Practical, cost-effective removal of Hem-o-lok Weck clip: a novel technique

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The Hem-o-lok Weck clip is part of a polymer locking ligation system often employed for hemostasis in surgical practices. Its use is routine in a wide array of surgical subspecialties. Surgeons have limited options in removing these clips when they are aberrantly positioned.
Herein, we describe a novel, cost-effective approach for removing a Hem-o-lok clip using standard robotic instruments. This simple approach will allow surgeons to remove a Hem-o-lok clip precisely and quickly if it is not adequately placed.
During a routine robotic-assisted laparoscopic prostatectomy a Hem-o-lok Weck clip was noted to be in juxtaposition to the rectal wall, and it was deemed appropriate to remove it. Ultimately, the indwelling Prograsp forceps was moved from the right fourth arm position to the left arm position. This allowed the Prograsp forceps to compress the scissors in the right hand port, which was insufficient in cutting the hinge of the clip. This provided sufficient force to cut through the clip at its hinge with ease.
The Hem-o-lok Weck clip is used in various surgical specialties. It is occasionally placed suboptimally and requires removal. Given the challenge of finding and using the clip removal device, surgeons should be aware of this simple and cost-effective way of removing a Hem-o-lok clip if desired.

Key Words: prostatectomy, surgical techniques, robotic surgery, surgical clips, urologic surgery

Introduction

The Hem-o-lok Weck clip is part of a polymer locking ligation system often used for hemostasis in various surgical procedures. The company that produces the clip, Teleflex, estimates their clip has been used in millions of patients. Its ease of use, size versatility, and evidence-based performance has led it to be a staple in many laparoscopic, robotic-assisted, and open surgeries.

Surgeons have limited options in removing these clips when they are aberrantly placed. A company manufactured clip removal device does exist if a surgeon wants to remove a clip but there are limitations to its use. Foremost, it is infrequently used, and many surgeons are unfamiliar with its use, raising concern for tissue injury if employed. Additionally, because of its infrequent use, finding it can be a challenge. This was the case in our experience. Other reported clip removal options, such as use of a harmonic scalpel, can substantially increase the cost for the simple task of removing a clip.[1] They also raise concern for possible thermal injury.

Herein, we describe a novel, cost-effective approach for removing a Hem-o-lok Weck clip using standard robotic instruments typically already in the surgical field at the time a surgeon wishes to remove a clip during a robotic procedure. This simple approach will allow surgeons to remove a Hem-o-lok clip precisely, quickly, and simply if it is not adequately placed.

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Methods and techniques

During a routine Da Vinci robotic-assisted laparoscopic prostatectomy a Hem-o-lok Weck clip was placed across the prostatic pedicle to assist in excising the prostate. Upon removal of the prostate, the clip appeared too close to the rectum. A digital rectal examination was performed, and the clip was palpable through the rectal wall, although there was no rectal bleeding or evidence it had penetrated through the mucosa. Close inspection revealed the clip was pinching the rectal muscle but had not caused an enterotomy. However, there was concern that the clip might erode through the rectal wall in the future or become a site of infection. It was therefore deemed appropriate to remove the clip to prevent future complication.

The Weck clip remover was requested, but it was not able to be located. To pursue other options for clip removal an intraoperative literature search was performed. Previous evidence suggests using the Harmonic scalpel may be a safe and effective tool to remove a Weck clip without damaging underlying tissue.[1] However, given the clip's proximity to the rectal wall, use of a Harmonic scalpel raised concern for potential thermal injury. Additionally, use of a Harmonic scalpel would substantially increase the surgery cost. Given these concerns, we decided to attempt removing the clip using robotic scissors, placed at the hinge of the clip.

The scissors, in the daVinci Surgical System right-hand position, did not generate enough force to cut the clip. Therefore, we moved the Prograsp forceps from the right fourth arm position to the left arm location, Figure 1. With the scissors still compressing the hinge of the clip, the Prograsp forceps were used to compress ("squeeze") the scissors, Figure 2. This provided sufficient force to cut through the clip at its hinge (base) with ease, Figure 3. The two remaining halves of the unwanted clip were successfully removed. A second Hem-o-lok clip near the rectum was also easily removed using the same technique. The rectum was filled with air via a catheter and the pelvis filled with water. There was no evidence of an enterotomy. The rest of the surgery proceeded as planned.

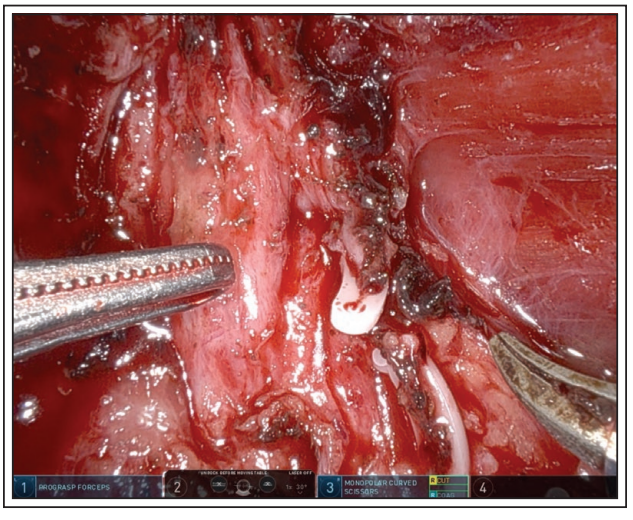

Figure 1. Hem-o-lok Weck clip to be removed.

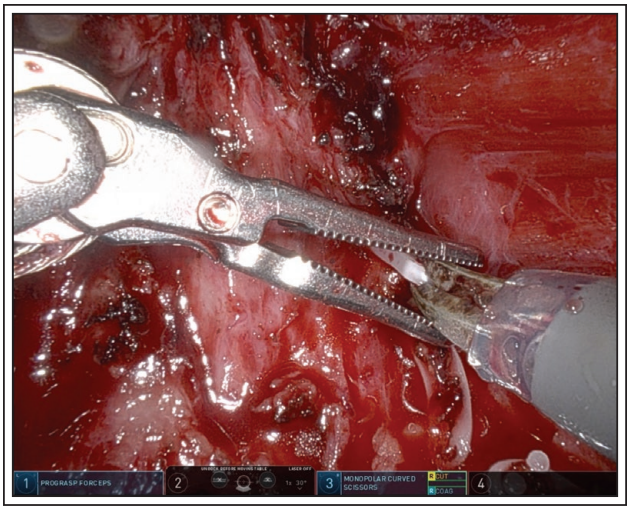

Figure 2. Scissors grasping the hinge (base) of the clip with the Prograsp forceps supplying force to the underlying scissors.

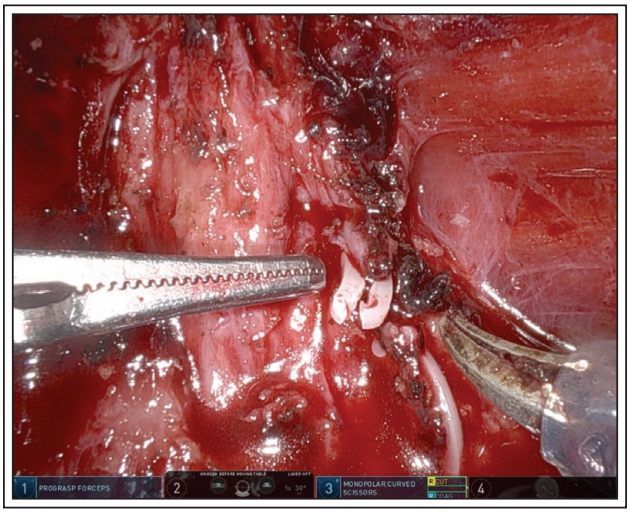

Figure 3. The Hem-o-lok clip that was broken with the new technique.

Results and conclusions

The Hem-o-lok Weck clip is frequently used in a wide array of operations, including robotic procedures. It is occasionally placed across bowel, nerve, or vessel in a suboptimal position which requires removal. Given the challenge with finding and using the manufacturer's clip removal device, surgeons should be aware of this simple and cost-effective way of removing a Hem-o-lok clip when desired. This technique takes less than 5 seconds to perform once the robotic scissor is placed in the surgeon's dominant hand (typically robot right hand) and the Prograsp instrument is placed in the surgeon's nondominant hand (typically robotic left hand). This saves significant time compared to locating and employing an additional robotic instrument to remove the clip. This saves significant money as well as fewer instruments are used. Publicly available market price for the Hem-o-lok Weck removal device is ~$400. The Harmonic scalpel, another instrument that has been published as a possible means to remove an aberrant clip, costs ~$500-700. Another instrument could likely be used instead of the Prograsp (e.g. robotic Fenestrated Bipolar or robotic Hem-o-lok instrument) to compress the scissor and facilitate Hem-o-lok clip cutting, but we have always used the Prograsp as this is a routine instrument for the senior author and the robotic Hem-o-lok instrument is not. This technique was used twice successfully in a single operation. In both cases, the scissor and Prograsp instrument were uninjured and were used throughout the remainder of the operation. There have not been any instances where this technique failed. This strategy will be further employed in our practice if a clip is aberrantly placed. □

References

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