Retropubic radical prostatectomy (RRP) is one of the most important treatment modalities for localized prostate cancer. The procedure is well known to be cause severe bleeding; even experienced surgeons have reported a blood transfusion rate of up to 20% [1–5]. The neurovascular bundle should be preserved for potency and continence and this preservation means that coagulation or hemostasis techniques should be maintained at a minimum level. In other words, during RRP, routine hemostatic techniques (mono or bipolar cautery, metal clips or bipolar open forceps, for example) should be the first choice to manage bleeding.

Ankaferd BloodStopper® (ABS) is a unique medicinal plant extract, which has historically been used in Turkish traditional medicine. This product includes five plants and each of them has some effects on the endothelium, blood cells, angiogenesis, cellular proliferation, vascular dynamics and cell mediators [6]. Furthermore, the efficacy of ABS in open heart surgery and upper gastrointestinal bleeding have also been confirmed [7,8]. In this case report, we evaluated the antihemostatic effect of local ABS application in a male patient who underwent RRP.

**CASE PRESENTATION**

A 66-year-old man was admitted to our outpatient clinic complaining of lower urinary tract symptoms. Disease-specific history, physical examination, blood and urine analysis, prostate specific antigen (PSA), digital rectal examination and uroflowmetry were performed. The total PSA level was 15.9 ng/mL. Pathologic examination of a transrectal ultrasound-guided biopsy specimen revealed prostate adenocarcinoma (Gleason Score: 3+4=7) in the right lobe. Retropubic radical prostatectomy was planned. We aimed to investigate the effect of ABS as a hemostatic agent during the RRP. Therefore, the patient signed the informed consent form authorizing us to use ABS during RRP. Routine electrocautery, metal clips and open bipolar plasmakinetic forceps were available for hemostasis. ABS tampons sized 2.5×7 cm were used to provide...
hemostasis. ABS was applied for hemorrhages that could not be managed with conventional procedures. The application regions did not include the dorsal venous complex, the neurovascular bundle or the urethra, and the application method involved compressing the ABS tampon onto the bleeding region for at least 2 minutes (Figure 1). Because the ABS tampons are non-absorbable products, we had to remove the tampon when the bleeding had stopped. The operation time was nearly 210 minutes. The amount of blood loss was 500 mL and one unit of blood was transfused to the patient. No serious complication was observed. During this RRP, the hemostatic control was only provided at the posterior plane of the prostate and the Denonvillier fascia after the formation of an ABS aggregate (red area) (Figure 2). We observed that a well-compressed tampon was sufficient to obtain hemostasis.

**DISCUSSION**

ABS comprises a standardized mixture of the plants *Thymus vulgaris*, *Glycyrrhiza glabra*, *Vitis vinifera*, *Alpinia officinarum* and *Urtica dioica*. This product has been licensed for use for external, dental and postsurgical major or minor hemorrhages. It has been confirmed that ABS does not have any limitation for its use. The basic mechanism of ABS in the hemostatic process is the formation of an encapsulated protein network that provides focal points for vital erythrocyte aggregation. The protein network induced by ABS is formed rapidly (<1 second); however, blood cells, particularly erythrocytes, participate in protein network formation [6]. ABS is produced by a registered Turkish company. In Turkey, some studies have been performed to investigate the efficacy of ABS in stopping bleeding in visceral organs; however, this is the first clinical application of ABS in a urology clinic to evaluate its antihemostatic effect during RRP.

It has been shown that a combination of factors such as intraoperative fluid reduction, epidural catheter usage and Trendelenburg positioning significantly decreased blood loss and transfusion [9].

Zelster et al confirmed that the use of a topical hemostatic agent along the neurovascular bundle in dogs did not adversely affect cavernous nerve function, measured as the erectile response to electrical stimulation [10]. An ideal topical hemostatic agent for use in surgical procedures, such as radical prostatectomy, should be easy to use, exert its effects within minutes and be effective against arterial and venous bleeding. Furthermore, it should not damage the neurovascular bundle or urethra, and not be toxic or anaphylactic. In this case, hemostasis during RRP was provided by applying ABS onto tissues with active hemorrhages. Here, we observed the clinical efficacy of ABS during RRP.

The aim of this case report was to investigate the hemostatic efficacy of ABS, which is a novel Turkish topical hemostatic agent, during RRP. According to our observations, ABS has a major effect on providing active hemostasis during RRP. In our opinion, further clinical studies with large numbers may support our findings and show the hemostatic efficacy of ABS in surgical procedures, including RRP.
REFERENCES