time was 15 min. The pain and hydronephrosis were resolved at follow-up.

Correspondence: Ill Young Seo MD, Department of Urology, Institute of Wonkwang Medical Science, Wonkwang University School of Medicine and Hospital, Iksan, Korea
Phone: +82-63-859-1333 **E-mail:** seraph@wku.ac.kr **ORCID-ID:** orcid.org/0000-0003-2061-8214
Received: 09.11.2021 **Accepted:** 03.02.2022

Cite this article as: Seo IY, Oh TH. Migration of LAPRA-TY Clips in Ureter and Collecting System Mimicking Urinary Stones Following Laparoscopic Partial Nephrectomy. J Urol Surg, 2022;9(3):209-211.

J Urol Surg,
2022;9(3):209-211

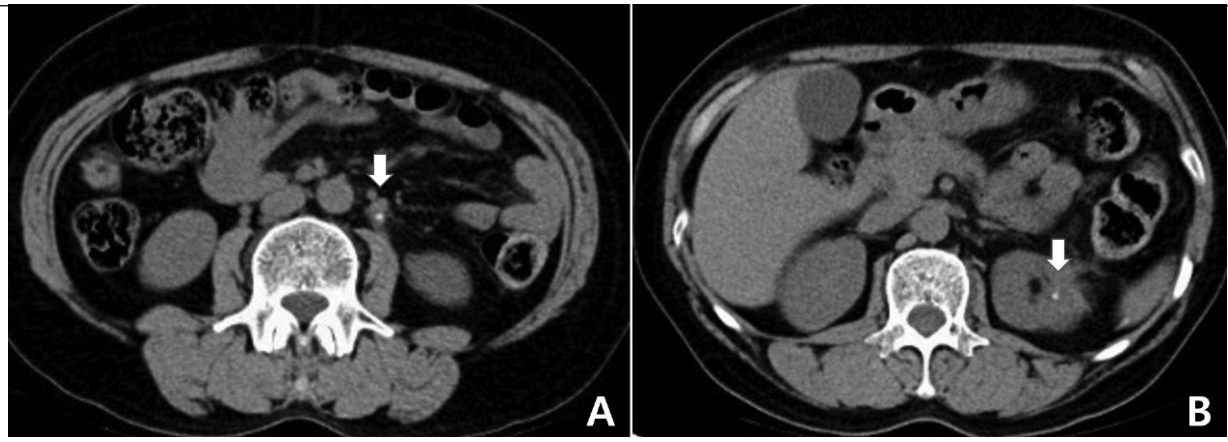

Figure 1. Abdominopelvic computed tomography scan showed a 4 mm stone (arrow) in left upper ureter (Hounsfield Unit: 159) (A). Another 3 mm stone (arrow) was also detected in left upper calyx (B)

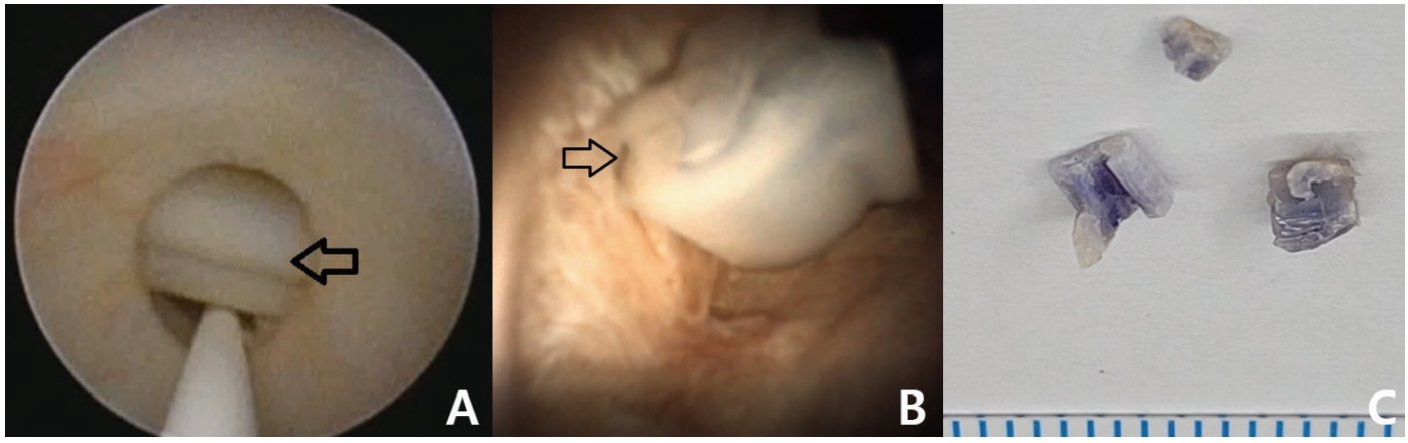

Figure 2. Ureteroscopy showed a white foreign body, LAPRA-TY clip, in the upper ureter (A). Flexible ureterorenoscopy found another clip in upper calyx (B). Removed clips were broken, and the size was seen in millimeter scale (C)

Discussion

Surgical clips may migrate to abnormal positions in urologic surgeries. Metal clips have been found in the bladder and urethra after radical prostatectomy in several cases (1). The clips might induce voiding difficulty and urinary infection (2). Furthermore, the clips may act as niduses for stone formation when they are in contact with urine (3). The migration of surgical clips into the collecting system is rare, but has been consistently reported after laparoscopic and robotic PN. Rare cases of ureteral migration of Hem-O-Lok clips (Teleflex, Research Triangle Park, NC, USA) after PN have been reported (4,5). The clips were misdiagnosed as urinary stones and removed with endoscopic surgery. A similar case with absorbable LAPRA-TY suture clips has been reported after PN. It was found in the collecting system and misdiagnosed as urinary stone (6).

Migrated surgical clips showed similar findings of urinary stones on imaging study. Hem-O-Lok clips are radiopaque on CT images with 223 to 570 HU (5,7). The clip can be suspected as it shows a curved design in the early stage after surgery, but as the calcification worsens, the shape of the clip disappears. In this study, it was initially diagnosed as a urinary stone because the patient complained of colicky flank pain and hyperdense lesions in the ureter and calyx on CT images. However, CT showed HU of 152, which was lower than that of stone and appeared radiolucent on plain X-ray. These migrated clips can be found in days or years after surgery (6,8). If there are no symptoms, it can be discovered incidentally on imaging studies and diagnosed as urinary stones. After symptoms develop, they can be passed spontaneously after conservative treatment, but they can also be removed through endoscopic surgery.

There are some hypotheses as to why the surgical clips migrated to the collecting system after PN. If the operative view during renorrphay is not secured due to severe bleeding, the clipping to knot will be inaccurate, and as a result, the clip will be deep into the collecting system. And excessive tension on the suture will also cause the clip to move (5). Therefore, if LAPRA-TY clipping is incorrectly performed in the renal bed, careful observation

and treatment are required. In this study, even after clamping the renal segmental artery, there was bleeding, so accurate operative view was unclear. And, clipping was performed while pulling excessively after the sutures.

Conclusion

Intrarenal movement of LAPRA-TY clip after PN is very rare, but it is possible. As in our case, the migrated clips into the collecting system can obstruct the ureter and induce similar symptoms and CT findings of urinary stone. During PN, clear operative view should be ensured, and excessive tension to the suture knot should be avoided to prevent migration of the clip.

Ethics

Informed Consent: Written informed consent was omittable and the omission was also approved.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: I.Y.S., T.H.O., Concept: I.Y.S., Design: I.Y.S., Data Collection or Processing: T.H.O., Analysis or Interpretation: I.Y.S., Literature Search: T.H.O., Writing: I.Y.S.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: This paper was supported by Wonkwang University in 2021.

References

1. Kadekawa K, Hossain RZ, Nishijima S, Miyazato M, Hokama S, Oshiro Y, Sugaya K. Migration of a metal clip into the urinary bladder. Urol Res 2009;37:117-119.
2. Long B, Bou S, Bruyere F, Lanson Y. Sténose uréthro-cervicale post prostatectomie radicale secondaire à la migration d'un clip métallique [Vesicourethral anastomotic stricture after radical prostatectomy secondary to migration of a metal clip]. Prog Urol 2006;16:384-385.
3. Gronau E, Pannek J. Reflux of a staple after kock pouch urinary diversion: a nidus for renal stone formation. J Endourol 2004;18:481-482.
4. Park KS, Sim YJ, Jung H. Migration of a Hem-o-Lok Clip to the Ureter Following Laparoscopic Partial Nephrectomy Presenting With Lower Urinary Tract Symptoms. Int Neurourol J 2013;17:90-92.
5. Ganpule A, Patil A, Singh A, Sabnis R, Desai M. Migration of Hem-O-Lok in Pelvicaliceal System Mimicking Renal Calculus Following Robotic Nephron-Sparing Surgery: A Case Report with Review of Literature. J Endourol Case Rep 2020;6:22-25.
6. Miller M, Anderson JK, Pearle MS, Cadeddu JA. Resorbable clip migration in the collecting system after laparoscopic partial nephrectomy. Urology 2006;67:845.e7-8.
7. Matsushita K, Matsubara S, Tsumura K, Taguchi I, Kawabata G. Computed tomography appearance of Hem-o-lok clips in patients who have undergone laparoscopic nephrectomy or nephroureterectomy. JSLS 2011;15:517-519.
8. Massoud W. Spontaneous migration of a surgical clip following partial nephrectomy. Urol J 2011;8:153-154.