RESEARCH LETTER

Dental extractions in patients with mild hemophilia A and hemophilia B and von Willebrand disease without clotting factor supplementation

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Received: May 28, 2018.
Revision accepted: June 8, 2018.
Published online: July 11, 2018.
Conflict of interest: none declared.
Pol Arch Intern Med. 2018;
128 (7-8): 488-490
doi:10.20452/pamw.4298

Introduction The search for new alternative therapies and methods for obtaining local hemostasis after tooth extractions in patients with coagulation disorders remains a challenge, especially after reports from the 1980s about adverse effects related to clotting factor supplementation, including viral infections (HIV, Epstein–Barr virus, human papilloma virus, hepatitis B virus, and hepatitis C virus), immune disorders, and the production of anti–factor VIII (FVIII) and anti–factor IX (FIX) antibodies.[1-4]

According to the current treatment algorithms, patients with coagulation disorders should be prepared for tooth extractions by a presurgical transfusion of the substitute mixture in a single dose, which provides about 30% of the hemostatic level of the missing coagulation factor. Recommendations include also an intravenous infusion of tranexamic acid and continuation of oral antifibrinolytic mixture until the postextraction wound heals. Significance of topical treatment in prevention of secondary bleeding is also emphasized.[5-7] Creating a strong and stable clot in the alveolus as a natural dressing provides sufficient hemostasis. The choice of a proper local hemostatic is no less important than the general preparation of the patient for surgery, because it can limit the use of substitution mixtures, which is important for clinical, economic, and social reasons.[7-9]

In the last decade, modern substances with local hemostatic effects (eg, TachoComb, Fibrillar, PerClot, Surgifilo) appeared on the market, which may be successfully applied in oral surgery.[10,11] TachoComb is a ready-to-use, absorbable hemostatic dressing consisting of collagen reticulum, unilaterally coated with human fibrinogen, bovine thrombin, aprotinin, and riboflavin.[11] Thrombin converts fibrinogen to fibrin, which by polymerization and formation of long chains transforms into a fibrin clot. Collagen activates the coagulation process in contact with the surface of the wound, causing platelet aggregation, and releases platelet mediators, such as thromboxane A_2, which contributes to clot stabilization. The role of aprotinin is to prevent clot degradation by delaying local fibrinolysis. TachoComb in the form of a dry dressing is convenient and easy to handle. After application, the dressing quickly absorbs the alveolar blood, changing its consistency into a gelatinous mass that adheres exactly to the edges of the wound.[8]

The aim of this retrospective study was to assess whether the exclusive local dressing of the postextraction wounds in patients with plasma hemorrhagic diathesis (hemophilia A, hemophilia B, and von Willebrand disease) and the use of tranexamic acid without the supplementation of missing coagulation factors is an effective and safe treatment in terms of preventing and inhibiting secondary postextraction bleeding.

Patients and methods We retrospectively reviewed medical histories of patients treated at the Department of Maxillofacial Surgery of the Fryderyk Chopin Clinical Provincial Hospital in Rzeszów, Poland, between 2005 and 2015. Of the 159 patients with coagulation disorders treated during this period, 19 patients were selected (17 men and 2 women; age range, 21–46 years) who underwent planned dental extractions due to dental caries and periodontal

diseases. All teeth qualified for extraction were classified as grade III or grade II of pathological mobility.

Mild hemophilia A was reported in 12 patients (FVIII, 7.2–13.5 IU/dl); mild hemophilia B, in 5 patients (FIX, 6.8–25 IU/dl); and type 1 von Willebrand disease, in 2 female patients (FVIII, 16–21 IU/dl). All patients had previously diagnosed type and form of hemorrhagic diathesis and confirmed level of coagulation factor deficiency.

In all 19 patients, tooth extractions were performed without supplementation of coagulation factor prior to the surgery. All patients gave written informed consent to the suggested method of treatment. The procedure was based on tranexamic acid transfusion approximately 30 minutes before the surgery in a single intravenous infusion (25 mg/kg of body weight) and continued oral administration of the substance after tooth extraction until the wound healed. Tooth extractions were performed atraumatically, protecting the tissues in the vicinity of the extracted tooth, under local anesthesia with a 2% solution of lignocaine hydrochloride with the vasoconstrictor. Postextraction wounds were topically filled with TachoComb dressing.

The efficacy of the procedure was assessed according to a 3-grade scale of secondary bleeding severity. In mild bleeding (grade I), there was only a slight drainage from underneath the clot, which usually resolved spontaneously or under pressure and did not require additional dressing. Moderate bleeding (grade II) was diagnosed when the volume of the clot significantly increased, the clot became limp, detached from the base, resulting in bleeding that required a reapplication of local dressing. Bleeding that required at least 2 local re-dressings of the alveolus and coagulation factor supplementation was considered severe (grade III).[8,10]

The statistical calculations were carried out with the use of the StatSoft, Inc. package (2011). The χ^2 independence test was used for qualitative variables. The level of significance was set at a P value of less than 0.05.

Results Of the 19 patients who were prepared for tooth extraction only by combining local dressing (TachoComb) with antifibrinolytic therapy, secondary bleeding occurred in 3 individuals (15.7%): 2 patients with hemophilia A and 1 patient with hemophilia B.

Among the hemophilia A subgroup, secondary bleeding occurred in 2 patients: on the third and fifth days after tooth extraction, respectively. The bleeding was characterized by a mild course with a slight drainage from underneath the clot. It ceased after application of a long-lasting pressure using a tampon soaked in tranexamic acid. The mean procoagulant activity of FVIII in these patients at the time of bleeding was 9.7 IU/dl. The occurrence of secondary bleeding in these cases, in addition to the reduced level of FVIII, may have been caused by inflammation of periapical tissues.

Secondary hemorrhage in the patient with hemophilia B was moderate in severity and occurred on the seventh day after tooth extraction and required reapplication of the dressing using TachoComb. The FIX level in this patient was 6.8 IU/dl during the secondary bleeding. Low level of the clotting factor and bad oral hygiene may have had influenced the secondary bleeding in this case.

Our observations show that the local dressing of postextraction wounds with TachoComb in combination with antifibrinolytics (tranexamic acid) made it possible to obtain local hemostasis after tooth extraction in patients with hemophilia A, hemophilia B, and von Willebrand disease in 16 cases without implementing a substitution therapy.

Discussion There are limited literature data on the attempts to reduce coagulation factor supplementation before surgical and dental procedures in connection with the reports on adverse medical events after the substitution therapy.[1,3,8,9] The observations presented in this study show that the dressing of postextraction wounds with TachoComb in combination with tranexamic acid therapy effectively prevented secondary bleeding. It allowed to achieve local hemostasis after tooth removal in 84.3% of the patients without the implementation of substitution therapy.

Reducing or withdrawing the supplementation of clotting factor prior to tooth extraction should be considered individually in each patient. Only a careful analysis of risk factors before the procedure will allow a safe surgery without complications. Our observations correspond with the reports of Abed et al,[4] Bajkin et al,[9] and Hevson et al,[11] who by limiting the supplementation of coagulation factor, obtained the correct local hemostasis not only in single-tooth extractions, but also after surgical removal of retained lower wisdom teeth. TachoComb in the form of a lyophilized dry dressing is easy to use and convenient for local application. It is completely absorbed from the application site.[8] Like some other authors, we believe that postoperative recommendations for patients regarding, for example, maintenance of a suitable soft diet or avoidance of analgesics that interfere with hemostasis (ie, aspirin and nonsteroidal anti-inflammatory drugs such as diclofenac, ketoprofen, ibuprofen, and naproxen), are as important as choosing the right local hemostatic.[1,4-6,7]

Our results show that tooth extractions in patients with mild hemophilia and von Willebrand disease performed without the supplementation of clotting factor after an appropriate dressing of the alveolus with TachoComb were safe and effective in reducing secondary postextraction bleeding. TachoComb provided effective local hemostasis and prevented secondary bleeding after tooth extraction in 84.3% of patients without the need

for coagulation factor supplementation. Tooth extractions in advanced periodontal disease and deciduous teeth in patients with congenital coagulation disorders can be safely performed without the supplementation of coagulation factors on condition that a thorough local dressing and antifibrinolytic therapy are used.

REFERENCES

1 Windyga J, Łopaciuk S, Stefańska E, et al. Haemophilia and other inherited blood coagulation disorders. Pol Arch Med Wewn. 2004; 42: 1197-2002.

2 Zdziarska J, Chojnowski K, Klukowska A, et al. Therapeutic properties and safety of recombinant factor VIII and factor IX. Pol Arch Med Wewn. 2009; 119: 403-409.

3 Abed H, Ainousa A. Dental management of patients with inherited bleeding disorders a multidisciplinary approach. Gen Dent. 2017; 12: 56-60.

4 Hawson ID, Makhmalbef P, Street A, et al. Dental surgery with minimal factor support in the inherited bleeding disorder population at the Alfred Hospital. Haemophilia. 2011; 17: 185-189.

5 Zanon E, Martinelli F, Bacci C, et al. Proposal of a standard approach to dental extraction in haemophilia patients: a case-control study with good results. Haemophilia. 2000; 6: 533-536.

6 Tuohy E, Litt E, Alikhan R. Treatment of patients with von Willebrand disease. J Blood Med. 2011; 2: 49-57.

7 Anderson JA, Brewer A, Creagh D, et al. Guidance on the dental management of patients with haemophilia and congenital bleeding disorders. Br Dent J. 2013; 215: 497-504.

8 Cocero N, Pucci F, Messina M, et al. Autologous plasma rich in growth factors in the prevention of severe bleeding after teeth extractions in patients with bleeding disorders: a controlled comparison with fibrin glue. Blood Transfus. 2015; 13: 287-294.

9 Bajkin BV, Rajic NV, Vujkov SB. Dental extraction in a hemophilia patient without factor replacement therapy: a case report. J Oral Maxillofac Surg. 2012; 70: 2276-2277.

10 Janczak J, Ruciński A, Rucińska Z, et al. Modern topical hemostatic agents: a breakthrough in vascular surgery [in Polish]. Polim Med. 2013; 43: 221-225.

11 Hewson ID, Makhmaloaf P. Management of third molar removal with a single dose of recombinant Factor IX (BeneFIX) and local measures in severe haemophilia B. Aust Dent J. 2010; 55: 322-324.