CASE REPORT

Migrated Hem-o-Lok clips in the ureter: a rare cause of recurrent urinary tract infection

Prashant Shrivastava, Brusabhanu Nayak, Prabhjot Singh

Department of Urology,
All India Institute of Medical
Sciences (AIIMS), New Delhi,
India

Correspondence to

Dr Brusabhanu Nayak,
Assistant Professor, Urology;
brusabhanu@gmail.com

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SUMMARY

Erosion of surgical materials into the adjacent organs following surgical procedures is a rare complication. Migrations of these surgical materials into the urinary tract like pelvicalyceal system, ureter and bladder have been reported following various urological procedures. We present a case of migrated Hem-o-Lok clips into the ureter following a laparoscopic partial nephrectomy for angiomyolipoma of the left kidney presented with recurrent urinary tract infection. The case was managed with ureteroscopic removal of clips. The patient is asymptomatic on last follow-up.

BACKGROUND

Migration of foreign bodies into the urinary tract after surgical procedures is a well-known phenomenon. Migration or erosion of suture materials, mesh, cotton swab, Hem-o-Lok clips, metallic clips, coils used for embolisation, etc into the urinary tract have been reported in the literature. These foreign bodies form a nidus for stone formation within the urinary tract and can present with flank pain, dysuria, haematuria, etc.

Today even the most difficult of reconstructive procedures are performed laparoscopically. Intracorporeal suturing is the main challenge faced by a minimally invasive surgeon particularly when the procedure is time bound, for example, partial nephrectomy. A number of devices and tools are available to ease suturing and complete the procedure within the stipulated time. One such device is the Hem-o-Lok clip (Teleflex Medical, Research Triangle Park, North Carolina, USA). These clips are primarily used either for vascular pedicle control or for suture stabilisation during reconstructive procedures such as radical prostatectomy or partial nephrectomy.

Migration of these Hem-o-Lok clips into the urinary tract following robotic, laparoscopic radical prostatectomy, pyelolithotomy, pyeloplasty and open, laparoscopic partial nephrectomy has been reported in the literature.^{1–5} We report a case of recurrent urinary tract infection due to migration of Hem-o-Lok clips into the ureter following laparoscopic partial nephrectomy for AML of left kidney, which was managed endoscopically.

CASE PRESENTATION

A 69-year-old man, known case of chronic kidney disease due to diabetes mellitus presented with symptoms of frequency (5–6 times), and nocturia (3–4 times), dysuria for a period of 3–4 months. He also had persistent pyuria without haematuria,

lithuria or fever. He had a history of laparoscopic left partial nephrectomy for AML of left kidney and low anterior resection for carcinoma colon in the same session 3 years prior to the present problems. The histopathology report was high-grade signet ring carcinoma of colon and that of left renal mass was AML. Two weeks after the procedure he developed anastomotic leak from the colonic anastomotic site with perirenal haematoma. He underwent exploratory laparotomy with removal of perirenal clots and end colostomy for anastomotic leak. Later he received concurrent chemoradiotherapy. Colorectal continuity was restored after the chemoradiation. However, he developed anastomotic stricture and required colonic stenting. He presented to our department with persistent dysuria, pyuria and documented recurrent urinary tract infection. He was evaluated and found to have a left mid-ureteric calculus on non-contrast CT (NCCT) scan (figure 1).

INVESTIGATIONS

Renal function: Serum creatinine was 3 mg/dL

Global glomerular filtration rate (GFR): 38 mL/min/1.73 m² body surface area, left kidney GFR—12 mL/min

NCCT kidney ureter bladder: Radio density in the left lower ureter and colonic stent in situ

DIFFERENTIAL DIAGNOSIS

1. Left lower ureteric stone
2. Migrated Hem-o-Lok clips in the ureter

Figure 1 Axial image of non-contrast CT scan showing clip in left lower ureter and colonic stent in situ.

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Figure 2 Endoscopic view of migrated Hem-o-Lok clip embedded in left ureteric wall (as seen during ureteroscopy).

TREATMENT

He underwent ureteroscopy. Intraoperatively, one clip was present in the mid-ureter partially embedded in mucosa and another was adjacent to it forming a pouch in mucosa medially with 2–3 tiny stones (figure 2). Both clips and stones were removed with ureteric forceps, and a double J stent was placed. He recovered uneventfully and was asymptomatic. 6 months after the procedure the patient again presented with similar symptoms and was evaluated and found to have two more Hem-o-Lok clips in the ureter, which were removed using ureteroscopy. The patient is asymptomatic at present.

OUTCOME AND FOLLOW-UP

At 3 months of follow-up, the patient is asymptomatic without any urinary tract infection.

DISCUSSION

Partial nephrectomy is the standard of care for small renal tumours. With the improvement in surgical techniques, innovation of new equipment, devices and surgeon's experience, partial nephrectomies are now being performed more commonly with minimally invasive approach. Both conventional and Robot-assisted laparoscopic partial nephrectomies are being more frequently performed. To reduce the hilar clamping time renorraphy is being performed using sliding clip renorraphy technique using Hem-o-Lok clips at both ends of the suture used for parenchymal closure. Even in open partial nephrectomies many urologists are using the same technique.

Clip migration has emerged as a recent and rare complication. Clip migration was most commonly reported after laparoscopic radical prostatectomy, but with advent of V-loc suture and a deliberate attempt to avoid using clip near the anastomosis has reduced its chances at most centres.³ The second most commonly reported procedure with the possibility of clip migration is partial nephrectomy. The multiple clips used during sliding renorraphy have the propensity to erode into the pelvicalyceal system particularly if there is disruption of anastomotic line and the pelvicalyceal system is opened during the procedure. These clips may obstruct pelvi-ureteric junction or the ureter causing colicky pain or pass spontaneously.^{2–5} The timing of

presentation as per different reports vary from as early as few weeks to decades after the surgical procedure.^{5–6}

The current patient presented with two Hem-o-Lok clips obstructing the midureter, 2½ years after partial nephrectomy. The proposed mechanism is tension when the clip is placed near a newly made suture line. One possible explanation could be delayed healing because of chronic kidney disease and diabetes in our patient. The need of exploratory laparotomy and perirenal clot evacuation in the immediate postoperative period further explains the non-approximation of parenchymal defect by renorraphy allowing migration of multiple clips, which in itself is a rare phenomenon. Postmigration, these non-absorbable clips are exposed to urine and act as a nidus for stone formation. Smaller clips such as LapraTy or titanium clips may pass spontaneously, but larger Hem-o-Lok clips often cause obstruction to the ureter and get calcified, requiring laser lithotripsy before removal. Thus, any non-absorbable material used in close proximity to suture lines has the potential to cause postoperative complications, the chances and magnitude of which can be increased by the conditions responsible for poor wound healing.

Learning points

- ▶ Migration of non-absorbable clips, used to assist suturing in partial nephrectomy, into the urinary tract is a potential complication that can occur years after primary surgery.
- ▶ Hem-o-Lok clips used during renorraphy should be placed away from the parenchymal approximation line.
- ▶ Any loose clips should be removed.
- ▶ In cases requiring re-exploration in postoperative period or associated conditions with poor wound healing like diabetes, chronic kidney disease. These clips should be used judiciously.
- ▶ In cases where pelvicalyceal system is opened during the procedure, clips should be used judiciously.

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