Use of Ankaferd Blood Stopper™ as a Hemostatic Agent: A Clinical Experience

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Abstract

Aim: To determine the efficacy of the topical application of Ankaferd Blood Stopper™ (ABS) on hemorrhagic diathesis following dental procedures under different conditions.

Background: Some patients have a tendency to bleed excessively after dental surgery for a variety of reasons, making oral surgical procedures more risky for these patients. Since hemorrhage can cause major morbidity and mortality, the identification of a novel, effective hemostatic agent could improve the management of excessive bleeding that occurs during dental procedures.

Case Descriptions: Four patients (3 females, 1 male) aged 28–45 with bleeding tendencies due to different presurgical conditions such as von Willebrand Disease, chronic liver failure, and mitral valve replacement presented for tooth extraction. Hematological consultations were obtained prior to surgical intervention and their international normalized (INR) ratio values were adjusted to less than 1.5; none received clotting factor replacement. All the extractions were performed under local anesthesia with and without epinephrine. In the presence of postsurgical bleeding, the efficacy of the ampule form of topical ABS was observed. Sex, age, anamnesis, von Willebrand Factor, activated partial thromboplastin time, factor VIII, and platelet counts of patients were recorded prior to the extractions.

Conclusions: ABS was found to be effective within 10 to 20 minutes in controlling bleeding in most of the patients after dental surgery. These observations suggest the use of ABS may be a beneficial hemostatic agent for use in patients with hemorrhagic diathesis following tooth extraction. Additional research is needed to clarify the role of this unique medicinal product in the surgical treatment of dental patients with bleeding tendency.

Clinical Significance: ABS has demonstrated potential for being an effective hemostatic agent for the treatment of excessive bleeding following dental surgery in four patients with hemorrhagic diathesis.
application, spraying, or incorporation in dressing material to injured skin or mucosa (Figures 1 and 2).

ABS is a unique medicinal plant extract that has been used historically in Turkish traditional medicine as a hemostatic agent. ABS consists of a standardized mixture of extracts from the following plants: *Thymus vulgaris*, *Glycyrrhiza glabra*, *Vitis vinifera*, *Alpinia officinarum*, and *Urtica dioica*. 2–5 Each of these plants has some effect on the endothelium, blood cells, angiogenesis, cellular proliferation, vascular dynamics, and cell mediators. Although the basic mechanism of action for ABS remains unclear, it appears to cause the formation of an encapsulated protein network that provides focal points for vital erythrocyte aggregation.

Ankaferd-induced protein network formation with blood cells, particularly erythrocytes, covers the primary and secondary hemostatic system without disturbing individual coagulation factors. 2 The findings of that study precipitated an interest in determining the clinical experience using ABS as a hemostatic agent following oral surgical procedures on four patients with bleeding tendencies for different medical reasons.

### Case Descriptions

Four patients (3 females, 1 male) aged 28-45 with bleeding tendencies due to different presurgical conditions such as von Willebrand disease, chronic liver failure, and mitral valve replacement presented for tooth extraction. Hematological consultations were obtained prior to surgical intervention and their international normalized ratio values were adjusted to less than 1.5; none received clotting factor replacement. The extractions were done as

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**Keywords:** Ankaferd Blood Stopper, oral surgery, bleeding


**Background**

Some patients have a tendency to bleed excessively after dental surgery for a variety of reasons, making oral surgical procedures more risky for these patients. 1 Since hemorrhage can cause major morbidity and mortality, the identification of a novel, effective hemostatic agent could improve the management of excessive bleeding that occurs during dental procedures.

The hemostatic action of ABS (Ankaferd Blood Stopper™, Mefar Ilaç Sanayi A.S., Istanbul, Turkey) has been reported by Goker et al. 2 for the management of excessive hemorrhage during and after dental surgery. The ABS used in these cases was obtained from Trend Teknoloji İlaç AS, Istanbul, Turkey, as a solution for direct application, spraying, or incorporation in dressing material to injured skin or mucosa (Figures 1 and 2).

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**Figure 1.** Ampule form of ABS.

**Figure 2.** ABS in a syringe.
disorder caused by a defect or deficiency of a blood clotting protein, called the von Willebrand Factor (vWF). Her bleeding time was longer than normal following previous surgical procedures such as a tonsillectomy and dental extractions. In addition, she has a history of her menstrual bleeding being clotted and extending up to 10 days. Her hematologic findings before the extraction were as follows:

- vWF: 50.0 (56–150 normal value)
- Factor VIII: 43.1%
- aPTT: 35.58 seconds
- Platelet count: 325,000 mm$^3$

Following the extraction of a mandibular first molar, an ampule form of ABS was placed into the empty alveolus until it was filled with the agent (Figure 3), then an ABS absorbed gauze (Figure 4) compress was placed over the extraction site (Figure 5) and held in place by biting force. Inspection of the extraction site revealed no evidence of bleeding at intervals of 10 (Figure 6) and 20 minutes following surgery and none at intervals of 1, 3, 6, and 24 hours.

**Case One**

A 28-year-old female with von Willebrand Disease was referred from a hematologist for a tooth extraction. von Willebrand Disease is a bleeding disorder caused by a defect or deficiency of a blood clotting protein, called the von Willebrand Factor (vWF). Her bleeding time was longer than normal following previous surgical procedures such as a tonsillectomy and dental extractions. In addition, she has a history of her menstrual bleeding being clotted and extending up to 10 days. Her hematologic findings before the extraction were as follows:

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**Figure 3.** Extraction socket of a lower first molar after application of the ABS

**Figure 4.** ABS on the gauze.

**Figure 5.** Gauze with ABS over the extraction socket.

**Figure 6.** Extraction area appearance 10 minutes after the ABS application
The destruction of periodontal tissues. His hematologic findings prior to the extraction were as follows:
- Platelet count: 261,000 mm$^3$
- INR value: under 1.5

A thorough curettage was applied to the socket to eliminate the granulation tissues. As in the other cases, following the extraction an ampule form of ABS was placed into the empty alveolus until it was filled with the agent, then an ABS absorbed gauze compress was placed over the extraction site and held in place by biting force. Mild bleeding was observed at the 10th minute after application. Consequently, the same administration of ABS and application of an ABS-impregnated gauze compress was performed again. A week following the extraction, the patient returned with a complaint of mild bleeding. An oral examination revealed a huge coagulum at the extraction site. The ampule form of ABS absorbed gauze was applied to the site followed by an infusion of ABS with a syringe. No further bleeding problem was found at 1, 3, 6, and 24-hour intervals.

Case Two

A 40-year-old female diagnosed with von Willebrand Disease was referred for the extraction of her left maxillary second premolar by a hematologist. The presurgical blood test indicated the following:
- vWF: 88.1
- aPTT: 27.2 seconds
- Prothrombin time: 12.5 seconds
- Platelet count: 215,000 mm$^3$
- Platelet function tests: collagen/ADP: 135; collagen/EPI: 88; aggregation was normal

As was done in Case One, following the extraction an ampule form of ABS was placed into the empty alveolus until it was filled with the agent, then an ABS absorbed gauze compress was placed over the extraction site and held in place by biting force. Inspection of the extraction site revealed no evidence of bleeding at intervals of 10 and 20 minutes following surgery and none at intervals of 1, 3, 6, and 24 hours.

Case Three

A 42-year-old female suffering from chronic liver disease and taking warfarin (2.5 mg/day) was referred for the extraction of the right mandibular first molar by a hematologist. Her hematologic findings prior to the extraction were as follows:
- Prothrombin time: 15.1 seconds
- Platelet count: 55,000 mm$^3$
- INR: 1.3

As in the other cases, following the extraction an ampule form of ABS was placed into the empty alveolus until it was filled with the agent, then an ABS absorbed gauze compress was placed over the extraction site and held in place by biting force. Mild bleeding was observed at the 10th minute after application of the ABS and another ABS gauze compress was placed. No bleeding was observed at 20 minutes, or at intervals of 1, 3, 6, and 24 hours.

Case Four

A 45-year-old male with a history of mitral valve replacement and taking warfarin (5 mg/day) was referred from a cardiology clinic for the extraction of his right maxillary second molar because of destruction of periodontal tissues. His hematologic findings prior to the extraction were as follows:
- Platelet count: 261,000 mm$^3$
- INR value: under 1.5

A thorough curettage was applied to the socket to eliminate the granulation tissues. As in the other cases, following the extraction an ampule form of ABS was placed into the empty alveolus until it was filled with the agent, then an ABS absorbed gauze compress was placed over the extraction site and held in place by biting force. Mild bleeding was observed at the 10th minute after application. Consequently, the same administration of ABS and application of an ABS-impregnated gauze compress was performed again. A week following the extraction, the patient returned with a complaint of mild bleeding. An oral examination revealed a huge coagulum at the extraction site. The ampule form of ABS absorbed gauze was applied to the site followed by an infusion of ABS with a syringe. No further bleeding problem was found at 1, 3, 6, and 24-hour intervals.

Discussion

Patients with hemorrhagic diathesis have a tendency to bleed excessively after dental surgery. This excessive bleeding may increase the risk of infection and also may cause delayed wound healing. Hemorrhagic diathesis is a result of congenital or acquired coagulation factor deficiencies such as the following:
- Hemophilia A and B
- von Willebrand's Disease
- Other clotting factor deficiencies
- Liver disease
- Vitamin K deficiency
- Use of anticoagulants such as warfarin that are usually prescribed to treat a number of cardiac or vascular disorders including atrial fibrillation, ischemic cardiac disease, cardiac valvular disease, prosthetic cardiac valves, postmyocardial infarction, deep venous thrombosis, pulmonary embolism, cerebrovascular accident, among others
- Disseminated intravascular coagulation
ABS is a new product without an adequate body of research to support its use in dental applications and more research is needed. It is available in three forms: tampons, spray, and an ampule. The best form for use in extraction sites is the 2 ml ampule. The spray form is too difficult to control due to the possibility of an overspray of the agent onto the tissues adjacent to the extraction socket. Use of the tampon form could inhibit wound healing in sockets and is not recommended.

The observations in the four patients in the present report support the recent in vivo and in vitro findings in previous studies, demonstrating the beneficial effect of ABS on hemostatic parameters. Taken together, ABS seems to be a promising therapeutic agent for the management of clinically evident coagulation disorders.
References


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