






# Bladder Stone due to Hem-O-Lok Clip Materials Following Radical Prostatectomy

## Radikal Prostatektomi Sonrası Hem-O-Lok Klipse Bağlı Oluşan Mesane Taşı

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**ABSTRACT** Prostate cancer is the most common cancer among men in developed countries and radical prostatectomy is the cornerstone treatment for localised prostate cancer. Laparoscopic and robotic-assisted laparoscopic radical prostatectomy (LRP and RALRP, respectively) are safe and effective alternatives to open radical prostatectomy. Hemostasis is one of the most crucial steps in LRP and RALRP in order to prevent damage of neurovascular bundle and to achieve proper anastomosis without tension. Hem-O-Lok clips are practical and effective materials for vessel ligation and frequently used by urologists for lateral pedicle ligation during these procedures. However, it has some certain disadvantages such as migration into the bladder and possible stone formation and migration into the anastomotic site and causing bladder neck contractures. Herein, we present two cases with a pre-diagnosis of bladder stone, which were formed around migrated Hem-O-Lok clips, following LRP and RALRP.

**Keywords:** Laparoscopy; postoperative complications; prostatectomy; prostatic neoplasms; robotic surgical procedures; surgical instruments

**ÖZET** Prostat kanseri, gelişmiş ülkelerdeki erkekler arasında en yaygın kanserdir ve radikal prostatektomi, lokalize prostat kanseri için temel tedavidir. Laparoskopik ve robot yardımlı laparoskopik radikal prostatektomi (sırasıyla LRP ve RALRP), açık radikal prostatektomiye karşı güvenli ve etkili alternatiflerdir. Hemostaz, LRP ve RALRP'de nörovasküler demetin zarar görmesini önlemek ve gerginlik olmadan uygun anastomoz elde etmek için en önemli adımlardan biridir. Hem-O-Lok klipsleri damar ligasyonu için pratik ve etkili malzemelerdir ve bu prosedürler sırasında lateral pedikül ligasyonu için ürologlar tarafından sıklıkla kullanılır. Bununla birlikte, mesaneye göç ve olası taş oluşumu, anastomotik bölgeye göç ve mesane boynu kasılmalarına neden olma gibi bazı dezavantajlara sahiptir. Burada, LRP ve RALRP'yi takiben, geçirilmiş Hem-O-Lok klipleri etrafında oluşturulan mesane taşları ön tanısı ile iki olgu sunuyoruz.

**Anahtar Kelimeler:** Laparoskopi; postoperatif komplikasyonlar; prostatektomi; prostat neoplazileri; robotik cerrahi işlemler; cerrahi aletler

Prostate cancer is the most common cancer among men in developed countries and radical prostatectomy is the cornerstone treatment for localised prostate cancer.<sup>1</sup> Although open radical prostatectomy is still an appropriate option for patients whose life expectancy is longer than ten years, with advances in technology and increased experience, laparoscopic radical prostatectomy (LRP) and robotic assisted laparoscopic radical prostatectomy (RALRP) are the preferred minimally invasive alternatives to open surgery and being increasingly preferred among urologists. Multiple

studies revealed that these procedures have less perioperative morbidity and better functional outcomes.<sup>2</sup>

Hemostasis is one of the most crucial steps in LRP and RALRP in order to prevent damage of neurovascular bundle and to achieve proper anastomosis without tension. Hem-O-Lok clips are practical and effective materials for vessel ligation and frequently used by urologists for lateral pedicle ligation during these procedures. However, it has some certain disadvantages such as migration into the bladder and possible stone formation and migration into the anastomotic site and causing bladder neck contractures.

Herein, we present two cases with a pre-diagnosis of bladder stone, which were formed around migrated Hem-O-Lok clips, following LRP and RALRP.

## CASE REPORTS

### CASE 1

A 62 year-old male patient admitted to our clinic with frequent urination, dysuria, incomplete emptying of the bladder and nocturia. He had a history of laparoscopic radical prostatectomy 24 months prior to his admission. Pathology specimen revealed Gleason 6 adenocarcinoma of the prostate with negative surgical margins. The prostate specific antigen (PSA) value was 0.001 ng/dL on admission. Urinary ultrasonography revealed a 25 mm stone inside the bladder without hydronephrosis. A sterile urine culture was obtained before the operation and diagnostic cystourethroscopy and cystolithotripsy with Holmium laser was planned. An informed consent was obtained from the patient.

### CASE 2

A 59 year-old male patient was admitted to our outpatient clinic with dysuria, pollakuria and incomplete emptying of the bladder. He had a history of RALRP 23 months prior to his admission. Pathology specimen revealed Gleason 7 adenocarcinoma of the prostate with negative surgical

margins. His PSA level was <0.0008 on admission. Urinary ultrasonography revealed a 15 mm of bladder stone and 50 cc of residual urine. A sterile urine culture was obtained from the patient prior to the operation and diagnostic cystourethroscopy and cystolithotripsy was planned. Informed consent was obtained from the patient, as well.

## PROCEDURE DETAILS

Informed consent was obtained from the two individual participants included in the study.

After induction of spinal anesthesia, both patients were positioned in lithotomy position. A 17 Fr cystoscope was introduced and no urethral or anastomotic stricture was detected in patients. Bladder stones were observed in close proximity to the bladder neck. During the fragmentation of the stones with Holmium laser, Hem-O-Lok clips were identified in the center part of the stone (Figure 1 and 2). Proximal part of these clips were slightly embedded into bladder mucosa. These embedded parts were relieved by using Holmium laser and removed with an endoscopic grasper (Figure 3). An indwelling urethral catheter was placed after the operation and catheters were removed and the patients were discharged from the hospital on first postoperative day. Their symptoms completely resolved after the operation.

## DISCUSSION

Currently, LRP and RALRP have been accepted as effective and safe surgical options for localised prostate cancer. The benefits of these minimally invasive procedures on perioperative bleeding, blood transfusion rate, shorter hospitalisation time and faster recovery period were well described. In long term follow up, surgeons generally focus on oncological results, erectile function and continence status of the patients, called as Trifecta. However, complications associated with materials, such as sutures and clips, should be kept in mind during follow up.

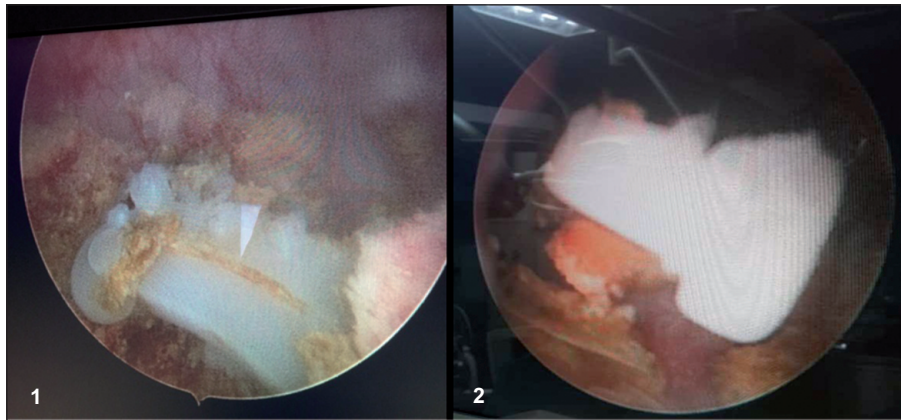


FIGURE 1, 2: Hem-O-Lok clip and stone formation around the clip, cystoscopic view.

Achieving adequate hemostasis in LRP and RALRP is a crucial step and lateral pedicles of the prostate are one of the most potential bleeding areas. Several techniques have been described for ligation of the lateral pedicles including clamping, cold cutting and suturing the vessels. Since the introduction of Hem-O-Lok clips, they have been widely used in urology practice to ligate the vessels instead of cold cutting and suturing. Despite its safety, complications related with Hem-O-Lok clips were reported in the literature such as migration of the clips to the anastomotic site, bladder neck contractures, acute urinary retentions and stone formations due to intravesically migrated Hem-O-Lok clips.

Several papers have mentioned cases of migrated clips in the literature. Banks et al. reported a case of intravesical Weck clip migration and stone formation ten months after LRP. The migrated clip was firmly lodged at the bladder neck and removed cystoscopically.<sup>3</sup> Mora et al. reported a case of clip migration and stone formation five weeks after LRP but no intervention was needed in their case because the patient spontaneously expelled the material.<sup>4</sup> Tunnard et al. also reported a freely floating Hem-O-Lok clip inside the bladder of a patient which had undergone LRP.<sup>2</sup> Three months after the cystoscopic removal of the freely floating clip, another Hem-O-Lok clip, which eroded through the vesicourethral anastomotic site was identified and removed cystoscopically.



FIGURE 3: Extracted Hem-O-Lok clip.

Bladder neck contracture is another serious complication of migrated clips into anastomotic site. Blumenthal et al. published a database review of patients who have undergone radical prostatectomy and have bladder neck contractures related to the use of Hem-O-Lok clips.<sup>5</sup> They reviewed the charts of 524 patients and 4 patients identified to have bladder neck contractures and 3 of these patients had bladder neck contractures due to migration of Hem-O-Lok clips. Cormio et al. also reported a case of bladder neck contracture due to a Hem-O-Lok clip, one month after RALRP.<sup>6</sup> Their patient presented with a unique symptom which was stress urinary incontinence. The clip was identified between anastomotic site and the sphincter. They removed the clip with cold knife incision and treated the contracture with wide bladder neck resection.

Migration of clips is not only described in LRP and RALRP. Shu-xiang et al. reported a case of intraneobladder Hem-O-Lok clip migration with stone formation 26 months after laparoscopic orthotopic sigmoid neobladder reconstruction following cystectomy.<sup>7</sup> Hung et al. reported two cases of intravesical Hem-O-Lok clip migration after laparoscopic radical nephroureterectomy and cuff excision.<sup>8</sup> Their patients were asymptomatic and clips were identified and removed during routine cystoscopic examination of the patients.

Several techniques have been proposed to prevent clip migration. Avoiding placement of clips in close proximity of the anastomotic site can be a reasonable solution. Moser et al. additionally recommended other alternatives such as the use of bipolar cautery or applying hemostatic biadhesives to the lateral pedicles, however they also mentioned that these techniques may need additional suture placements in some cases.<sup>9</sup> Tugcu et al. mentioned the use of Harmonic ace near the anastomosis in order to avoid clip-related complications.<sup>10</sup>

In conclusion, Hem-O-Lok clips are safe and effective methods for achieving hemostasis but migration of these clips into the anastomotic site or bladder may end up with complications such as bladder neck contractures or stone formation. Thereby, persistent urinary symptoms in patients with a history of LRP or RALRP should raise a suspicion of clip migration and should be evaluated

with imaging methods or cystoscopy in order to avoid further complications.

### **Ethics**

*All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.*

### **Source of Finance**

*During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.*

### **Conflict of Interest**

*No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.*

### **Authorship Contributions**

**Idea/Concept:** Muhammed Burak Üçpınar; **Design:** Muhammed Burak Üçpınar, Ömer Sarılar; **Control/Supervision:** Faruk Özgör, Ömer Sarılar; **Data Collection and/or Processing:** Furkan Günay, Ahmet Halis; **Analysis and/or Interpretation:** Muhammed Burak Üçpınar, Faruk Özgör; **Literature Review:** Furkan Günay, Ahmet Halis; **Writing the Article:** Muhammed Burak Üçpınar; **Critical Review:** Faruk Özgör.

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