Original Article

Management Protocol of Common Bleeding Disorders in Routine Dental Practice

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Abstract

Objectives: *Bleeding disorders can result from inherited genetic defects or be acquired due to use of anticoagulant medications or medical conditions such as liver dysfunction, chronic kidney disease, and autoimmune disease.(1) During blood vessel injury, hemostasis relies on interactions between the vascular vessel wall and activated platelets as well as clotting factors.(2) Any marked defect at one of these stages results in bleeding disorders. Vascular wall defects, platelet defects, or deficiency of clotting factors can affect the severity level of bleeding episodes. Thus, patients may have mild, moderate, or severe episodes of bleeding.*

Key wards: *Clotting Factors, Hemostasis, Platelets.*

Introduction

Hemostasis is the physiological process that stops bleeding at the site of an injury while maintaining normal blood flow elsewhere in the circulation.[1] 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.[2] Dental surgeons must be aware of the impact of bleeding disorders on the management of their patients. Proper dental and medical evaluation of patients is therefore necessary before treatment, especially if an invasive dental procedure is planned. Patient evaluation and history should begin with standard medical questionnaires.[3] When a bleeding disorder is suspected, laboratory investigations, including blood counts and clotting studies, should be carried out.[4]

General consideration

1. Three questions must be answer before the management of bleeding disorder in dental procedure.

a. Either the bleeding is due to local pathology or bleeding disorder or combination of both? Haemorrhegic or bleeding disorder is suspected if there is -

i. Spontaneous bleeding,

ii. Excessive or prolonged bleeding after minor trauma,

iii. Bleeding from more than one site,

iv. Family history,

v. Previous incident.

b. If due to haemorrhegic/bleeding disorder, which component is involved?

i. In case of platelet disorder

1. Petechial bleeding common.

2. Tourniquet test positive.

3. Increased bleeding time. 4. Decreased platelet count.

ii. If vascular component is involved

1. Bleeding confined to skin.

2. Petechie or ecchymosis.

3. Platelet count normal.

4. Clotting test normal.

iii. In coagulation disorder

1. Large ecchymosis.

2. Petechial bleeding is rare.

3. More frequently in deep tissue.

4. One or more clotting test is abnormal.

c. What is the cause of haemorrhegic/bleeding disorder?

i. Congenital – family history, long and previous incident.

ii. Acquired – drug history, massive blood transfusion.

2. Diagnosis of nearly all bleeding disorder is largely or mainly clinical. Selection of appropriate

laboratory test required for appropriate diagnosis depends on full clinical assessment.[5]

3. Clinical assessment

a. History

i. Age and sex.

ii. Present episode of bleeding

1. Type, frequency and duration

2. Spontaneous or following trauma/surgery

iii. Co-existing diseases

1. Collagen disease

2. Thrombocytopenia

3. Renal disease

4. Allergy and skin disease

iv. Drug – anticoagulant, anti-platelet and other

v. Past history of bleeding and trauma

vi. Bleeding after trauma/surgery

vii. Family history of bleeding

b. Clinical examination

i. General appearance

ii. Wound

iii. Skin

iv. Joint

v. Tourniquet test

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4. Investigation

a. Essential for all

i. CBC with PBF (peripheral blood film)

ii. BT and CT

b. Further coagulation screening

i. PT

ii. APTT

iii. Factor assay

Treatment/Management of bleeding in dental patient: After proper evaluation diagnosis is made accurately and treatment of specific cause should be done accordingly -

1. Systemic therapies

Choice of appropriate systemic therapy for dental procedure should be made in consultation
with the patient haematologist.

A. The need and type of coagulation factor replacement depend on

- Specific haemostatic diagnosis
- The severity of disorder
- The type of dental procedure, i.e. major and minor

Bleeding disorder	*Pre-treatment for extraction or nerve block*	*Post- extraction treatment for all*
VWD[6]	*Desmopressin 0.3 micro gm. / kg. *Maximum 20 micro gm. *s/c or I/v over 20-30 minutes.[6]	*Antifibrinolytic agent, e.g. Tranexamic acid 25mg/kg TID for 3-5 days. *Soft diet for 7 days. *Further assessment within 24 HRs for the need of repeat treatment.[6-8]
Haemophillia A (Mild)	Desmopressin as above	
Haemophillia A (Moderate to severe)	Recombinant factor VIII concentrate 20-25 IU/kg. [7,8]	
Haemophillia B (Mild, Moderate and severe)	Recombinant factor IX concentrate 40-60 IU/kg. [7,8]	

B. Appropriate prophylaxis for platelet disorder will depend on

-The specific defect

-The planned dental surgery

Platelet disorder	*Pre-procedure*	*Post- procedure*
Thrombocytopenia	If platelet count is below 50×10^9/L, consider measure to increase platelet count quickly, e.g. platelet transfusion[9]	*Antifibrinolytic agent, e.g. Tranexamic acid 25mg/kg, TID for 3-5 days.[9] *Soft diet for 7 days. *Further assessment within 24 HRs for the need of repeat treatment.
Thrombasthenia	*Desmopressin 0.3 micro gm. / kg. *Maximum 20 micro gm. *s/c or I/v over 20-30 minutes	

2. Use of antifibrinolytic agents:

a. Aminocaproic acid and Tranexamic acid are synthetic derivative of amino acid lycin.

They inhibit fibrinolysis and protect the formed clot from disintegration flowing oral surgery or dental extraction.

b. On the other hand, the oral mucosa is rich in plasminogen activator and saliva has significant fibrinolytic activity.

c. Aminocaproic acid and Tranexamic acid are use as adjuncts to specific systemic therapy that corrects the coagulation factor or platelet abnormalities. In haemophillia, they have shown to reduce both the risk of delayed bleeding and the amount of clotting factor replacement therapy required.

d. These agents could be used locally as mouthwash and to perform dental procedure in the patients on oral anticoagulant therapy with reducing or withholding the anticoagulant. Oral dosing starts before the surgery and continues for several days after/until the socket heal. Oral dosing starts before the surgery and continues for several days after/until the socket heal.

3. Patients receiving drug for anti-thrombotic therapy or antiplatelet therapy

a. Although common practice has been to discontinue, most patients on long-term anticoagulant or anti-platelet therapy do not have to discontinue their medication before surgical procedure.

b. With attention to local haemostatic measures, the risk of serious bleeding is minimal.

c. In patients receiving anticoagulant for therapeutic purposes.

i. Measures to taken before surgery in patient taking anticoagulant:

1. Parenteral heparin should be discontinued at least 4-6 hrs. before elective surgery.

2. In case of emergency operation, the effect of heparin may be neutralized by slow infusion of protamine sulphate. (1 mg to inhibit 100 micro gm. of heparin, maximum dose 50 mg.)

3. Oral anticoagulant/ warfarin should be discontinued 4-6 day before elective surgery.[10]

ii. Patients at risk of thrombosis and embolism:

1. Oral anticoagulant should be stopped 4-6 day before and replace by heparin.

2. During operation heparin is continued with IV infusion of 1000 micro gm. /hr. or 5000 micro gm. / 4 hrs.[11]

3. Following operation heparin can be withdrawn after 3 day meanwhile oral anticoagulant re-started immediately.

d. Patients receiving prophylactic doses of anticoagulant, able to proceed with dental surgery without discontinuing their prophylaxis, provided that adjunct and local measures are adequate.[12]

e. Patients receiving anti-platelet drug

i. Less information about anti-platelet drugs.

ii. Study shows patients taking 75-100 mg of Aspirin/day showed no risk of bleeding following dental extraction compared to control.[13]

4. Treatment consideration:

a. Consider not only the nature and severity of the disorder but also

i. Type of bleeding

ii. Location and
iii. Extent of intervention
b. The risk of intervention depend on the accessibility of the surgical site for local control of haemostasis
i. Simple exodontia provide application of local measures such as pressure pack
or topical agent.
ii. In contrast deep spatial/cavity surgery or flap surgery may afford little or no access.
c. Surgical location is also important with regard to possible post-operative sequence of haemorrhage, specially haemorrhage and haematoma formation that may cause airway obstruction must be controlled by systemic measures.
d. Injection of local anaesthetic also poses various degree of risk
i. Nerve block have greater risk and may cause airway obstruction with IAN block.
ii. Local infiltration, PDL injection may advised and have a lower risk.
5. Local measures to limit and control haemorrhage:
a. Sedation/hypnosis is a good adjunct to nerve block and pain control.
b. Surgical techniques may be modified or refined
i. Minimize or lesser trauma, e.g. forceps extraction should be converted into elective sectioning of tooth.
ii. Avoid flap as much as possible.
iii. Choose technique that permit easy access for packing, suturing and cautery
iv. Try to obtain primary closure.
v. Remove all granulation tissue from area of chronic inflammation and infection.
vi. Minimal surgery/minimal access surgery may be performed. RCT is preferable than extraction
vii. Various adjuncts to haemostasis-can be performed
1. Surgical/Gelfoam is an absorbable sponge material-absorbed within 4-6 weeks without little or no scar.[14]
2. Electrocautery.
3. Suturing.
viii. The use of preformed splint to protect and enhance placement of pressure on surgical site is a valuable adjunct. Obturator in palatal procedure and Coe-pack dressing in periodontal procedure are good examples of splint.
ix. Pressure must be applied to appropriate location and gauge should be pre-wetted to prevent the clot from adhering to it and should be maintained for at least 30 minutes preferably one hour.
x. Post-extraction advice should be written and well briefed and must be maintained.
6. Management of post-operative haemorrhage
a. When the diagnosis is clear, appropriate precaution are taken and carried out, this is highly unlikely.
b. Nevertheless post-operative bleeding episodes should be anticipated and managed appropriately.
c. The patient should be briefed/informed the described plans for intervention (pressure pack for another one hour.)
d. All patient with bleeding disorder or potentially to have reassured when they are given a 24 hr. a day contact and next day (24 hr.) reassessment is prearranged.
e. Technique include:
i. Reapplication of pressure pack, esp. with pre-wetted/moistened with anti-fibrinolytic agent, e.g.
Aminocaproic acid.
ii. Packing or replacing sockets with gel foam.
iii. Reinjection of LA with epinephrine.
iv. Any large excess clot should be removed down to the level of the socket.
v. Use of astringent e.g. tannic acid. (the old tea-bag-trick)
vi. Patient instructed to limit physical exertion.
7. Choosing the best course:
a. Team approach should be instituted in special cases.
b. Team member includes Dentists, Physician, Haematologist and Patient.
c. Post-operative monitoring by dentist.
d. Being prepared to deal with bleeding episodes in a calm, competent manner will
result in minimal morbidity for the patient.

Conclusion

Remarkable complexity (inherited, acquired and drug related) sometimes make the situation more difficult but systemic and calm approach solve the most problem in a efficient way.

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