

Endodontic Treatment in the Patients with Bleeding Disorders- Short Review

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ABSTRACT

Bleeding disorders remain an enigma to the dentist's world over. The dental treatment of patients with bleeding disorders has been widely discussed in the literature with the aim of developing safe dental procedures. They not only challenge the skills of dental specialists but also raise the question of how these individuals should be managed emotionally as well as psychologically. The high incidence of dental problems is inducing bleeding during treatment which can even be life threatening in certain cases. With proper care, diligence and meticulous treatment planning, there is no dental treatment that cannot be performed in such patients. Mild bleeding disorder patients can be easily managed and can effectively undergo even surgical endodontic, however, severe bleeding disorder condition can pose significant health hazard and needs thorough preparation to meet any exigencies arising during the treatment. The majority of literature recommends how to deal with bleeding disorder patients in different cases during endodontic treatment.

Keywords

Bleeding disorders, Dental treatment, Patients, Oral health.

Introductions

Endodontics is the study and practice of the basic and clinical sciences of the biology of the normal dental pulp and the etiology, diagnosis, prevention and treatment of diseases and injuries of the dental pulp along with associated periradicular conditions [1]. Endodontic treatment is a judicious procedure of removing the infected dental pulp and periradicular exudates using appropriate instruments and biocompatible chemicals in adjunct to medicaments to preserve the inert nature of the tooth when the procedure is carried out in healthy individuals, it is sufficient to concentrate on the technical course of action, but when there is a demand to preserve the tooth for patients with systemic illness and who are under medical management, it is equally important to avoid the potential medical emergencies, the practitioner must be aware of common diseases, and drugs that have an impact in endodontic treatment and the management options in such cases [2].

Endodontic therapy is preferred over extraction whenever possible in patients with bleeding disorders. Endodontic therapy safe, less

invasive and does not usually pose any significant risk of bleeding and can be performed routinely [3-6]. Dentists may encounter patients with various types of bleeding disorders in their day today practice. Initial recognition of such bleeding disorders and their possible systemic causes plays a significant role in reducing potential complications [7,8].

Bleeding disorders can be classified as:

- Coagulation factor deficiencies; Congenital: Haemophilia A, Haemophilia B (Christmas disease) and Von Willebrand's disease Acquired: Anticoagulants, liver disease, DIC, Vit K deficiency.
- Vascular defects; Congenital: Connective tissue disease (Ehlers-Danlos Syndrome), Osler-Weber-Rendu syndrome. Acquired: Senile purpura, infections, steroids, scurvy.
- Decrease marrow production: Aplastic anaemia, marrow infiltration (leukaemia, myeloma), marrow suppression (cytotoxic drugs, radiotherapy) Excessive destruction: immune thrombocytopenic purpura (ITP), SLE, CLL, heparin treatment, viruses. Thrombotic thrombocytopenic purpura (TTP), sequestration (as in hypersplenism).
- Platelet defects; Myeloproliferative disease, increase urea,

Von Willebrand's disease, Bernard-Soulier (giant platelet) syndrome, Alcoholism, Drug-induced (aspirin, NSAID).

chain).

- Ester group such as; Procaine.

Evaluation of patients is therefore necessary before treatment, especially if an invasive dental procedure is planned. The patient should be asked for any history of significant and prolonged bleeding after dental extraction or bleeding from gingivae. A history of nasal or oral bleeding should be noted. Family history should be checked. Complete drug history is important if a patient is taking anticoagulant drugs and there are medications may interfere with hemostasis and prolong bleeding such as alcohol or heroin [3,9]. There are several manifestations or signs in the body and oral cavity might be indicators for underlying bleeding disorders such as; Multiple purpurae of the skin, bleeding wounds, hematomas or swollen joints may be evident in patients with severe bleeding defects, underlying systemic disease as in the patients with liver disease may have jaundice, spider nevi, ascites and other signs of impaired hepatic function. Evident petechiae, ecchymoses, hematomas or excessive gingival bleeding should direct the practitioner's attention toward a possible underlying bleeding disorder [3,10].

When a bleeding disorder is suspected Preoperative laboratory tests of the hemostatic system should be carries out such as [3]:

- Bleeding time to determine platelet function (normal range: 2-7 minutes).
- Activated partial thromboplastin time to evaluate the intrinsic coagulation pathway (normal range: 25 ± 10 seconds).
- International normalized ratio to measure the extrinsic pathway (normal range: 1.0).
- Platelet count to quantify platelet function (normal range: 150,000-450,000/ μ L).

Dental management general considerations

The management of patients with bleeding disorders depends on the severity of the condition and the invasiveness of the planned dental procedure. If the procedure has limited invasiveness and the patient has a mild bleeding disorder, only slight or no modification will be required. In patients with severe bleeding disorders, the goal is to minimize the challenge to the patient by restoring the hemostatic system to acceptable levels and maintaining hemostasis by local and adjunctive methods [3]. Coordination with the patient's hematologist in association with a dental risk assessment is the first step that should always be taken prior to any dental procedures [4,11]. The careful medical and dental history, including details of medical condition, medications, and response to any previous dental treatment, must be obtained and updated at the beginning of every visit [4,12].

Endodontic treatment considerations

Local anesthesia

The use of local anesthetic chemical agents is the most common method to achieve pain control in dental practice. Local anesthetic agents can be classified according to their chemical structure to [20]:

- Amide group such as; Lidocaine, Prilocaine, Mepivacaine, Bupivacaine, Etidocaine, Articaine (Amide with an ester side

The patients with bleeding disorders, the inferior alveolar nerve-block anesthesia are contraindicated because of the risk of hematoma formation, which could be fatal if it accumulates in the mediastinum and compromises the airway [3,13-15]. There is there is an 80% chance that a patient with hemophilia will develop a hematoma following the administration of an inferior alveolar nerve block injection without prior factor VIII infusion [6,16]. However the Preoperative prophylactic coverage should be discussed with the patient's hematologist prior to any local anesthesia in the floor of the mouth or lingual infiltration for the same reason [6,17]. Articaine is an amidelocal anesthetic with high lipid solubility due to the thiophene ring it also contains an ester group which makes enable its hydrolyzation in plasma, it has high protein binding capacity (94%) which helps in keeping the drug for longer period and increases its duration of action [21]. Buccal infiltration to the mandibular first molars with 4% articaine hydrochloride (1:100,000 epinephrine) shows a more effective result than 2% lidocaine hydrochloride, and patients find the procedure more acceptable than inferior alveolar nerve block injection [6,18,19]. Mental nerve block injection in the mandibular arch is considered safe and requires no hematologic coverage prior to administration; therefore, it facilitates administration of local anesthesia in the primary care setting [6,17]. However, other local anesthetic techniques, such as intra-pulpal, intra-ligamentary, and buccal infiltration, are safer [6,18]. The alternative techniques, including sedation with diazepam or nitrous oxide oxygen analgesia can be employed to reduce need of anesthesia.

Pain management

Dental pain can usually be controlled with a minor analgesic such as paracetamol (acetaminophen) in the patients with bleeding disorders. The Aspirin should not be used due to its inhibitory effect on platelet aggregation and the use of any non-steroidal anti-inflammatory drug (NSAID) must be discussed beforehand with the patient's hematologist because the NSAIDs produce a systemic bleeding tendency by reversibly inhibiting platelet cyclooxygenase, there by blocking formation of thromboxane A₂. Effects of individual NSAIDs on ex vivo platelet function, bleeding time, and clinical bleeding depend at least in part on dose, serum level, and drug half-life. Additionally, their systemic effect on platelets compounds the gastrointestinal bleeding potential created by their actions on gastric mucosa and the risk of systemic bleeding with NSAIDs is enhanced by concomitant use of alcohol or anticoagulants, and by associated conditions, including advanced age, liver disease, and other hemorrhagic diatheses (e.g., hemophilia, von Willebrand's disease) [22,23].

Endodontic procedure

Non-surgical endodontic treatment is generally low risk for patients with bleeding disorders. It can be performed without any modification in anticoagulant therapy. It can be done routinely without any risk of hemorrhage [3,24]. Pulp extirpation is unlikely to cause significant haemorrhage [25]. Although there is sometimes

some bleeding at the apical foramen where vital pulp is present, may continue to bleed for some time and cause pain hypochlorite for irrigation and calcium hydroxide paste as the canal medicament appears to reduce this problem [4,5,6,22]. The use of rubber dam is almost mandatory in modern endodontic practice to provide aseptic operating field and to protect the patient against foreign body aspiration or ingestion and to prevent laceration of soft tissues by the cutting instruments with care to minimize trauma to the soft tissues during placement of rubber dams clamps [4-6]. Working length of the root canal should be calculated precisely to prevent over instrumentation. Electronic apex locator is preferred over radiographic technique as it reduces the need of IOPA x-ray, which can traumatize the soft tissue during placement and lead to prolonged bleeding [25]. High-speed vacuum evacuators and saliva ejectors can cause trauma to the floor of mouth thereby leading to haematoma formation. So they should be used very carefully in those patients. It should be placed on a gauze swab in the floor of the mouth [25]. Endodontic surgical procedures, which are more invasive that required the patient hematologist to adjust patient INR or considered replacement therapy in case of factors or platelets deficiencies [3,4].

Conclusion

With limitation of this review, we found the patients with the bleeding disorders need careful assessment before commence with dental treatment in general. Non-surgical endodontic treatment of those patients totally safe and should be preferred over extraction as possible and can be done routinely, but for surgical endodontic treatment the consultation of the patients hematologist should be considered.

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