

MANAGEMENT OF BLEEDING AFTER TOOTH EXTRACTION

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Running Title: MANAGEMENT OF BLEEDING AFTER TOOTH EXTRACTION

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Abstract: Oral care providers must be aware of the impact of bleeding disorders on the management of dental patients. Initial recognition of a bleeding disorder, which may indicate the presence of a systemic pathologic process, may occur in dental practice. Furthermore, prophylactic, restorative and surgical dental care of patients with bleeding disorders is best accomplished by practitioners who are knowledgeable about the pathology, complications and treatment options associated with these conditions. The purpose of this paper is to review common bleeding disorders and their effects on the delivery of oral health care.

Keywords: blood coagulation/physiology; blood coagulation disorders/complications; dental care

INTRODUCTION

Dental extraction is one of the most commonly performed surgical procedures in the United States. Difficulties of extractions are multi-factorial. Depth and angle of impaction are obvious factors that should be assessed. Factors that are also important in the decision-making process are the age of the patient, general medical health, ethnicity, anatomy (trismus, tongue size, tooth structures), mental status (anxiety), and ability to cooperate.

BLEEDING DISORDER

One of the most common complications of all surgeries is post-operative bleeding. Post-operative bleeding from dental extraction is commonly due to venous bleed from nutrient blood vessels in the supporting bone but can also be due to an arterial source. Other causes of post-operative bleeding may include the failure to debride all granulation tissues from the socket, torn soft-tissue, and rebound vasodilatation following the use of epinephrine-containing anesthetics. Patient factors can also contribute to excessive and prolonged post-operative bleeding. Patients who are on medications such as Coumadin, Aspirin, Plavix, and chemotherapeutic agents may have prolonged bleeding. Patients who have uncontrolled hypertension, liver diseases, platelet deficiency, hemophilia, von Willebrand factor deficiency, or vitamin K-deficiency (from prolonged antibiotic intake or GI surgeries) may also pose a significant risk for post-operative bleeding.[1]

Table 1 Common bleeding disorders

Coagulation factor deficiencies

Congenital:

- Hemophilia A and B
- von Willebrand's disease
- Other factor deficiencies (rare)

Acquired:

- Liver disease

- Vitamin K deficiency, warfarin use
- Disseminated intravascular coagulation

Platelet disorders Quantitative disorder (thrombocytopenia)

Immune-mediated:

- Idiopathic
- Drug-induced
- Collagen vascular disease
- Sarcoidosis

Non-immune-mediated:

- Disseminated intravascular coagulation
- Microangiopathic hemolytic anemia
- Leukemia
- Myelofibrosis

Qualitative disorder:

Congenital:

- Glanzmann thrombasthenia
- von Willebrand's disease

Acquired:

- Drug-induced
- Liver disease
- Alcoholism

Vascular disorders

- Scurvy
- Purpura
- Hereditary hemorrhagic telangiectasia
- Cushing syndrome
- Ehlers-Danlos syndrome

Fibrinolytic defects

- Streptokinase therapy
- Disseminated intravascular coagulation

Bleeding disorders can be classified as coagulation factor deficiencies, platelet disorders, vascular disorders or fibrinolytic defects (Table 1).[5][6]

Bleeding after tooth extraction:

Bleeding occurs because the gingiva (gum) and periodontal tissues have been damaged.

The amount of bleeding can vary due to:

Local factors: Amount of damage caused by elevators or forceps

Amount of inflammation surrounding the tooth, either due to acute infection or chronic gingival or periodontal disease. (if there has been an abscess and swelling the tissue will have a bigger blood supply. If they have bleeding gums because of poor toothbrushing. If the tooth is loose because of periodontal disease there will be more bleeding from the socket).

If it is a large tooth with wide apart roots that causes the gum to tear when removing the tooth.

Medical factors: Patients may have bleeding problem because of Leukemia, Liver disease, Haemophilia, high blood pressure or because of medication to make the blood thinner (anticoagulants) or aspirin. Bleeding can be reduced by the use of local anaesthetic next to the tooth as most anaesthetics contain a vasoconstrictor (a drug to reduce the blood flow by reducing the size of the blood

vessels) such as Adrenaline/Epinephrine. Patients can be given Chlorohexidene Gluconate as a mouthwash or gel several days before the extraction to reduce the amount of bacteria and reduce the inflammation. The Clotting System When a blood vessel is damaged it will contract (become smaller) to block the vessel- it then releases clotting factors that will cause the Platelets in the blood to stick to the damaged area and allow the fibrin proteins to form a clot.

Persisting bleeding following a dental extraction

• Persisting bleeding following a dental extraction is an uncommon, but well-reported postoperative complication of dental surgery.

• This can be associated with a number of medical conditions, E.g. blood disorders and liver disease; and with certain medications E.g. warfarin and aspirine

POST OPERATIVE PERIOD

- No mouth rinsing for 24 hours;
- No smoking for 24 hours;
- Soft diet for 24 hours;
- No strenuous activities for 24 hours;
- Prescribed medication must be taken as instructed;
- Analgesia should be prescribed for use if required;
- Salt-water mouthwashes (1 teaspoon of salt in a glass of warm water) should be used four times a day starting the day after the extraction for 7 days [14]
- Antibacterial mouthwash may be used
- Emergency contact details must be given to patient in case of problems

Surgical Swelling & Infection

Post-operative soft-tissue swelling can be a normal part of the healing process. The wound heals by the inflammatory process, which has four cardinal signs: tumor (swelling), rubor (redness), dolor (pain), and calor (heat). Particularly during surgical extraction of third molars, the removal of bone and the elevation of periosteum can cause significant swelling in the post-operative period. This swelling will increase throughout the first three to four post-operative days. Elevation of the head and neck during this period is recommended to minimize swelling. Ice packs may be used on alternating sides every 20 minutes during the first 24–48 hours but may do little to alleviate swelling associated with oral surgery²: Administration of steroids has been shown to decrease post-operative swelling.^{3 4} Surgical swelling should slowly diminish from Post-Operative Day 3 or 4 onwards, until it finally disappears by Day 7 to 10.

MANAGEMENT

After an Extraction:

- The best way to stop bleeding and help healing is to apply pressure over the socket to stop blood flow and encourage a blood clot to form. A really good pack must fit the socket – (fit between the other teeth and be higher than the next teeth so the opposing teeth can press on it)
- It must be firm enough to provide pressure onto the socket (cotton wool will not do this)
- It should be covered in Vaseline so the blood will not seep into the gauze otherwise that blood will clot and pull away the clot when the pack is removed.
- The patient is asked to bite very hard onto a pack placed over the socket for at least 10 -15 minutes. That area of the mouth must be left undisturbed for as long as possible to stop disturbing the fragile clot.
- To make a good pack fold the gauze no wider than the cotton wool roll. Smear some vaseline on the gauze to hold the pack together – use 1 or 2 cotton wool rolls and tightly roll them in the gauze – then apply a large amount of vaseline over the whole surface of the pack .
- The dental assistant should ensure the mouth is clear of debris, blood and saliva before the pack is placed on the socket to ensure the patient is comfortable and does not want to spit or wash out their mouth. Wipe round the patients mouth with a damp then dry tissue to remove any traces of blood.
- Bite hard on the swab for a minimum of thirty minutes. This should be constant pressure.
- If it is difficult to maintain pressure in this way, press hard on the swab with a finger, again for thirty minutes

Table 7 Management of patients with coagulati on factor deficiencies, who require dental extraction or complex procedures) [7]"

Bleeding disorder	Pretreatment for extraction or nerve block	Postextraction treatment for all bleeding disorders
<ul style="list-style-type: none"> vWD, Type 1 vWD, Types 2A and 2M vWD, Types 2B and 3 Hemophilia A (mild) Hemophilia A (moderate or severe) Hemophilia B (mild, moderate or severe) 	<ul style="list-style-type: none"> Desmopressin, 0.3 µg/kg (maximum dose 20 µg) IV over 20–30 minutes or Subcutaneously Desmopressin, as above, if tested response or Humate-P, 50 IU of vWF:RCoF/kg Humate-P, 50 IU of vWF:RCoF/kg Desmopressin, as above, if tested response is adequate Recombinant Factor VIII concentrate, 20–25 IU/kg Re-evaluate postprocedure Recombinant Factor IX concentrate, 40–60 IU/kg Re-evaluate postprocedure 	<ul style="list-style-type: none"> Antifibrinolytic agents (e.g., tranexamic acid, 25 mg/kg t.i.d.) for 3–5 days Soft diet for 7 days Within 24 hours, assess need for repeat treatment

MANAGEMENT OF POST OPERATIVE HEMORRHAGE

An important aspect of treating any patient with the potential for excessive bleeding is to inform him or her of the risk and describe plans for intervention should excessive bleeding occur. Too often, patients assume that any amount of bleeding is abnormal.)[8]"

Techniques for managing postoperative bleeding episodes are:• Reapplication of pressure packs. Often patients do not do this properly. The technique must be demonstrated to the patient to ensure that this simple technique is effective. Pressure packs must be kept in place at least 30 minutes without checking them before the need for other intervention is determined.

- Packing or repacking sockets with Gelfoam is usually the second step, with pressure packs replaced over the fresh Gelfoam.[9]"

- Reinjection of local anesthetic with epinephrine can help slow hemorrhage and allow vessel constriction, platelet plug formation and stable clot formation. However, after epinephrine rebound, vasodilation can occur, which may lead to significant hemorrhage.

- Any large, exophytic clots should be removed down to the level of the socket as they may provide a pathway for continued bleeding and prevent application of adequate pressure to the site.

- The use of astringents may be considered, especially on incisions and raw areas. The “old tea-bag trick” refers to the practice of using a tea bag as a pressure pack. The tea contains the astringent tannic acid. Commercial preparations containing aluminum chloride produce a similar result.[10]"

- Patients should be instructed to limit physical exertion, to sit or sleep in a semi-sitting position and to avoid smoking and alcohol consumption.[11]"

Pain Control

In patients with coagulopathies, nerve-block anesthetic injections are contraindicated unless there is no better alternative and prophylaxis is provided, as the anesthetic solution is deposited in a highly vascularised area, which carries a risk of hematoma formation.[12]" , [13]"

Choice of Medications

Many medications prescribed in dental practice, especially ASA, may interfere with hemostasis. In addition, many drugs interact with anticoagulants, increasing their potency and the risk of bleeding. When used for prolonged periods, ASA and nonsteroidal anti-inflammatory drugs (NSAIDs) can increase the effect of warfarin. Penicillins, erythromycin, metronidazole, tetracyclines and miconazole also have potentiating effects on warfarin. Care should be taken when prescribing these drugs to patients with bleeding

tendencies or those receiving anticoagulant therapy, and it may be desirable to consult the patient's physician before planning the dose regimen

Post-extraction hemorrhage

Careful pre-operative planning and the use of antifibrinolytic agents will prevent many postoperative problems.[15]"

Conclusion

Dental practitioners who perform dental extractions should be prepared to deal with all potential complications associated with this procedure. Several common post-operative complications of dental extractions have been discussed here, and their etiologies and managements explored. It is our hope that general practitioners will be more prepared to manage these complications should they arise in the clinical setting.

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