

## Oral Care in Pediatric Hemophilia Patients (Overview)

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### Abstract

Oral and dental diseases would endanger the health of the general health of people, especially those with coagulation disorders. Hemophilia and other patients with hereditary bleeding disorder have the priority to receive preventive dentistry services. Having healthy teeth and gums and preventing dental problems is very important aspects in hemophiliac children's oral health. It not only provides a level of quality of life and nutrition, but also reduces the risks of surgery.

Unfortunately, people with coagulation disorders do not care about the maintenance of their teeth due to fear of bleeding, with no regard to the status of their oral hygiene. Paying attention to this will help these people to improve their oral health, and health professionals to provide better oral care for them and minimizing dental problems.

**Keywords:** Dental Diseases; Hemophilia; Oral Hygiene

### Introduction

Hemophilic patients were in the group of patients with coagulation defects which given the importance and vital role of coagulation, requires special attention and care. In various types of hemophilia, disruption of blood flow due to defects in one Coagulation precursor is considered. The most common types of hemophilia, types A and B which both are dependent on chromosome X.

Oral and dental care requires attention to history, clinical findings, and protocols and guidelines. A detailed overview of the medical history, patient's recent blood tests, and consultation with the hematologist before the invasive treatment methods is very important [1-6]. These details are essential in restoring the hemostatic system to a range of parameters for effective hemostasis and coagulation support with auxiliary drugs and topical methods [1].

A review of the history of dentistry, especially on the frequency of previous bleeding history in the oral cavity, diet and health is very important because care and prevention of oral cavity health are very important for patients with blood dyscrasia.

### Characteristics of hemophiliac patients

The disease is transmitted through the mother to her sons, but men cannot convey the disease to their sons. The hemophilia is 85% due to lack of blood coagulation factor 8 and this type of hemophilia is called hemophilia A or classical hemophilia [7].

The clinical features of the Hemophilia A are the muscle and joint hemorrhages which are readily bruising and potentially lethal bleeding after injury or surgery [8,9] but the bleeding is not severed after mild cuts or small abrasions. Intraarticular hemorrhage is seen first

when the baby starts to walk. If joint bleeding remains untreated, severe limitation of the movement occurs; and may result in permanent disability.

In people with mild to moderate hemophilia, dental treatments (non-surgical) can be covered with anti-fibrinolytic therapy [10,11] but before performing any dental procedures, the consultation is obligatory to be done with the hemophiliac physician of the treatment center.

### Oral manifestations

The sign and symptoms appear in different forms in hemophilia patients. Bleeding from different parts of the oral cavity and also gingival bleeding may be voluminous and prolonged. Even the physiological growth phase and teeth eruption stages can be along with prolonged bleeding in children [12]. In hemophilia patients, poor oral hygiene and iatrogenic factors can also give rise to oral bleeding [13]. In toddlers, oral ulcerations and ecchymosis are reported in lips and tongue areas commonly [13].

Bleeding from the mouth, in many cases, is a primary finding that should lead the conscious dentist to the correct diagnosis. Children who have sharp teeth and bite their cheeks can be prone to oral bleeding [14].

In the hemophilia patients, the only progression of the disease is faster and recession of the attached gingiva and the loss of bone are observed, hence, high oral health care in these individuals can reduce the loss of the attached gingiva [15].

Pseudohemophilia tumor in the mandible is the complication that occurs after frequent hemorrhage under the periosteum. Other oral findings, such as high rates of tooth decays, and progressive periodontal diseases appears to be more likely due to failure to observe the oral health and diet of the patient rather than the Hemophilia per se [16].

### Special oral health care in hemophilic children

After diagnosing hemophilia in the child, taking care and education of the child and caregiver should be started at the earliest time. In comprehensive planning, dental care and prevention of dental caries should be taken into consideration by parents. It should be kept in mind that people with hereditary bleeding are more likely to develop oral and dental diseases. This objectivity is not due to hereditary deficiency or increased hemophilia's sensitivity to oral and dental diseases, but due to lack of proper health care by the patient or the dentist. Most oral and dental diseases can be prevented, but their treatment is not as simple as the treatment for other people. These two diseases can be prevented by increasing knowledge of patients and collaboration of his family and caregivers.

### Preparation prior to dental procedures

Before starting any dental work, it is necessary for the patient to have a normal coagulation factor level for the type of dental problem. In the oral examination of hemophiliac children, medical history, and recent blood tests should be considered. The pediatric dentist should consult a hematologist before any aggressive treatment [1-6].

A review of the dental history of hemophilia children is important in terms of the frequency of previous bleeding attacks in the oral cavity, and on the other side, general health, diet, care for the prevention, and maintenance of oral cavity health are the other important aspects which should be taken into consideration too.

When a child with hemophilia refers to the pediatric dentistry, the dental procedures (non-surgical) should be covered by anti-fibrinolytic drugs [10,11], but it is advisable for the pediatric dentists to consult with the hematologists of the hemophilia treatment center before taking any action.

The point is that the child should be well prepared by his parents before entering the dental environment. The child's mental readiness, overcoming the child's fear, and having all the necessary information about the patient, will help the dentist to perform his task quickly

and well without any special problems or complications. On the other hand, the preparation of the patient by the dentist should not be forgotten, which includes the most part of the dental procedures [17]. Therefore, reducing dental fears and anxiety is a key point in continuing dental care in hemophilia children.

### Oral hygiene status in children with hemophilia

For children with hemophilia, good oral hygiene is the most important factor to prevent gingival and periodontal disease. Parents are responsible for providing good oral health. Tooth brushing by him is not a contraindication, but it is not enough [18]. Parents should help them with brushing techniques to acquire a better result.

At low ages, parents are the best individuals that can easily prevent the occurrence of a large number of teeth problems in their children [19].

Using toothbrushes and dental floss are two inseparable factors in preventing tooth decays and gum diseases. Since the toothbrush is not able to clean the interproximal areas, dental floss is the best and most applicable tool for clearing the interproximal spaces [20,21], which is very essential for the hemophiliac children's oral health.

Continuity of dentist's advice on using the toothbrush, dental floss, fluoride compounds combined with the proper diet, routine dental examinations to prevent dental and gum problems in these people is very essential.

### Anticipatory guidance for children with Hemophilia

The treatment plan should be based on the following guidelines [22]:

- A thorough clinical and radiographic examination of the child patient should be performed.
- The prophylactic cover may be needed which should be identified and prescribed prior to the treatment.
- All patients' general conditions have to be monitored for a prolonged period after a dental extraction. This may be for a mild to the severe bleeding tendency that hemophiliac patients may prone to.
- Treatment consultation should be discussed with the hematologist for patients requiring the administration of coagulation factors.
- Discuss the use of local hemostatic agents.
- Use of antibiotics following dental extraction is controversial, but it is recommended to the prevention of infection. However, if a patient has an infection before treatment, he should be treated with antibiotics.
- Always carry out the treatment as atraumatically as possible to prevent the complications may endanger the child patient.

### Dental management of a child with detected hemophilia

The management of hemophilia children depends on the severity of his condition and the invasiveness of the dental work which is going to be performed. Our goal is to reduce the possible trauma to the child by maintaining hemostasis by application of local and adjunctive methods; hence, the patient's hematologist should be consulted before performing any invasive treatment.

Dental management in this group can be divided into two categories: emergency and non-emergency.

### Emergency management

Performing some dental treatments, especially emergency treatments in children with hemophilia, can cause bleeding if hemostasis is not controlled. Hence, having such treatments without having a defined treatment plan can have worse consequences.

**Dental infections:** Treat an acute bacterial infection with antibiotics is an emergency situation that should be considered for all hemophilia patients especially in children. Penicillin is the first choice antibiotic to treat dental infections [22]. In the case of anaerobic infection,

Metronidazole is prescribed; is often used in combination with penicillin [22] to treat dental abscesses. Drainage of the abscess can put the child in high risk of bleeding which should be performed in hospital setting under the supervision of the hematologist. Erythromycin and Clindamycin are highly recommended for patients who are allergic reactions to penicillin groups [22].

**Oral Surgery:** Surgical treatment or even a tooth extraction must be planned so that the patient does not prone to the risk of severe bleeding; therefore, safety precautions are needed to be highly pointed out.

Before the treatment, the hematologist must be informed about the factor levels, factor replacements, types of surgery, and the need for systemic hemostatic [22,23].

Minimizing the risk of infection must be established by the administration of antibiotics, topical antiseptic mouthwashes. Surgery must be performed so cautiously that the possible trauma to the soft tissues and the intraoperative and postoperative hemorrhage would be significantly reduced. Proper suturing could help prevention of clot formation postoperatively, and the application of the surgical stent would protect the surgical site during healing [22,23].

The bleeding after extraction can be managed with applying the pressure on the site of bleeding or use of other local hemostatic aids such as fibrin glue and oxidized cellulose. Tranexamic acid and Epsilon aminocaproic acid (EACA) can be prescribed before the surgery and should be continued for a total of 7 days [24,25]. Hematologist consultation and additional systemic hemostatic therapy may be required if oozing and bleeding are still persisting [26].

**Dental trauma and bleeding:** The management of dental trauma is very complex due to the involvements of both the teeth and gingiva. To control gingival bleeding, some measures such as hemostatic agents are used.

The management of dental trauma in hemophilic children needs an immediate attention to reduce the amount of blood loss and anxiety. Commonly, available materials in the dental clinic to assist in stopping of bleeding episode include pressure pack, ice application, vasoconstrictors and suturing. Local hemostatic agents include pressure surgical packs, vasoconstrictors, sutures, topical thrombin, fibrin sealant (glue), collagen gel, oxidized cellulose (Surgicel), calcium alginate and ice therapy [27]. Ice application helps to decrease inflammation and swelling by decreasing leukocyte-endothelial interactions [28]. Both the local and systemic management is essential in such patients till the complete healing occurs.

In case of tooth fracture or loose teeth a temporary splinting can be used for this purpose. Comprehensive treatment planning for an emergency asks for the whole team efforts to diminish the risk of future complications.

**Pain management and local anesthesia:** Pains that related to dental caries can usually be relieved with either analgesics and antibiotics or performing pulpectomy in order to allow appropriate time for the planning of the extraction and having a consultation with a hematologist. Dental pain can usually be controlled with an analgesic such as Paracetamol. Use of Aspirin has contraindication due to its inhibitory effect on platelet aggregation. Before prescribing any non-steroidal anti-inflammatory drug (NSAID) it should be consulted with the hematologist [22].

There are no restrictions regarding using the anesthetics although those with vasoconstrictors may provide additional local hemostasis. It is important to advise parents of children about the risks of local oral trauma before the anesthetic wears off [22].

Both mandibular block and lingual infiltration require appropriate factor replacement as there is a risk of bleeding. There is a risk of significant airway obstruction in the event of bleeding too. Buccal infiltration can be used without any factor replacement. The intraligamental technique or interosseous technique should be considered instead of the mandibular block [29].

### Non-emergency management

These types of procedure do not involved with invasiveness and if the patient confronts with mild bleeding, slight or no modification in local hemostatic agents may be applied.

**Restorative procedures:** Restorative treatment can be performed routinely without posing the patient at risk of bleeding if the dental practitioner able to protects the mucosa from trauma. There is a risk of bleeding with the use of matrix bands, wooden wedges or placing rubber dam clamps which can easily be controlled by the application of topical agents. The rubber dam is necessary to avoid tissues from laceration by the sharp dental instruments. Saliva ejectors and high-speed suction can cause hematoma or ecchymosis [22,30-32]; thus, the caution should be considered when they are in use.

**Endodontic procedures:** In hemophilia children, Endodontic therapy is preferred to tooth extraction. Endodontic therapy usually is not an invasive procedure; consequently, bleeding is not the main issue.

It is noteworthy that the procedure has to be accomplished carefully without passing the files through the apex of the root canal which can cause bleeding. Sodium hypochlorite should be used for irrigation in all cases, followed by the use of calcium hydroxide pastes to control the bleeding [22,30].

In both pulpectomy and pulpotomy in children, application of formaldehyde is strongly recommended if there is persistent bleeding [22].

**Prosthodontic procedures:** This type of dental works barely involved in the children, but in some cases, in adolescents, may require doing the possible necessary procedures which do not usually involve considerable risk of bleeding. Soft tissues' trauma should be avoided by careful adjustments. Oral tissue management should be handled gently during the completion of the prosthesis, and final adjustments so that the risk of ecchymosis to be minimized as possible [22,30].

**Orthodontic procedures:** Orthodontic therapy can be accomplished without any bleeding complications. It should keep in mind that the use of the appliances should not lead to any trauma to the soft tissues [22,30]. Furthermore, good oral hygiene must be maintained in excellent and atraumatic condition.

**Periodontal procedures:** Keeping good oral hygiene in hemophilia children is an important issue which should strongly be considered. This is an essential concept that the pediatric dentist should educate parents. In the case of poor oral hygiene, the periodontal treatment must start as soon as possible before the additional damage has occurred to the periodontal tissues. It may be necessary to perform supragingival scaling with caution [22,30].

Subgingival scaling should be carried on when we observe the decrease signs of the gingival inflammation. This procedure may need to be repeated over several different appointments to prevent blood loss [22].

In the case of periodontal surgery which is rare in hemophiliac children, this invasive procedure must be considered as a significant risk of blood loss.

Moreover, Chlorhexidine and Povidine-iodine mouthwash must be prescribed to control periodontal problems. Antibiotics are another adjunct aid to decrease the initial inflammation. Control of blood loss can be achieved by direct pressure on the site of bleeding, use of periodontal dressings; or even application of topical anti-fibrinolytic agents [22,30,32].

### Prevention of dental problems

Due to the many problems in hemophilic families, the treatment of teeth is usually the last thing that matters. Therefore, it is necessary to give more importance to this. The most important goal is to prevent dental caries. Patients and their relatives should be aware of the

importance of proper oral health to reduce the need for dental emergency treatments and frequent referral to dentistry. Normally, dental caries, periodontal disease, and bad breath can be prevented. In people who are prone to hemorrhage, this prevention is very important. The following measures can prevent dental problems:

- A- Reduce the amount and amount of sugar in the diet
- B- Avoid Smoking
- C- Use fluoride
- D- Observe oral hygiene and brushing at least twice a day
- E- Routine dental examination two times each year

Preventing dental problems is the basic principle of oral care which can prevent dental emergency conditions. These care include brushing with fluoridated toothpaste, use of soft or medium toothbrushes, use of dental floss, fluoride supplements, limiting sugar use, and regular referral to the dentist at least every 6 months (for a routine dental examination, fluoride therapy and sealants therapy if necessary). On the other hand, the health of periodontal tissues to prevent bleeding and loss of teeth is essential.

The age of the advent of the first symptoms of the disorder and the referral to the physician is between the ages of 6 and 12 months old, and the most common referral due to bleeding is during the teeth eruption or loss of the first teeth [14].

The best time for the first dental visit is between the ages of 12 to 18 months old. In each visit, the dentist should remind the parents about oral and dental health guidelines [33].

It should be noted that hemophilic people should wear oral protective equipment when exercising, especially martial arts. To prevent bruxism teeth, erosion of the teeth due to drinking acidic beverages or radiation from radiation therapy, oral protectors such as oral bite guards are required.

## Conclusion

For children with hemophilia, maintaining good oral hygiene is very essential key to prevent dental decays, gingival bleeding, periodontal disease, and tooth loss or extraction. If these dental problems left untreated, it could lead to fatal complications.

Due to the coagulation problems and the risk of bleeding during the extraction and repair of the teeth, special attention is required in these patients. Therefore, oral and dental health education, along with frequent reminders and controls, can be effective in anticipating these problems, the complexity of the treatments and the risk of bleeding following a loss of teeth; or even the periodontal problems as far as possible.

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