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Surgical clip migration with Stone Formation to the Bladder Neck after Robotic Radical Prostatectomy, Case report and Literatures review

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1. Abstract

This study reports a rare case of Hem-o-Lok clip migration after robotic radical prostatectomy, leading to bladder stone formation in a 65-year-old male. Despite successful initial recovery post-surgery, the patient presented with recurrent urinary tract infections and obstructive lower urinary tract symptoms one year later. Diagnostic cystoscopy revealed stones obstructing the bladder neck, originating from a migrated Hem-o-Lok clip. The subsequent intervention involved cystolitholapaxy, successfully removing the stone and the clip. This study highlights the potential complications associated with Hem-o-Lok clips, emphasizing the importance of vigilant monitoring. Urologists and surgeons are urged to exercise caution during procedures involving these clips to prevent such occurrences in the future.

2. Introduction

Prostate cancer is one of the most common type of solid cancer in men [1] and one in every 25 men [2] is likely to be diagnosed with prostate cancer globally. It can be stratified based on risk and personalized therapy is given based on the type associated with its diagnosis. Sometimes surgery with minimal access is also considered a better approach towards therapy as a small incision is associated with reduced bleeding along with relatively fewer postoperative problems and faster recovery [3]. For such surgical interventions, Radical Prostatectomy is considered as a standard procedure which is either performed by robotic or laparoscopic assistance [4]. It has been observed that Hem-o-lok is used in those surgeries to stop the bleeding and tissue closing, however, due to their un-absorbable polymer they are often associated with the formation of stones in the urinary bladder [5]. Even though it is rare various studies have reported this complication associated with hem-o-lok. In this study, we are reporting a case of a patient who developed bladder stones due to the migration of those Hem-0-lok clips after 1 year of surgery.

3. Case Presentation

A 65-year-old male with a medical history significant for hypertension managed with amlodipine, rheumatoid arthritis treated with methotrexate, and a remote left inguinal hernia repair. The patient underwent a robotic radical prostatectomy with pelvic lymph node dissection on 3/9/2022 due to an elevated PSA level of 9.06 ng/dl and a transrectal ultrasound-guided prostate biopsy revealing Gleason 7 (3+4) adenocarcinoma. Postoperatively, the patient experienced a successful recovery, achieving continence and resuming sexual activity with positive responses to alprostadil injection and Cialis.

However, after one year, the patient presented with recurrent urinary tract infections and obstructive lower urinary tract symptoms. Renal ultrasound revealed a significant postvoid residual reaching up to 70% of the bladder capacity, without identified stones as shown in Figures 1 and 2. Diagnostic cystoscopy on December 3rd, 2023, uncovered stones obstructing the bladder neck at the anastomotic site, preventing the scope from reaching the bladder.

The subsequent intervention involved a diagnostic cystoscopy with cystolitholapaxy on December 7th, 2023. The operative findings revealed a stone obstructing the bladder outlet, identified as a calcification around a large Hema Lock clip that had migrated into the bladder during the initial radical prostatectomy as shown in Figures 3, 4, and 5. The stone was successfully pushed proximally with a rigid scope, and a thulium laser was employed to fragment the stone.

However, after the surgery the stone was removed and the patient was discharged.

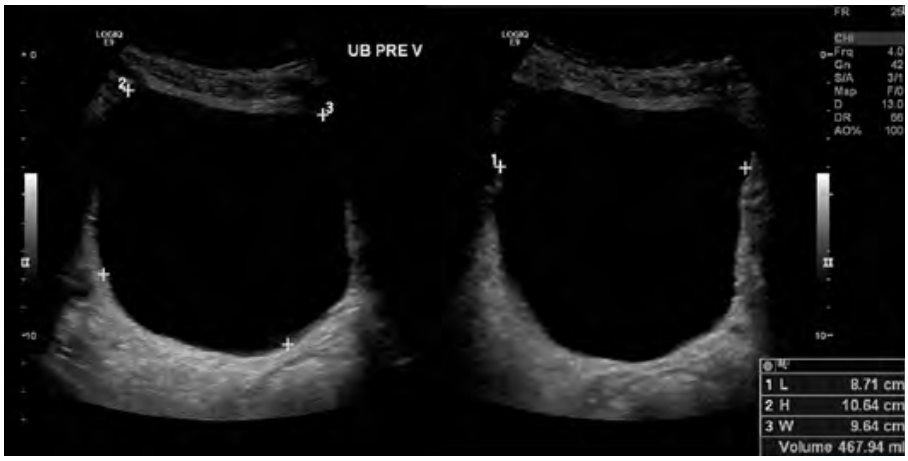

Figure 1: pre-void urinary bladder.

Figure 2: Post-void urinary bladder

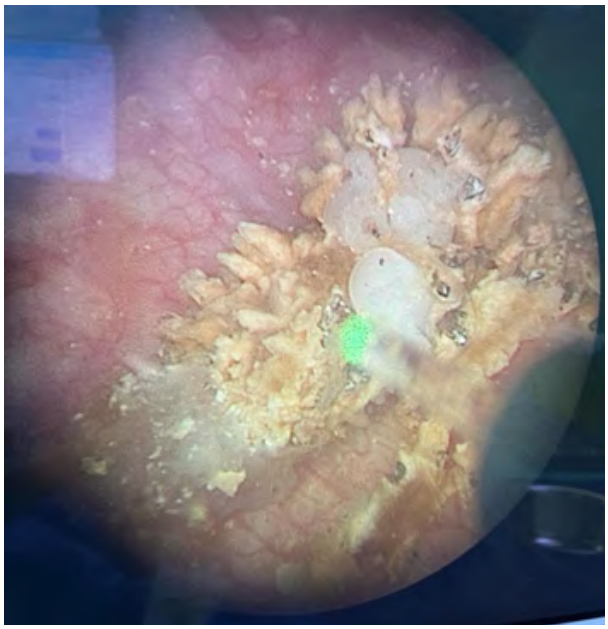

Figure 3: Bladder stone with clip.

Figure 4: Fragmented bladder stone with Clip.

Figure 5: recovered hem-o-lok clip recovered during surgery with calcification around.

4. Discussion

Hem-o-Lok® clips which are manufactured by Weck® Surgical Instruments, Teleflex Medical, Durham, NC have extensive application in managing the lateral pedicles during laparoscopic radical prostatectomy. They are available in various sizes and may migrate due to factors such as improper placement, postsurgical inflammation, scar formation, fibrosis, or erosion. Classifying migrations into Types I, II, and III, can result in obstructive lower urinary tract symptoms, stone formation with hematuria or bladder spasm, and spontaneous HOLC expulsion weeks after prostatectomy, respectively [6].

In literature already ten such cases have been identified before of clip migration. It has been reported by Palou et al. that metal clips are associated with causing perineal pain after RRP [7]. Tugcu V et al.'s 2009 study, reported two cases of migration, though it wasn't clear if robotic assistance was involved [8]. Similarly, Long et al. in their study have reported a clip traveling and causing contracture of the bladder neck [9]. In another study, Shin et al. reported a study where hem-o-lok clips were found floating in the bladder with a guide wire but without the formation of stone [10]. Furthermore, Aoki T et al. reported a case in 2016 in which a 54-year-old patient after robot-assisted laparoscopic radical prostatectomy developed lower urinary tract symptoms and hematuria, with a stone containing a Hem-o-Lock clip as the nidus [11]. Another study reported of use of rectal Hem-o-lok clips in Robot-Assisted Laparoscopic Prostatectomy causing diverticular disease of the colon showing the migration of these clips causing complication [12]. Luigi et al. reported in 2014 that the use of these clip migrations to vesicourethal anastomosis leads to urinary incontinence [13]. Recently Deen et al. (2022) reported a case of formation of bladder stone formation due to hemostatic clip migration [14].

These cumulative studies and systematic analysis emphasize the significance of vigilant monitoring and consideration of potential complications related to Hem-o-Lok clip migration [15]. Nevertheless, employing strategies such as the use of a minimal yet innovative instrument set [16], like Ligasure, not only facilitates shorter operation periods for doctors [17] but also helps in avoiding complications associated with Hem-o-Lok.

5. Conclusion

Hem-o-lok migration after Robotic radical prostatectomy is associated with irritating the urinary tract, recurrent infection, and often formation of bladder stones irrelevant to the duration after surgical procedures. Despite the low occurrence of such instances, Urologists and surgeons should exercise caution during procedures involving Hem-o-Lok clips or opt for safer alternatives like Ligasure to ensure precision and awareness of potential complications to avoid such occurrences in the future.

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