

A Technical Tip to Minimize Dorsal Vein Complex Bleeding in Extraperitoneal Laparoscopic Radical Prostatectomy: Using Balloon of the Urethral Catheter

Ekstraperitoneal Laparoskopik Radikal Prostatektomide Dorsal Ven Kompleksi Kanamasını Minimize Etmek İçin Teknik Bir İpucu: Üretral Kateter Balonu Kullanımı

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ÖZET

Amaç: Kliniğimizde uyguladığımız, laparoskopik radikal prostatektomi sırasında dorsal ven kompleksinin (DVC) kontrolü sonrası devam eden sızıntı şeklindeki kanamaları durdurabilecek bir teknik ipucu ve sonuçlarını sunmayı amaçladık.

Gereç ve Yöntemler: Çalışmaya Mayıs 2021 ile Ağustos 2023 tarihleri arasında ekstraperitoneal laparoskopik radikal prostatektomi uygulanan hastalar dahil edildi. Tüm hastalara DVC'den gelen minimal kanamayı kontrol altına almak amacıyla üretradan 16 Fr foley kateter yerleştirildi ve 25 mL'lik şişirilmiş balon ile 15 dk süreyle traksiyon uygulandı. Hastaların demografik özellikleri, Prostat Spesifik Antijen (PSA) değerleri, gleason skoru, prostat hacmi ve ameliyat süresi kaydedildi.

Bulgular: Toplam 95 hasta dahil edildi. Ortalama yaş, PSA, prostat volümü değerleri sırasıyla 67,2 (49- 76) yıl, 8,43 (4-21) ng/ml, 46,32 (28-79) ml iken, medyan gleason skoru değeri ise 6 (6-8) idi. Operasyon süreleri ise ortalama 162,5 (126-237) idi. Ortalama olarak ameliyat süreleri çalışmaya katılmayan hastalarinkinden farklı değildi.

Sonuç: Bize göre kateter balon kompresyonu, kanamayı kontrol etmek ve net görüntüleme altında anastomozu kolaylaştırmak için güvenli ve uygulanabilir bir tekniktir. Bu tekniğin prospektif, randomize, çift kör çalışmalarla desteklenmesi gerekmektedir.

Anahtar Kelimeler: Prostat Kanseri, Dorsal Ven Kompleksi, Laparaskopi

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ABSTRACT

Objective: We aimed to present a technical tip that can stop bleeding in the form of leakage after control of the dorsal vein complex (DVC) during laparoscopic radical prostatectomy and its results.

Material and Methods: Patients who underwent extraperitoneal laparoscopic radical prostatectomy between May 2021 and August 2023 were included in the study. In all patients, a 16 Fr foley catheter was placed through the urethra to control minimal bleeding from the DVC, and traction was applied for 15 min with a 25 ml inflated balloon. Demographic characteristics, Prostate Specific Antigen (PSA) values, gleason scores, prostate volumes and operation times were recorded.

Results: A total of 95 patients were included in the study. The mean age, PSA and prostate volume values were 67.2 (49-76) years, 8.43 (4-21) ng/ml, 46.32 (28-79) ml, respectively, while the median Gleason score value was 6 (6-8). The mean operation time was 162.5 (126-237). Mean operative times were not different from those of patients who did not participate in the study.

Conclusions: In our opinion, catheter balloon compression is a safe and feasible technique to control bleeding and facilitate anastomosis under clear visualization. This technique needs to be supported by prospective, randomized, double-blind studies.

Keywords: Prostate Cancer, Dorsal Vein Complex, Laparoscopy

INTRODUCTION

Prostate cancer is the second most common cancer diagnosed in men. In 2020, approximately 1.4 million people were diagnosed worldwide (1). Laparoscopic Radical Prostatectomy (LRP) and Robotic Assisted Radical Prostatectomy (RARP) are common methods for the treatment of localized prostate cancer.

One of the most important steps during these surgeries is Dorsal Vein Complex (DVC) control. Serious bleeding may occur, so there are many methods for DVC control, the most common of which is the eight-suture method. Apical dissection is very important to protect the urethra; but bleeding from DVC may cause difficulties in this step. In some cases, even if DVC is largely controlled and apical dissection is completed and the urethra is separated from the prostate, bleeding from DVC may continue in the form of leakage (2,3).

We aimed to present a technical tip that can stop these bleedings in the form of leakage that continues after DVC control that we have applied in our department.

MATERIAL AND METHODS

We included 95 patients who underwent extraperitoneal laparoscopic radical prostatectomy between May 2021 and August 2023 in the Urology Clinic of our hospital. In order to control minimal bleeding due to DVC, all patients underwent the technical tip described below.

Surgical Technique

All patients underwent extraperitoneal laparoscopic radical prostatectomy with 5 trocars. Under 15 mmHg pressure, after removal of the anterior periprostatic fat, the endopelvic fascia was opened and the prostate was liberated from the levator muscles in the apical direction. The puboprostic ligaments were cut bilaterally and the DVC was exposed. After that, the bladder neck was identified and dissected with the descending technique. The seminal vesicles and vas deferens on both sides were then found, freed and elevated; the denonvilliers fascia was opened, and the prostate pedicle was separated with polymer clips. Subsequently, a vessel closure system (LigaSure™, Medtronic, USA) was used for DVC ligation. Before the vesicourethral anastomosis, a 16 Fr foley catheter was inserted through the urethra to control minimal bleeding from DVC (Figure-1), by a 25 ml inflated balloon, and traction was applied (Figure-2). After 15 minutes of compression, the bleeding was controlled (Figure-3).

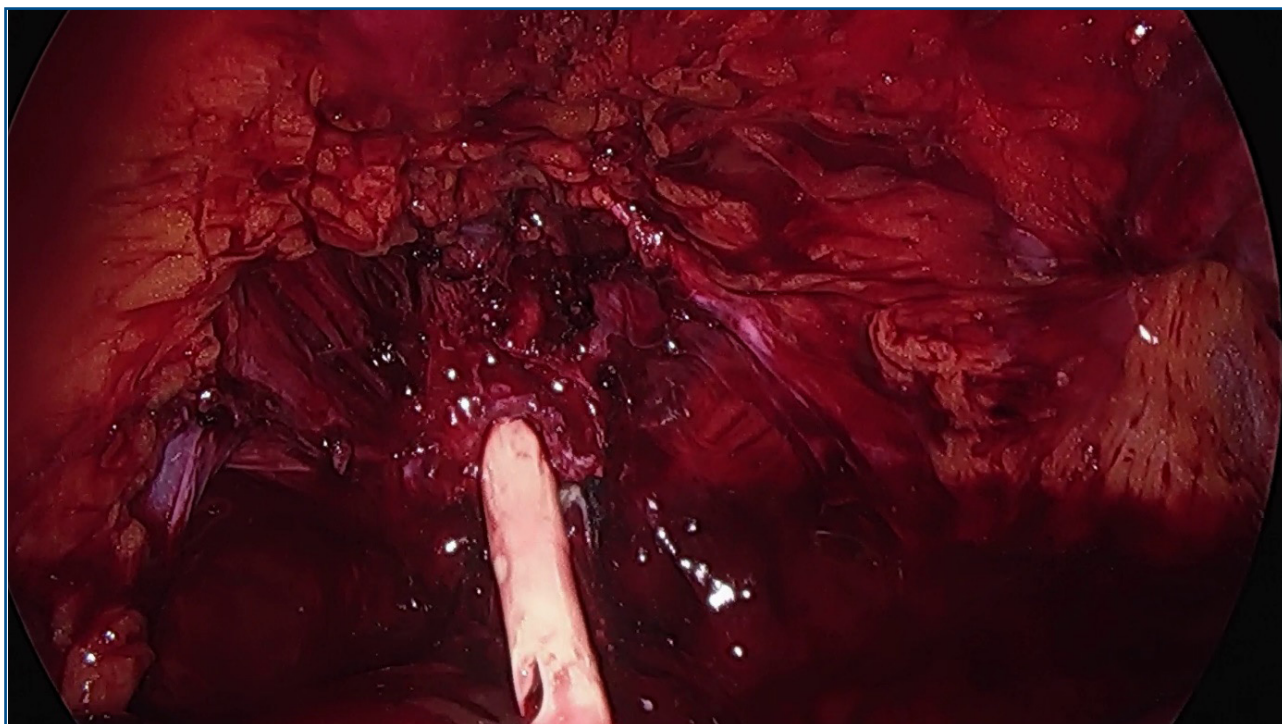


Figure 1. Technique to control minimal DVC bleeding using a catheter balloon. Endoscopic view of minimal bleeding after DVC control.

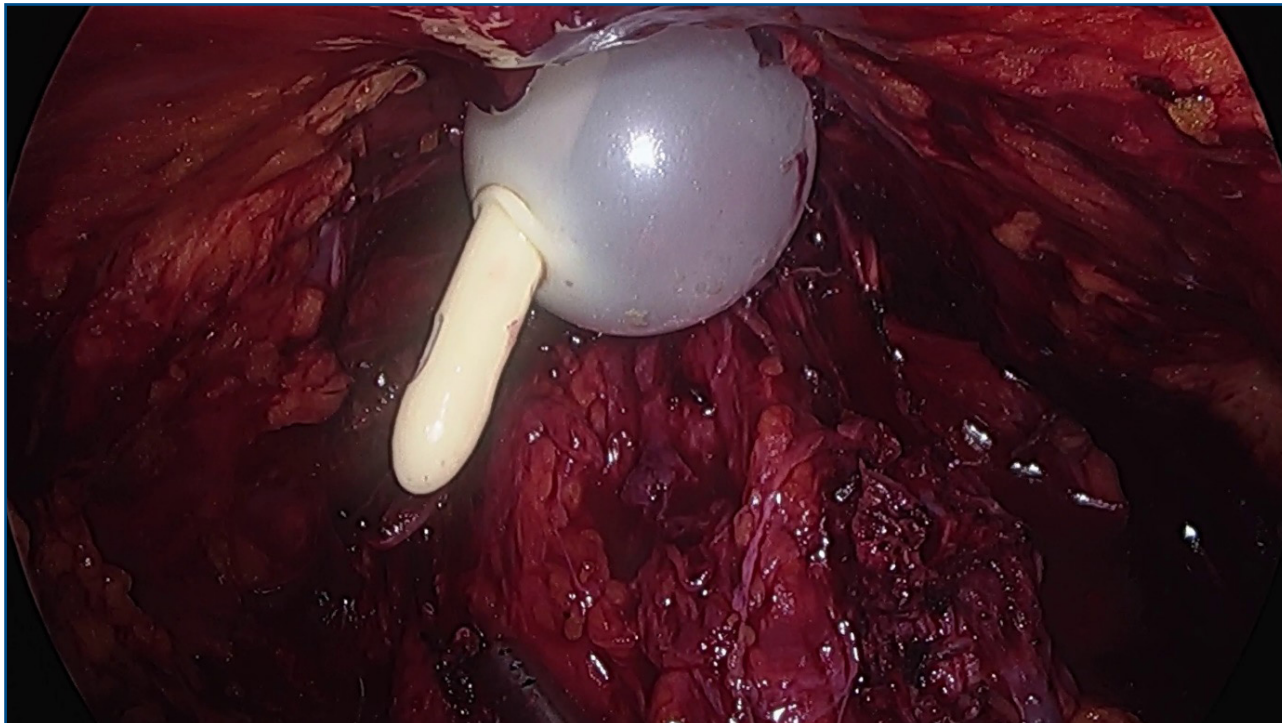


Figure 2. Compression with catheter balloon.

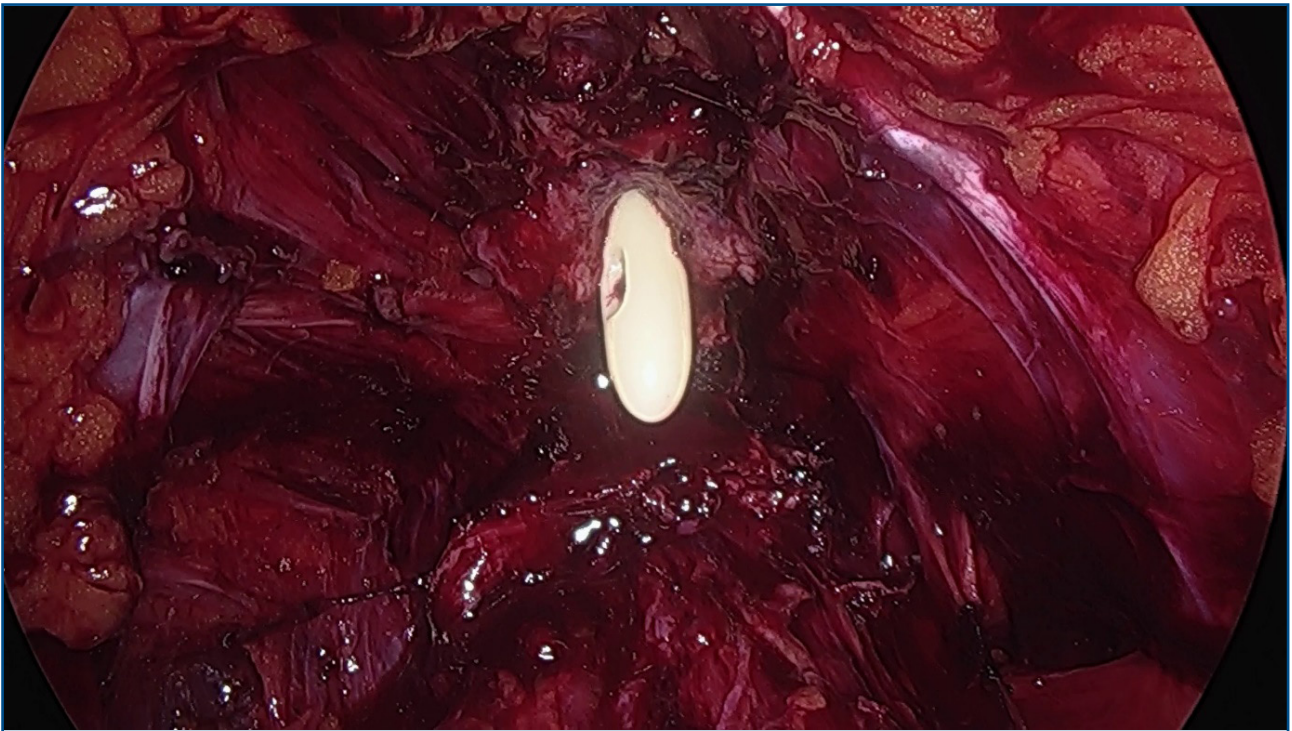


Figure 3. After 15 minutes, minimal bleeding due to DVC was completely controlled.

RESULTS

A total of 95 patients were included in the study. The mean age, PSA and prostate volume values were 67.2 (49-76) years, 8.43 (4-21) ng/ml, 46.32 (28-79) ml, respectively, while the median Gleason score value was 6 (6-8). The mean operation time was 162.5 (126-237) minutes. The mean operation times were not different from the patients who were not included in the study. Demographic characteristics of the patients are summarised in Table-1.

Table 1. Demographic Characteristics of the Patients Included in the Study

Age, years, mean (min-max)	67.2 (49-76)
PSA (ng/ml)	8.43 (4-21)
Gleason Score, median (min-max)	6 (6-8)
Operational Time, min, mean (min-max)	162.5 (126-237)
Prostate Size, volume, mean (min-max)	46.32 (28-79)

DISCUSSION

Laparoscopic Radical Prostatectomy is one of the most technically challenging laparoscopic surgeries. DVC bleeding is the most common cause of intraoperative bleeding and can be observed in 44% of cases, so DVC ligation is one of the most important steps in this operation. DVC control was first described in 1954 and many ligation methods have been described since then. Although some studies have reported techniques that do not require ligation to control DVC, ligation methods are now widely used to control DVC (4). The most used method is suture ligation, but vascular closure systems (LigaSure™, Medtronic, USA) are also used. DVC suturing is a difficult and prolonged process depending on the size of the prostate and the thickness of the DVC, and superficial suturing may cause bleeding and deep suturing may damage the urethra (5). In one of these studies, the foley catheter inserted from the urethra was tractioned by inflating 20-40 ml balloon and DVC control was achieved, but it was observed that bleeding was statistically higher compared to the ligation methods (6).

In our department, 95 extraperitoneal laparoscopic radical prostatectomies were performed between May 2021 and August 2023, and in all of them, the vessel closure system (LigaSure™, Medtronic, USA) was used for DVC ligation. After DVC ligation, a 16 Fr foley catheter was inserted through the urethra and the balloon was inflated with 25 ml saline, then traction was applied and waited for 15 minutes. In the meantime, the rectum was checked and pelvic lymph node dissection was performed in patients having indications. It was observed that all oozing bleeding was controlled at the end of 15 minutes. Considering that pelvic lymph dissection was performed in patients with indication during the suturing and DVC ligation time, we think that this waiting time did not cause an increase in the mean operation time. No perioperative blood requirement and no significant postoperative hemoglobin drop were observed in any patients.

This technical tip seems to have several limitations. These are small number of patients and the lack of a comparison group. Our aim is to present only our experience with minimal bleeding after DVC ligation, which we found to be successful. This is a technical tip, not a study, and this technique needs to be supported by prospective, randomized, double-blind studies.

CONCLUSION

We believe that compression with a catheter balloon traction successfully controls minimal bleeding after DVC ligation instead of re-ligation with sutures or vessel closure systems (LigaSure™, Medtronic, USA). The other advantage may be its ease that can be performed especially by surgeons who are in the learning curve.

Conflict of interest: The authors declare that they have no conflict of interest.

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