

Case Report

Late-onset Hem-o-Lok® migration into the bladder after robot-assisted radical prostatectomy

Takehiro Ohyama,  Masaki Shimbo,  Fumiyasu Endo and Kazunori Hattori

Department of Urology, St. Luke's International Hospital, Tokyo, Japan

Abbreviations & Acronyms

HOLCs = Hem-o-Lok® clips
N/A = not available
RARP = robot-assisted radical prostatectomy

Correspondence: Takehiro Ohyama M.D., Department of Urology, St. Luke's International Hospital, 9-1 Akashi-cho, Chuo-ku, Tokyo, 104-8560, Japan. Email: ohytake@luke.ac.jp

How to cite this article:

Ohyama T, Shimbo M, Endo F, Hattori K. Late-onset Hem-o-Lok® migration into the bladder after robot-assisted radical prostatectomy. *IJU Case Rep.* 2022; 5: 49–52.

This is an open access article under the terms of the Creative Commons Attribution-NonCommercial License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited and is not used for commercial purposes.

Received 1 June 2021; accepted 24 September 2021.

Online publication 11 November 2021

Abstract:

Introduction: Hem-o-Lok® clips are widely used in robot-assisted radical prostatectomy because of their ease of application and secure clamping. Although there have been some reports of their migration into the urinary tract, this usually occurs a few months after robot-assisted radical prostatectomy. Late-onset cases of Hem-o-Lok® clip migration, that is, after more than 1 year, are rare.

Case presentations: We report three cases of delayed endourethral Hem-o-Lok® clip migration more than 2 years after robot-assisted radical prostatectomy. The Hem-o-Lok® clips were almost completely endoluminal, and were attached at one end to the vesicourethral anastomosis. We successfully removed them via transurethral surgery using a holmium laser.

Conclusion: This case series describes late-onset Hem-o-Lok® clip migration into the bladder more than 1 year after robot-assisted radical prostatectomy. Transurethral holmium laser surgery was very effective for Hem-o-Lok® clip removal. To avoid involvement of Hem-o-Lok® clips in the vesicourethral anastomosis, appropriate resection at the time of bladder neck transection is important.

Key words: Hem-o-Lok®, holmium laser, robot-assisted radical prostatectomy.

Key message

We report three cases of intravesical HOLC migration more than 1 year after RARP. Transurethral holmium laser surgery was very effective for HOLC removal.

Introduction

In recent years, RARP has become a widely accepted minimally invasive surgical alternative to open radical prostatectomy for localized prostate cancer.¹ HOLCs (Weck Surgical Instruments, Teleflex Medical, Durham, NC, USA) are widely used to control lateral vascular pedicles of the prostate during RARP. However, HOLC migration into the urinary tract has been reported,^{2–14} presenting with spontaneous expulsion, urethral erosion, the formation of bladder stones, and even bladder neck contracture. In most reports, HOLC migration usually occurs within a few months after RARP; very few cases occur after more than 1 year. We report three cases of late-onset HOLC migration into the bladder, that is, more than 1 year after RARP.

Case presentations

The patient characteristics are summarized in Table. These were the 27th, 47th, and 69th RARP procedures performed at our institution. All three patients were diagnosed and treated based on the NCCN guidelines.¹⁵ The main steps involved in the radical prostatectomy were similar to those described originally by Menon,¹⁶ with some modifications. We do not routinely employ energy devices. The first and second cases featured right-side nerve-sparing, and the third case included bilateral nerve-sparing.

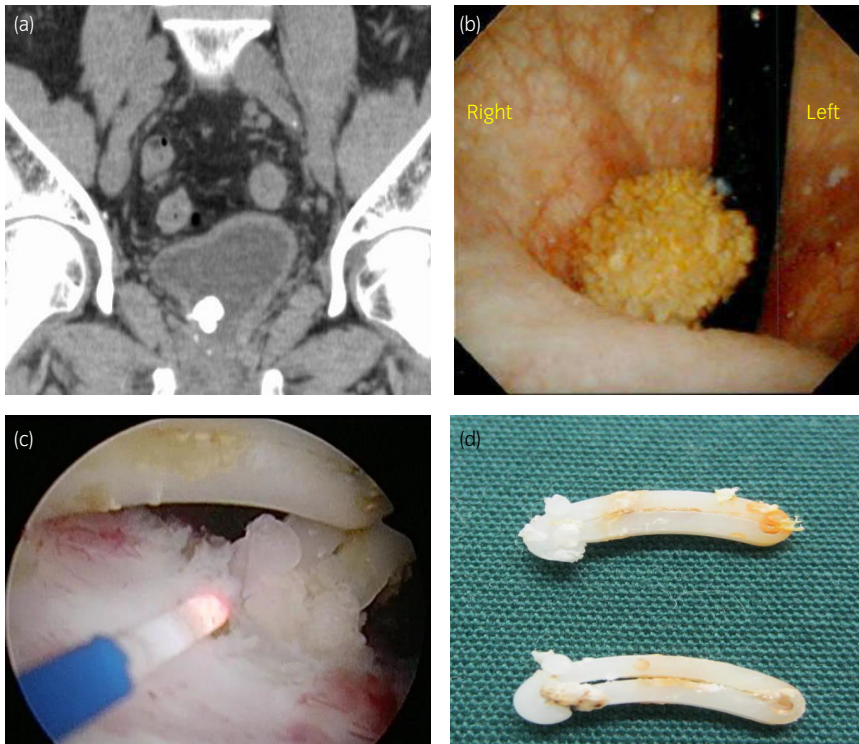


Fig. 1 Case 1 findings. (a) CT in axial section shows a lesion with calcification in the right wall of the bladder. (b) Flexible cystoscopy showing a vesical calculus. (c) Intraoperative endoscopic removal of HOLC using Holmium laser. (d) Removed HOLCs.

The patients presented with complaints of urinary symptoms at 2 years and 8 months, 2 years and 11 months, and 5 years and 3 months after RARP, respectively. We diagnosed HOLC migration using computed tomography (Fig. 1a) and flexible cystoscopy (Fig. 1b). Regular urine tests revealed no pyuria or microhematuria. For removal of the migrated HOLCs, which were coated with stones, we performed transurethral surgery (Fig. 1c,d). First, the stone coating was removed using the holmium laser, with an output setting of $0.5 \text{ J} \times 5 \text{ Hz}$. The tissue adhering to the HOLCs was carefully excised and the HOLCs were then removed using an output setting of $0.8\text{--}1.0 \text{ J}$ at 5 Hz . There were no signs of bladder perforation and no recurrence after surgery.

Discussion

We report three cases of intravesical migration of an HOLC more than 2 years after RARP. Transurethral holmium laser surgery successfully removed the migrated HOLCs.

Several hemostatic surgical clips such as LAPRA-TY® absorbable suture clips (Ethicon, Somerville, NJ, USA), Lapro-clip® absorbable clips (Covidien, Mansfield, MA, USA) and HOLCs have been used during laparoscopic procedures.² Among them, HOLCs are commonly used, and are safe and reliable for vascular control during laparoscopic procedures.³ During RARP, HOLCs have been used to ligate the lymph ducts, seminal vesicle arteries, and prostatic pedicles to prevent excessive electrocautery and possible injury to the neurovascular bundles.⁴

Blumenthal *et al.* reported the first case of HOLC migration into the vesicourethral anastomosis after RARP.⁴ There have been many subsequent reports, but they all describe the onset of symptoms in the early postoperative period.

When delayed HOLC migration was defined as migration occurring more than 1 year after RARP, we found four reports in the literature^{4,11,13,14} (Table 1). Most patients presented with painful urination and hematuria. Stone deposits were observed in almost all cases, and the HOLCs migrated into the bladder more often than into the anastomosis. Migration occurred in our three cases after an even longer interval.

The mechanism underlying surgical clip migration into the bladder remains unclear. In cases where HOLC migration occurred soon after surgery, the site of migration was often the vesicourethral anastomosis.¹⁷

In cases where HOLC migration occurred more than 1 year after RARP, often into the bladder, the reason for migration may have been different. Kadekawa *et al.*¹⁸ suggested that inflammation around the bladder and/or vesicourethral anastomosis could have been the main factor, but this remains to be confirmed.

We always make every effort to avoid direct entrapment of the HOLC in the vesicourethral anastomosis. However, upon review of the surgical videos, we found that, in our early cases, the HOLCs were placed rather distally with respect to the neurovascular bundles (Fig. 2). Also, the posterior bladder walls of earlier patients seemed to be thinner than those of our more recent cases; some HOLCs may have penetrated such thinner walls. We now meticulously measure bladder wall thickness during transection. Also, we use both the anterior and lateral approaches to check the shape of the bladder neck; this ensures reliable posterior bladder dissection.¹⁹ Although more than 1,000 RARPs have been performed in this manner in at our institution, there have been no cases of HOLC migration.

Although sealing devices prevent clip migration to the bladder,²⁰ the energy devices usually employed for nerve-

Table 1 Eight cases of late-onset HOLC migration into the bladder after RARP

Author	Age	Year	Symptoms	Onset (month)	stone	Place	N	Therapy	Course after therapy
1 Blumenthal KB ⁴	N/A	2008	Hematuria, pyuria	12	N/A	Bladder	Multiple	N/A	no recurrence
2 Bientinesi R ¹¹	76	2014	Dysuria•frequent urination•hematuria	12	+	Anastomosis	1	Removal	no recurrence
3 Yu-Chen C ¹³	75	2018	Intermittent gross hematuria	60	+	Bladder neck	1	Transurethral resection	N/A
4 Iemura Y ¹⁴	71	2019	Painful urination	26	N/A	Anastomosis	1	Removal (Holmium laser)	no recurrence
5	71	2019	Obstructive Luts	18	N/A	Anastomosis	1	Follow up examination	N/A
6 Our case	74	2021	Painful urination	30	+	Bladder	2	Removal (Holmium laser)	no recurrence
7	67	2021	Painful urination	33	+	Bladder	1	Removal (Holmium laser)	no recurrence
8	60	2021	Lower abdominal pain	63	+	Bladder	3	Removal (Holmium laser)	no recurrence

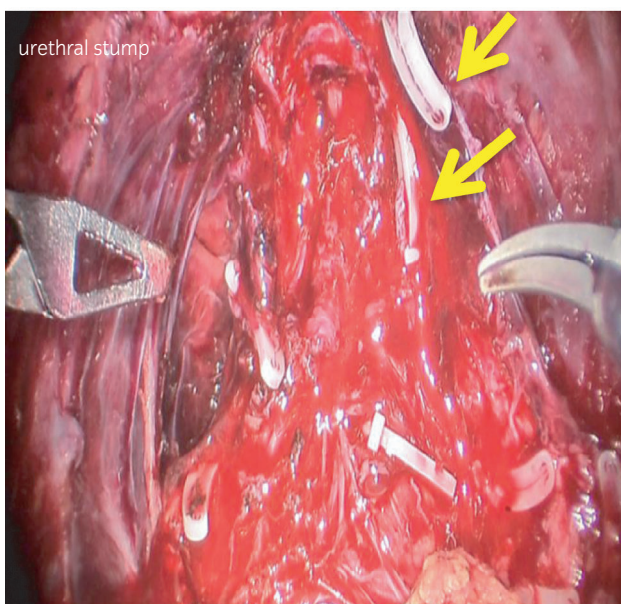


Fig. 2 Case 1 findings. Intraoperative view before vesicourethral anastomosis. Arrow: possible candidate for the migrating HOLCs.

sparing are not readily applicable during all surgeries, given the high financial costs.

Conclusion

We report three cases of intravesical HOLC migration more than 1 year after RARP. Transurethral Holmium laser surgery was very effective for HOLC removal. To avoid involvement of HOLCs in the vesicourethral anastomosis, appropriate resection during bladder neck transection is important.

Conflict of interest

None declared.

Approval of the research protocol by an institutional reviewer board

21-R020

Informed consent

Not applicable.

Registry and the registration no. of the study/trial

Not applicable.

References

- Mazzone E, Mistretta FA, Knipper S *et al.* Contemporary national assessment of robot-assisted surgery rates and total hospital charges for major surgical uro-oncological procedures in the United States. *J. Endourol.* 2019; **33**: 438–47.
- Tunnard GJ, Biyani CS. An unusual complication of a hem-o-lok clip following laparoscopic radical prostatectomy. *J. Laparoendosc. Adv. Surg. Tech. A* 2009; **19**: 649–51.
- Moser RL, Narepalem N. Erosion of Hem-o-Lok clips at the bladder neck after robot-assisted radical prostatectomy. *J. Endourol.* 2009; **23**: 949–51.
- Blumenthal KB, Sutherland DE, Wagner KR *et al.* Bladder neck contractures related to the use of Hem-o-lok clips in robot-assisted laparoscopic radical prostatectomy. *Urology* 2008; **72**: 158–61.
- Tugcu V, Polat H, Ozbay B *et al.* Stone formation from intravesical Hem-o-lok clip migration after laparoscopic radical prostatectomy. *J. Endourol.* 2009; **23**: 1111–3.
- Banks EB, Ramani A, Monga M. Intravesical Weck clip migration after laparoscopic radical prostatectomy. *Urology* 2008; **71**: 351.e3–351.e4.
- Yi JS, Kwak C, Kim HH, Ku JH. Surgical clip-related complications after radical prostatectomy. *Korean J. Urol.* 2010; **51**: 683–7.
- Wu SD, Rios RR, Meeks JJ *et al.* Rectal Hem-o-Lok clip migration after robot-assisted laparoscopic radical prostatectomy. *Can. J. Urol.* 2009; **16**: 4939–40.
- Shin YS, Doo AR, Cha JS *et al.* Floating Hem-o-Lok clips in the bladder without stone formation after robot-assisted laparoscopic radical prostatectomy. *Korean J. Urol.* 2012; **53**: 60–2.
- Cornio L, Massenio P, Lucarelli G *et al.* Hem-o-lok clip: a neglected cause of severe bladder neck contracture and consequent urinary incontinence after robot-assisted laparoscopic radical prostatectomy. *BMC Urol.* 2014; **14**: 21.
- Bientinesi R, Di Gianfrancesco L, Pugliese D *et al.* Endourethral migration of a Hem-o-Lok Clip after robot-assisted laparoscopic radical prostatectomy. *Urologia* 2015; **82**: 242–4.
- Aoki T, Zakoji H, Kamiyama M *et al.* Intravesical migration of a hem-o-lok clip after robot-assisted radical prostatectomy: a case report. *Nihon Hinyokika Gakkai Zasshi* 2016; **107**: 111–4.
- Chen Y-C, Chen H-W, Lee C-H *et al.* A rare delayed bladder migration of a Hem-o-lok clip 5 years after robotic-assisted radical prostatectomy. *Urol. Int.* 2019; **102**: 495–8.

- 14 Iemura Y, Kagebayashi Y, Fukui S *et al.* Migration of Hem-o-Lok clips into the urinary bladder used during robot-assisted laparoscopic prostatectomy. *Hinyokika Kiyo* 2019; **65**: 65–8.
- 15 National Comprehensive Cancer Network: NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®). Prostate Cancer. Version 4.2019. [Cited 28 May 2021.] Available at <https://www2.tri-kobe.org/nccn/guideline/urological/english/prostate.pdf>.
- 16 Tewari A, Peabody J, Sarle R *et al.* Technique of da Vinci robot-assisted anatomic radical prostatectomy. *Urology* 2002; **60**: 569–72.
- 17 Iizuka J, Hashimoto Y, Kondo T *et al.* Incidental detection of asymptomatic migration of Hem-o-lok clip into the bladder after laparoscopic radical prostatectomy. *Asian J. Endosc. Surg.* 2017; **10**: 442–5.
- 18 Kadekawa K, Hossain RZ, Nishijima S *et al.* Migration of a metal clip into the urinary bladder. *Urol. Res.* 2009; **37**: 117–9.
- 19 Shimbo M, Hattori K, Endo F *et al.* Modified anterior approach to the bladder neck: simple and reproducible procedure for anterior bladder neck transection during robot-assisted radical prostatectomy. *Int. J. Urol.* 2014; **21**: 946–8.
- 20 Sharma V, Karnes RJ, Viers BR. Treatment outcomes of bladder neck contractures from surgical clip erosion: a matched cohort comparison. *Transl. Androl. Urol.* 2020; **9**: 115–20.