

Dental management of Bleeding Disorders-2

Laboratory Tests

Several tests are available to screen patients for bleeding disorders and to help pinpoint the specific deficiency. Three tests are recommended for use in initial screening for possible bleeding disorders: activated partial thromboplastin time (aPTT), prothrombin time (PT), and platelet count.

If no clues are evident two additional tests can be added to the initial screen: platelet function analyzer (PFA-100) and thrombin time (TT).

A hematologist orders these tests, establishes a diagnosis that is based on the additional testing, and makes recommendations for treatment of the patient who is found to have a significant bleeding problem.

Partial thromboplastin time (PTT); is used to check the intrinsic system (factors VIII, IX, XI, and XII) and the common pathways (factors V and X, prothrombin, and fibrinogen). It also is the best single screening test for coagulation disorders.

When a contact activator is added, the test is referred to as *activated PTT (aPTT)*. In general, aPTT ranges from 25 to 35 seconds, and results in excess of 35 seconds are considered abnormal or prolonged in cases of mild to severe deficiency of factor VIII or IX.

Table 2: Clinical presentation of bleeding disorders

Clinical signs	Disorders of coagulation	Disorders of platelets or vessels
Petechiae	Rare	Characteristic
Superficial ecchymoses	Common: large and solitary	Characteristic: small and multiple
Bleeding from superficial cuts and bruises	Minimal	Persistent: often profuse
Delayed bleeding	Common	Rare
Deep dissecting haematomas	Characteristic	Rare
Haemarthrosis	Characteristic	Rare

Also spontaneous gingival bleeding consider as a characteristic feature in vascular or platelets disorders, while it's rare in disorders of coagulation.

Prothrombin Time. The prothrombin time (PT) is used to check the extrinsic pathway (factor VII) and the common pathway (factors V and X, prothrombin, and fibrinogen). When the test is used to evaluate the level of anticoagulation with coumarin-like drugs the INR format is recommended.

Platelet Count. Platelet count is used to screen for possible bleeding problems due to thrombocytopenia. Normal platelet count is 140,000 to 400,000/ μ L of blood. Patients with a platelet count of between 50,000 and 100,000/ μ L manifest excessive bleeding only with severe trauma. Patients with counts below 50,000/ μ L demonstrate skin and mucosal purpura and bleed excessively with minor trauma. Patients with platelet counts below 20,000/ μ L may experience spontaneous bleeding.

Thrombin Time. In this test, thrombin is added to the patient's blood sample as the activating agent. It converts fibrinogen in the blood to insoluble fibrin which makes up the essential portion of a blood clot. This test bypasses the intrinsic, extrinsic, and most of the common pathway. For example, patients with hemophilia A or factor V deficiency have a normal TT. Generally, the normal range for the TT test is 9 to 13 seconds, and results in excess of 16 to 18 seconds are considered abnormal or prolonged. Abnormal test results usually are caused by excessive plasmin or fibrin split products.

PREOPERATIVE EVALUATION OF HEMOSTASIS

Most experts do not recommend routine preoperative screening for potential bleeding disorders in patients with a negative history and clinical findings who are scheduled for minor surgery such as dental extractions and biopsy procedures. It is recommended that patients with a negative history for excessive bleeding who are scheduled for major surgery be screened with use of platelet count and aPTT. Patients with an equivocal bleeding history who are scheduled for major surgery involving hemostatic impairment (heart bypass machine) should be screened with use of PT, aPTT, platelet count, factor XIII assay, and euglobulin clot lysis time. All patients with a positive bleeding history who are scheduled for minor or major surgery should be screened with use of PT, aPTT, platelet count, factor XIII assay, and euglobulin clot lysis time.

The suggestions for dentistry are based on these recommendations. Patients with a significant history of a bleeding disorder should be referred to a hematologist for all screening and diagnostic testing.

Patients with a history suggestive of a possible bleeding disorder may be screened by the dentist at a commercial laboratory or may be referred to a hematologist for screening. If the dentist orders screening tests, aPTT, PT, TT, and platelet count should be used.

DENTAL MANAGEMENT

Patient Identification

The four methods by which the dentist can identify the patient who may have a bleeding problem are listed here. Skills acquired through application of these methods determine how well dentists can protect certain patients from the dangers of excessive bleeding after dental surgical treatment. ***These four methods consist of the following:***

- A thorough history
- Physical examination
- Screening clinical laboratory tests
- Observation of excessive bleeding after a surgical procedure

Prolonged bleeding after a surgical procedure may be the first indication of a bleeding problem in a patient with a negative history and clinical findings. The dentist should use the appropriate local procedures in an attempt to control the bleeding. If these measures should fail, consultation with the patient's physician or hematologist is indicated. Screening laboratory tests may be ordered to better identify the source of the problem before the consultation.

Medical Considerations

No surgical procedures should be performed on a patient who is suspected of having a bleeding problem on the basis of history and physical examination findings. Such a patient should be screened by the dentist through appropriate clinical laboratory tests or should be referred to a hematologist for screening. Patients screened by the dentist with abnormal test results should be referred to a hematologist for diagnosis, treatment, and management recommendations. Patients under medical care who may have a bleeding problem should not receive dental treatment until consultation with the patient's physician has taken place, and appropriate preparations have been made to avoid excessive bleeding after dental procedures.

Dental management in some Clinical situations:

1- Haemophilia

LOCAL ANAESTHESIA

In adults, local anaesthetic infiltration using a slow injection technique and modern fine gauge single-use needles can usually be used without the need for factor replacement therapy. In children there are differing

views and advice should be sought from the paediatric haemophilia center; for children on regular prophylaxis a dose of factor replacement therapy may be administered before infiltration.

Augmentation of factor levels with or without tranexamic acid is required in all age groups when inferior alveolar and posterior superior alveolar dental nerve-blocks are given; there is a risk of muscle haematoma, in addition to potential airway compromise due to haematoma formation in the retromolar or pterygoid space. Factor replacement therapy is also necessary for lingual infiltration and floor-of-mouth injections in all age groups as there may be a significant risk of haematoma.

Specifically in adults the consensus view is that intraligamentous or intrapapillary injections do not require haemostatic cover; however, it would be advised to give buccal infiltration at the time of the injection to avoid pain.

Table 3 Dental anaesthetic procedures and factor replacement therapy ⁴⁴	
Procedures that do not require factor cover (specifically applies to adult patients only; paediatric patients may receive factor replacement therapy before local anaesthetic infiltration as directed by the haemophilia unit)	Procedures that require factor cover (applies to both adult and paediatric patients)
Buccal infiltration	Inferior dental block
Intra-papillary injection	Lingual infiltration
Intra-ligamentary injections	

There are no restrictions regarding the type of local anaesthetic used, and 2% lidocaine with 1 in 80,000 epinephrine is routinely used in restorative dentistry; the use of a vasoconstrictor improves local haemostasis. Recently there have been reports that the use of articaine with 1:100,000 epinephrine may achieve more optimal bone penetration. This local anaesthetic has been described for infiltration as an alternative to inferior dental block in the restoration of mandibular molars, removing the need for pre-operative factor cover.

Scaling and periodontal disease

Routine periodontal probing, supragingival scaling, and polish (including ultrasonic scaling) is unlikely to cause prolonged bleeding for patients, especially those with mild conditions.

The use of tranexamic acid (oral or mouthwash) and/or factor replacement therapy may be required to control bleeding and the

haemophilia centre should be consulted. The use of antibacterial mouthwashes and antibiotics may be necessary.

Prosthodontic

The provision of any removable prosthesis and the use of full or partial dentures should not pose any additional problems in this group of patients

Restorative treatment

Restorative dentistry, including the provision of crowns and bridges, is associated with low bleeding risk and can be carried out safely in general dental practice. If an inferior dental block or lingual infiltration is required, coagulation factor concentrate will be necessary

Endodontic (root canal) treatment

Endodontic treatment should not cause problems. However, if vital pulp tissue is present at the apical foramen this may bleed for some time and cause pain. The use of 4% sodium hypochlorite for irrigation and calcium hydroxide paste appears to minimise this problem.

Dental extractions and oral surgical procedures

Dental extraction and minor surgical procedures under local anaesthesia should be planned after discussion with the local haemophilia center

EMERGENCY TREATMENT

1. Acute pulpitis

The pain in adults can usually be controlled by removing pulp from the tooth. In paediatric patients local anaesthesia is used as for any other patient who presents with acute pulpitis. If patients cannot tolerate this treatment an urgent referral to a specialist paediatric unit is required as use of sedation or general anaesthesia may be indicated. A temporary dressing should be used if the tooth is not restorable & the haemophilia center contacted for planning of the extraction.

2. Dental abscess with facial swelling

Antibiotics should only be prescribed if there is local spread or signs of systemic infection. Advice should be sought from the haemophilia center for factor concentrate cover.

OTHER ISSUES

1. Analgesia

Analgesia may be necessary for the management of dental pain or abscess, or for alleviation of pain post procedure. Aspirin, and aspirin-containing medications, should be avoided in patients with bleeding disorders as the haemorrhagic tendency may worsen as a result of the

inhibitory effect on platelet function. Using of non-steroidal anti-inflammatory drugs may be beneficial to control dental pain but their prescription should be discussed with the haemophilia center as they may increase the risk of bleeding if taken pre-procedure. Paracetamol and codeine-based preparations are safe alternatives.

2. Antibiotics

There are no contra-indications to any antibiotics from the dental section of the British National Formulary for patients with congenital bleeding disorders.

3. Patients on Anticoagulants:

Management of the dental patient on anticoagulant therapy involves consideration of the degree of anticoagulation achieved as gauged by the PT/INR, the dental procedure planned, and the level of thromboembolic risk for the patient.

*** Minor oral surgery are planned and the patient's INR is between 2.0 and 3.5 : no adjustment in the warfarin dosage is indicated.**

*** If the INR is greater than 3.5 or major oral surgery is planned : Patients stop warfarin therapy + while the Low molecular weight heparin (LMWH) is administered to maintain anticoagulation therapy. After 3-5 days the surgery can be performed and scheduled for early in the day. LMWH is withheld the day of surgery and resumed in the evening. Warfarin can be resumed the following day, and the LMWH is continued until the INR returns to the desired therapeutic range.**