**International Journal of Dental Research**
**www.dentaljournal.net**
**Online ISSN: 2664-9055, Print ISSN: 2664-9047**
**Received: 15-01-2023, Accepted: 31-01-2023, Published: 17-02-2023**
**Volume 5, Issue 1, 2023, Page No. 12-18**

# Dental management of patients with bleeding disorders

**Dr. Ayan Guin**
Postgraduate Student, Department of Conservative Dentistry and Endodontics, Divya Jyoti College of Dental Sciences and Research, Modinagar, Uttar Pradesh, India

**Abstract**
The effects of bleeding disorders on the treatment of dental patients must be understood by those who provide oral care. In the course of dental work, a bleeding condition that may be the first sign of a systemic pathologic process may be discovered. Furthermore, Practitioners who are informed about the pathology, consequences, and available treatments for these problems are best prepared to provide preventative, restorative, and surgical dental care to patients with bleeding disorders. Dental professionals must be alert for any indications of bleeding disorders and recommend patients for additional medical examinations. The purpose of this article is to educate dental professionals on how to treat patients with inherited bleeding disorders.

**Keywords:** dental management, bleeding disorders, oral care

## Introduction

Bleeding disorders can be developed by the use of anticoagulants, inherited genetic abnormalities, or illnesses such liver disease, autoimmune illness and chronic renal disease. Hemostasis is dependent on interactions between the vascular vessel wall, active platelets, and clotting factors upon blood vessel injury. In one of these stages, bleeding disorders are the result of any obvious deficiency. The amount of severity of bleeding episodes can vary depending on vascular wall flaws, platelet problems, or clotting factor deficiencies. Patients may experience mild, moderate, or severe bleeding episodes as a result [1].

Dentists need to be aware of how bleeding diseases affect the way they manage their patients optimum dental and medical care. Therefore, a patient evaluation is required prior to treatment, especially if an invasive dental surgery is anticipated. Standard medical questionnaires should be used as the first step in patient evaluation and history. Patients should be questioned about any prior instances of unusual bleeding following surgery or an injury, as well as regarding spontaneous bleeding and frequent or easy bruising. A clinically significant bleeding episode [2] is one that:

- lasts longer than 12 hours;
- prompts the patient to call or visit the dentist again;
- prompts the patient to seek emergency medical attention;
- causes hematoma or ecchymosis to form in the soft tissues; or
- necessitates the use of blood products.

The majority of reported bleeding incidents are mild, don't necessitate a trip to the dentist or emergency room, and don't affect dental care considerably. Any history of substantial and protracted bleeding following tooth extractions or gingival bleeding should be brought up with the patient. It is important to record any prior nose or oral bleeding. A family history of bleeding disorders should be carefully elicited as many bleeding diseases, including hemophilia and von Willebrand's disease, run in families.

A thorough drug history is crucial. It is crucial to speak with a patient's doctor if they are on anticoagulant medication, before undergoing any major surgery. A number of drugs may also prevent hemostasis from occurring or cause bleeding to last longer. Addiction-related drugs, such as alcohol or heroin, may also result in excessive bleeding [3] by damaging the liver and altering the generation of coagulation components. Use of illicit injectable drugs entails a higher risk of viral pathogen transmission, which can result in viral hepatitis and impaired liver function.

Endodontic therapy is a methodical process of carefully removing infected tooth pulp and periradicular exudates with the aid of suitable tools and biocompatible substances as a supplement. when the surgery is performed on healthy people, medications are used to maintain the tooth's inert state. When possible, endodontic therapy is chosen for individuals with bleeding issues instead of extraction. Endodontic therapy is generally less intrusive, safe, and does not significantly increase the risk of bleeding. This can be done frequently. In their day-to-day work, dentists may come across individuals who have different kinds of bleeding issues. Early detection of these bleeding problems and any suspected underlying systemic causes is crucial for minimising consequences [4].

The patient's general checkup may reveal a propensity to bleed. Patients may have many cutaneous purpurae, bleeding sores, obvious hematomas, or swollen joints has significant bleeding flaws. Patients could also display symptoms of a systemic disease that is underlying. Jaundice, spider nevi, ascites, and other symptoms of reduced hepatic function may be present in patients with liver disease. A cardiac patient may exhibit tachycardia or hypertension, which could make achieving hemostasis more challenging. An underlying bleeding condition can be present if there are

signs of petechiae, ecchymoses, hematomas, or severe gingival bleeding.

When a bleeding condition is thought to exist It is recommended to conduct preoperative laboratory testing of the hemostatic system, such as [5]:

- Bleeding duration to assess platelet activity (normal range: 2-7 minutes).
- Activated partial thromboplastin time (normal range: 25–10 seconds) to assess the intrinsic coagulation pathway.
- The extrinsic route can be measured using the international normalized ratio (normal range: 1.0).
- Platelet count, which measures platelet function and typically ranges between 150,000 and 450,000/L.

**Type of bleeding disorders**

Coagulation factor deficiencies, platelet disorders, vascular diseases, and fibrinolytic abnormalities are several types of bleeding disorders.

| | |
|---|---|
| **Coagulation factor deficiencies** | **Congenital**<br>Hemophilia A and B<br>von Willebrand's disease<br>Other factor deficiencies (rare)<br>**Acquired**<br>Liver disease<br>Vitamin K deficiency, warfarin use<br>Disseminated intravascular coagulation |
| **Platelet disorders** | **Quantitative disorder (thrombocytopenia)**<br>Immune-mediated<br>Idiopathic<br>Drug-induced<br>Collagen vascular disease<br>Sarcoidosis<br>Non-immune-mediated<br>Disseminated intravascular coagulation<br>Microangiopathic hemolytic anemia<br>Leukemia<br>Myelofibrosis<br>**Qualitative disorder**<br>Congenital<br>Glanzmann thrombasthenia<br>von Willebrand's disease<br>Acquired<br>Drug-induced<br>Liver disease<br>Alcoholism |
| **Vascular disorders** | Scurvy<br>Purpura<br>Hereditary hemorrhagic telangiectasia<br>Cushing syndrome<br>Ehlers-Danlos syndrome |
| **Fibrinolytic defects** | Streptokinase therapy<br>Disseminated intravascular coagulation |

**Fig 1**

Von Willebrand's disease, haemophilia A, and haemophilia B (Christmas disease) are among the congenital coagulation deficiencies. The most frequent are illnesses. Antihemophilic factor, also known as clotting factor VIII, is absent in people with haemophilia A. It is a male-specific, X-linked recessive trait. Delay in bleeding, ecchymosis, deep hematomas, epistaxis, spontaneous gingival bleeding, and hemarthrosis are possible symptoms. Mild haemophilia (factor VIII level 6% to 50% of normal factor activity) is linked to bleeding during surgery or trauma, mild damage (factor VIII level 1% to 5%), and severe haemophilia (factor VIII level 1%) is linked to spontaneous bleeding [6].

**Sources of inherited bleeding disorders**

Vascular wall defects Undiagnosed bleeding disorders can occur in patients, and spontaneous or post-dental extraction bleeding episodes can occur. Individuals with hereditary bleeding problems who exhibit a major bleeding episode

following dental extraction is uncommon in people with vascular defects including Marfan syndrome, hereditary hemorrhagic telangiectasia (Osler-Weber-Rendu syndrome), and Ehlers-Danlos syndrome. These people can typically obtain dental care in a primary care environment. Local hemostatic measures, collaboration with the haematologist, minimally invasive dentistry, and refraining from painkillers like aspirin and other NSAIDs are all part of the treatment plan [7].

**Flaws in platelets**

The recommended course of treatment for patients with inherited platelet abnormalities is to consult with a haematologist first. who could support platelet transfusion before any invasive dental operations. To evaluate platelet function, which is determined by the platelet aggregation capacity, specific laboratory tests are needed. While being referred to a haematologist, people with inherited platelet abnormalities can be evaluated using a variety of blood tests. These include the platelet aggregation test, bleeding time, and peripheral blood smear (film) [8].

**Abnormalities in clotting factors**

Hemophilia A and von Willebrand disease (vWD), two genetic clotting disorders, are managed by not simple and necessitates speaking with a haematologist. In particular, patients with haemophilia A and von Willebrand factor (vWF) deficiency will be reviewed in this article along with other patients with inherited bleeding disorders.

Factor VIII deficiency contributes to the genetic clotting condition known as haemophilia A.The frequency of haemophilia A varies by nation and is influenced by the national economies. For instance, the largest incidence is found in high-income nations, and this prevalence rises over time. Hemophilia A is mostly a male-predominant condition since it is inherited as an X-linked autosomal recessive trait [9]. However, females who have factor VIII activity levels lower than 50% are thought to be carriers and are given moderate.

Hemophilia A is divided into three kinds based on the concentration of factor VIII in the plasma: mild, moderate, and severe. Finding the level of factor VIII is necessary, it aids in individualised preoperative and postoperative management. Prior to any dental operations that are likely to result in postoperative bleeding, laboratory tests are required. These include the bleeding time, the factor VIII coagulant level in plasma, and the activated partial thromboplastin time (aPTT).

Despite the fact that local hemostatic therapies are frequently effective in controlling postoperative bleeding in patients with bleeding disorders, these measures are sometimes insufficient. In severely hemophili A a recommendation letter detailing the anticipated dental operations, the underlying medical conditions, and the kinds of postoperative local hemostatic measures that will be used should be sent by the dentist to the haematologist before the procedure to help avoid and manage postoperative bleeding episodes [10]. Based on the severity of the dental treatments and the present factor VIII insufficiency, the haematologist can choose from a variety of medical measures to raise the amount of factor VIII. Desmopressin acetate, factor concentrate, recombinant factor VIII, and antifibrinolytic agents are some of the substances that can be provided (tranexamic acid) [11].

**Clinical feayures include**

- Hematomas, hemarthroses, hematuria,
- Gastrointestinal bleeding, and
- Bleeding from lacerations
- Head trauma or spontaneous intracranial bleeding
- Echymoses
- Joint pain, joint swelling and redness
- Excessive post-surgical bleeding
- Spontaneous gingival bleeding

Patients with haemophilia typically require complex management and intensive dental care, thus they attend dental offices. Expensive travel as well as lengthy medical waiting lists and treatment could be barriers to receiving care sooner. Access to dental care may also be made more difficult by mobility issues. In the severe form of haemophilia A, recurrent joint bleeding causes joint deformity and clinical hip abnormalities that necessitate joint replacement therapy [12]. The patient's activities are restricted by these defects, and getting to the dental office is challenging. The absence of factor IX causes haemophilia B. Replacement therapy with highly pure, virally inactivated factor IX concentrates is used to treat it. Prothrombin Factor IX replacement can also be done with complicated concentrates.

| Condition | Treatment and dose | Potential complications |
|---|---|---|
| Mild bleeding | Dose: 15 U/kg factor VIII every 8–12 hours for 1–2 days<br>Target: 30% of normal level | Hemarthrosis, oropharyngeal or dental bleeding, epistaxis, hematuria |
| Major bleeding | Dose: 50 U/kg factor VIII every 8–12 hours for 7–14 days<br>Target: 80% to 100% of normal level | Same potential complications as for mild bleeding, as well as central nervous system hemorrhage, retroperitoneal hemorrhage, gastrointestinal bleeding |
| Adjunctive therapy | Desmopressin, tranexamic acid or epsilon-aminocaproic acid (for mild disease) | |

**Fig 2:** Presurgery treatment for hemophilia A

An hereditary disorder called v WF deficiency causes von Willebrand disease. Affected by 1% of people in both sexes, it is regarded as the most prevalent congenital bleeding condition. According to reports, between 1 in 1000 and 1 in 10,000 people in the population exhibit symptoms. In rare instances, older patients may develop acquired von Willebrand disease, which is linked to a number of underlying illnesses [1]. Types 1 (mild), 2 (moderate), and 3 of vWD have been identified, each with a variety of subtypes and inheritance patterns (severe). To better comprehend dental management, it is crucial to understand this classification and lessen the possibility of bleeding during dental operations. Clinical manifestations of this illness might range from an undiagnosed, mild form that just needs local hemostatic treatment to a profoundly debilitating type that needs preoperative and postoperative hematopoietic prophylaxis [13].

A prolonged bleeding time, a prolonged aPTT, and low levels of the vWF antigen (VIII:Ag) and ristocetin cofactor (Rco F) in a factor VIII assay are used to detect vWD in patients.

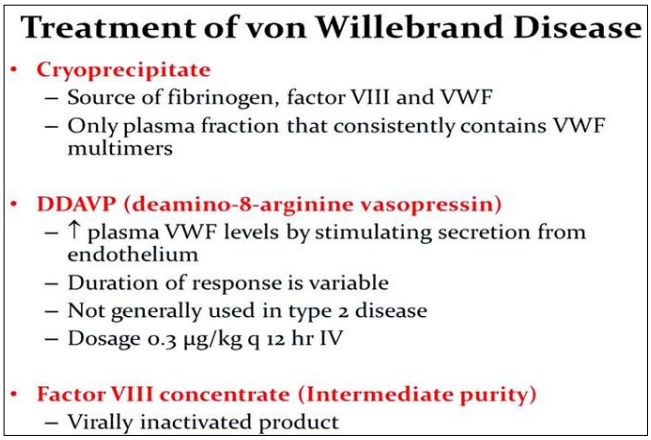


**Fig 3**

Drugs may cause coagulopathy. The most widely used anticoagulant medications are warfarin, low-molecular-weight heparin, and dicumarol (coumadin). Treatment must be altered based on the patient's current pharmaceutical regimen and how it affects coagulation.

Prior to dental surgical treatments, the blood platelet concentration should be at least 50,000/L; more extensive surgery may need > 100,000/L. substitution treatment. If the count falls below this point, it might be necessary. A platelet transfusion is often performed 30 minutes before to surgery. Prolonged oozing can happen in patients with platelet counts below 100,000/L, although most of the time, local remedies are enough to stop the bleeding. Oral systemic steroids may be recommended 7–10 days before to surgery in patients with idiopathic thrombocytopenic purpura, an acquired platelet disease, to raise the platelet count to safe levels [14].

**Dental management**

Patients with haemophilia A and vWD require similar dental care. The first step that should be taken is coordination with the patient's haematologist in conjunction with a dental risk assessment be taken before having any dental work done. At the start of every session, a complete medical and dental history must be gathered and updated. This includes information on medical conditions, prescription drugs, and reactions to any prior dental work. In addition, it's crucial to evaluate the patient's hematologic requirements before performing any invasive dental procedures including deep scaling, periodontal surgery, and teeth extraction. Following surgery, it is advised that the patient refrain from taking any analgesics that raise the risk of bleeding, such as aspirin and other non-steroidal anti-inflammatory drugs (NSAIDs) (eg, ibuprofen and naproxen sodium). Paracetamol is safest drug in such occasion, but discussion with hematologist should be done before doing any dental treatment [10].

**Local anesthesia and pain control**

Unless there is no other option and prophylaxis is given, nerve-block anaesthetic injections are contraindicated in patients with coagulopathies. An area with a lot of blood vessels receives anaesthetic solution, which increases the chance of hematoma development. The typical blocks demand clotting factor levels between 20% and 30%. Blood that has leaked from an inferior alveolar block or the pterygoid plexus into the oropharynx can cause severe swelling, discomfort, dysphasia, respiratory obstruction, and even suffocation. In many situations, anaesthesia alternatives to nerve block include anaesthetic infiltration and intraligamentary anaesthesia. A vasoconstrictor-containing anaesthetic should utilise wherever possible. Alternative methods can be used to lessen or do away with the requirement for anaesthesia, such as sedation with diazepam or nitrous oxide-oxygen analgesia. In a hospital operating room, patients having extensive therapy who need factor replenishment may be administered general anaesthesia.

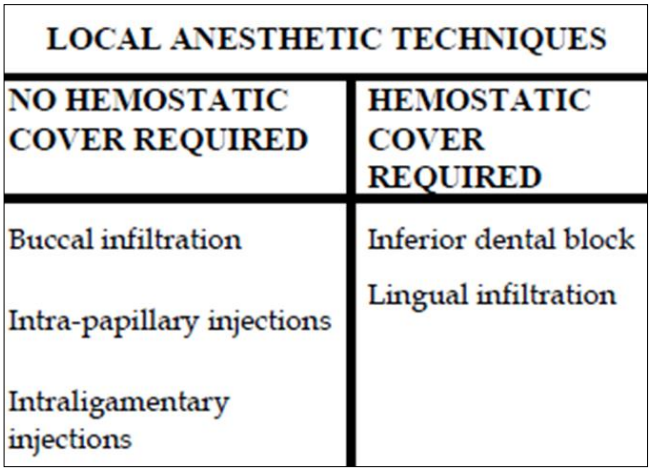


**Fig 4**

**Oral surgery**

The greatest danger of bleeding occurs during surgical procedures, hence safety measures are required. Transfusion of the proper factors to 50% to 100% of patients with coagulopathies. When a single bolus infusion is given in an outpatient environment, normal levels are advised. After lengthy procedures, people with haemophilia may need additional postoperative factor maintenance. Depending on the patient's condition, this can be accomplished using fresh frozen plasma, DDAVP, cryoprecipitate, or factor VIII infusion. Before making any plans, the patient's haematologist should be consulted, and patients with serious illness should receive treatment at speciality facilities.

Individually or in combination, local hemostatic drugs and surgical stents can be employed. It may help with the local distribution of vasoconstrictors and topical thrombin, two hemostatic drugs. However, due to the possibility of rebound vasodilatation, which could increase the risk of late bleeding, care must be taken when using vasoconstrictors. The formation and stability of clots may be favoured by the use of absorbable hemostatic agents. Topical thrombin is an methods including pressure, surgical packs, sutures, and efficient treatment when administered directly to a bleeding wound because it quickly turns fibrinogen into fibrin thus bleeding stops in a wound. Topical fibrin glue combined with antifibrinolytic drugs can lessen the quantity of factor replacement required [15]. Additionally, fibrin glue has been used successfully in conjunction with other hemostatic techniques.

| Brand name | Generic name or description |
|---|---|
| Gelfoam (Pfizer, Markham, Ont.) | Absorbant gelatin sponge material |
| Bleed-X (QAS, Orlando, Fla.) | Microporous polysaccharide hemispheres |
| Surgicel (Ethicon, Markham, Ont.) | Oxidized cellulose |
| Tisseel (Baxter, Mississauga, Ont.) | Fibrin sealant |
| Thrombostat (Pfizer) | Topical thrombin |
| Cyklokapron (Pfizer) | Tranexamic acid |
| Amicar (Wyeth, Markham, Ont.) | Epsilon-aminocaproic acid |

**Fig 5:** Local hemostatic agents

Most of the time, local hemostatic treatments are sufficient to control bleeding and ASA therapy does not need to be interrupted. Likewise, other most of the time, antiplatelet medications like clopidogrel and dipyridamole don't need to be stopped. Before deciding to change the patient's medication regimen, the patient's doctor should be consulted and the potential risk-benefit ratio should be assessed. Prior to surgery, the international normalised ratio (INR) of patients on warfarin should be assessed. 2.0–3.0 is the typical therapeutic range. The majority of oral surgical operations can be carried out without changing the warfarin dosage if the INR is less than 3.0.23, according to current standards. It is advised to consult a doctor if the INR is above 3.0.

**During surgical procedure**

- Have the patient rinse with chlorhexidine mouthwash for 2 minutes before the administration of the local anesthetic.
- the extraction should be carried out as atraumatically as possible.
- Suturing done in the socket if the gingival margins do not oppose well.
- local hemostatic measures can be used if indicated.
- a soft vacuum formed splint can be used to protect the socket if needed.

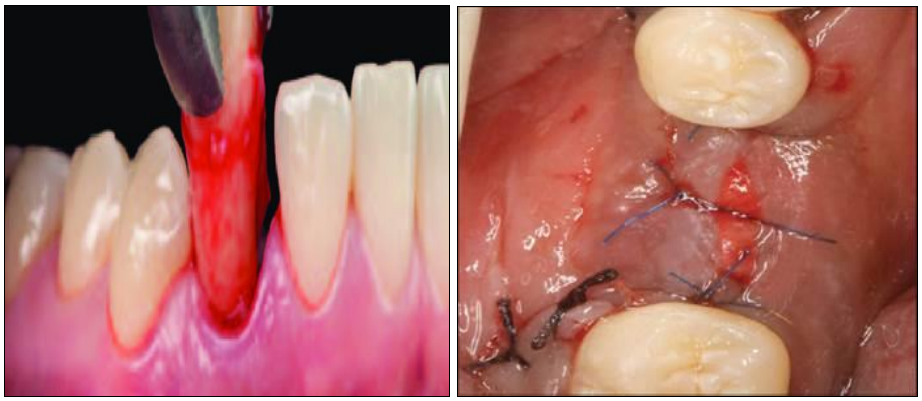

**Fig 6**

**After the treatment**

- 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 should be used four times a day starting the day after the extraction for 7 days
- Antibacterial mouthwash may be used
- Emergency contact details must be given to the patient in case of problems.

**Periodontal treatment**

Scaling is dependent on the depth of the probing and the patient's level of oral hygiene in people with haemophilia A and vWD. Scaling of the supragingival combined with regional hemostasis. Patients with the mild form are thought to be safe using (for instance, tranexamic acid). Patients with moderate to severe forms are advised to consult a haematologist to receive replacement therapy. Prior to any periodontal surgery or thorough root surface debridement, the patient must have a preoperative factor VIII level of at least 50%-75%. If subgingival scaling and root planing are performed carefully, factor replacement is rarely necessary. Ultrasonic equipment might be the outcome of reduced tissue damage. It is advised to start treating significantly inflamed tissues with chlorhexidine mouthwashes and gross debridement in order to lessen tissue inflammation before thorough scaling. Antifibrinolytic mouthwashes used after therapy are typically successful in stopping persistent bleeding [16].

**Endodontic procedures**

For patients with bleeding disorders, non-surgical endodontic treatment generally carries a low risk. It can be done without changing anticoagulant therapy in any way. Regularly performing it carries little danger of bleeding. Significant haemorrhage is unlikely to result from pulp extirpation [17]. While there may occasionally be some bleeding at the apical foramen where essential pulp is present, this bleeding may last for a while and cause pain. Hypochlorite for irrigation and calcium hydroxide paste as the canal medication are often used to treat this type of bleeding.

In current endodontic therapy, the use of a rubber dam is almost required to provide an aseptic operating field and to protect the patient from extraneous objects. During the insertion of rubber dam clamps, care must be taken to limit harm to soft tissues in order to prevent body aspiration or swallowing and to prevent laceration of soft tissues by cutting devices [18]. To avoid overinstrumentation, the working length of the root canal should be carefully estimated. The use of an electronic apex locator is preferred to radiographic methods because it eliminates the requirement for IOPA x-rays, which can cause soft tissue stress during implantation and result in to bleeding for a long time. Vacuum cleaners that operate quickly and saliva ejectors can damage the mouth's floor, which can result in the growth of haemorrhages. In those cases, they should therefore be used extremely carefully. It needs to be put on a gauze swab and inserted into the mouth. Endodontic surgery is more invasive, thus the patient's haematologist must alter the patient's INR or consider replacement medication in the event of factors or platelet deficits.

**Prosthodontic procedures**

There is typically not much of a danger of bleeding with these procedures. By making deliberate post-insertion adjustments, trauma should be reduced. To reduce the risk of ecchymosis, the various clinical stages of prosthesis manufacture must be managed gently. Prosthetics must be adjusted carefully to minimise soft tissue damage.

**Orthodontic treatment**

It is possible to undergo orthodontic therapy without experiencing any bleeding concerns, but it is important to take care that the appliances do not impinge on soft tissues and an emphasis on superb, non-traumatic oral hygiene is necessary.

**Dental infection**

- Penicilin is the drug of choice, orally given penicilin v
- Metronidazole is extremely effective in treating anaerobes
- Erythromycin and clindamycin can be used in case of penicilin allergy

**Periodontal infection**

- Metronidazole is effective
- **Topical application:** Chlorhexidine gluconate, povidone– iodine (it may be useful to irrigate the periodontal pockets)

**Conclusion**

After consulting with a haematologist, patients with mild bleeding disorders can receive treatment in a primary care setting, but those with moderate to severe bleeding disorders must see a specialist. The best way to address dental problems that need invasive operations is in a hospital. Prior to any dental procedure, a haematologist consultation is advised to determine whether the patient requires prophylactic replacement medication. Prior to inferior alveolar nerve block, lingual infiltration, or floor of the mouth injection, factor replacement treatment is necessary. In most individuals with bleeding problems, restorative, prosthodontic, endodontic, and orthodontic procedures are thought to be safe unless more involved dental procedures are required. Patients with bleeding issues ought to refrain from taking aspirin and other nonsteroidal anti-inflammatory medicines (such ibuprofen and naproxen sodium).

**References**

1. Abed H, Ainousa A. Dental management of patients with inherited bleeding disorders: a multidisciplinary approach. Gen Dent,201:65(6):56-60.
2. Gupta A, Epstein JB, Cabay RJ. Bleeding disorders of importance in dental care and related patient management. J Can Dent Assoc,2007:73(1):77-83.
3. Meechan JG, Greenwood M. General medicine and surgery for dental practitioners Part 9: haematology and patients with bleeding problems. Br Dent J,2003:195(6):305-10.
4. Shastry SP, Kaul R, Baroudi K *et al*. Hemophilia A: Dental considerations and management. Journal of International Society of Preventive & Community Dentistry,2014:4:S147-S152.
5. Rajeswari K, Kandaswamy D, Karthick S. Endodontic management of patients with systemic complications. Journal of Pharmacy & Bioallied Sciences,2016:8: S32-S35.
6. Patton LL. Bleeding and clotting disorders. In: Burket's oral medicine: diagnosis and treatment. 10th ed. Hamilton (ON): BC Decker, 2003, 454-77.
7. Scully C, Diz Dios P, Kumar N. Special Care in Dentistry: Handbook of Oral Healthcare. Philadelphia: Churchill Livingstone Elsevier, 2007.
8. Valera MC, Kemoun P, Cousty S, Sie P, Payrastre B. Inherited platelet disorders and oral health. J Oral Pathol Med,2013:42(2):115-124.

9. Anderson J, Brewer A, Creagh D *et al*. Guidance on the dental management of patients with haemophilia and congenital bleeding disorders. Br Dent J,2013:215(10):497-504.
10. Hewson ID, Daly J, Hallett KB *et al*. Consensus statement by hospital-based dentists providing dental treatment for patients with inherited bleeding disorders. Aust Dental J,2011:56(2):221-226.
11. Iorio A, Remmington T, Jahnke N, Dwan K, Hall N. Desmopressin acetate (DDAVP) for preventing and treating bleeding in people with mild or moderate haemophilia A. Cochrane Database Syst Rev,2015:(12):CD011985.
12. Kelly D, Zhang QC, Soucie JM, Manco-Johnson M, Dimichele D. Prevalence of clinical hip abnormalities in haemophilia A and B: an analysis of the UDC database. Haemophilia,2013:19(3):426-431.
13. Stubbs M, Lloyd J. A protocol for the dental management of von Willebrand's disease, haemophilia A and haemophilia B. Aust Dent J,2001:46(1):37-40.
14. Lockhart PB, Gibson J, Pond SH, Leitch J. Dental management considerations for the patient with an acquired coagulopathy. Part 2: Coagulopathies from drugs. Br Dent J,2003:195(9):495-501.
15. Martinowitz U, Schulman S. Fibrin sealant in surgery of patients with hemorrhagic diathesis. Thromb Haemost,1995:74(1):486-92.
16. Webster WP, Courtney RM. Diagnosis and treatment of periodontal disease in the hemophiliac. In: Proceedings, Dental Hemophilia Institute. New York: National Hemophilia Foundation; January,1968.
17. Vikram Chugani. Management of Dental Patients on Warfarin Therapy in a Primary Care Setting. Dent Update,2004:31:379- 384.
18. Parolia A, Kamath M, Kundubala M *et al*. Management of foreign body aspiration or ingestion in dentistry. Kathmandu Univ Med J (KUMJ),2009:7:165-171.