REVIEW ARTICLE

Orthodontic treatment considerations in hemophilic patients

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ABSTRACT

Introduction: Orthodontic treatment reason improving the appearance, increased confidence and satisfaction, it seems that these treatments for patients with systemic diseases (for example, hemophilia) compared with normal subjects, can be useful. In this manuscript following are what special considerations for orthodontic treatment will be provided to these patients? **Materials and Methods:** Our searches were done by using keywords "hemophilia," "orthodontic treatment" and "bleeding disorder." Articles are from 1975 to 2012. All of them were searching through Google, Google scholar, Pub Med, Medline and Science Direct. **Results:** Orthodontic treatment does not increase the risk of bleeding in patients with hemophilia. These patients can also do orthognathic surgery. Two issues that need to be considered in the orthodontic treatment of hemophilia patients are: Iatrogenic viral infection, bleeding risk. Of course, each one has its own solution. **Conclusions:** People with hemophilia without any concern can be done orthodontic treatment. Even orthognathic surgery is no contraindications to them.

Key words: Blood coagulation disorders, hemophilia, orthodontics

Introduction

Orthodontic treatment is fully consistent with the model of health that aims improve life expectancy and quality-of-life. Significant crowding incisors are seen in most people and races. Just 22% of adults have regular lower incisors. Based on NHANES index, only 30% of people have normal occlusion. Furthermore, based on IOTN Index, 57-59% in different ethnic populations needs some degree of orthodontic treatment.[1]

On the other hand, patients with medical conditions and complex drug regime are increasing. Advances in medicine, more expectations from life's quality have increased life expectancy, which results increasing demand for optional dental and medical treatments.[2]

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Orthodontists need to be aware of some clinical requirements for a number of diseases. Further orthodontists see his patients every 6-8 weeks. This causes problems as soon as they see occurring in their patients at any age.[3]

Hereditary deficiency of coagulation factor has caused 90% of hereditary diseases: Hemophilia A, hemophilia B and von Willebrand's. Hemophilia A is a sex-linked disease and mostly seen in men. These patients are faced with eight coagulation factor deficiency. The severity of bleeding problems depends upon the level of factor eight blood. Hemophilia B is due to the nine coagulation factor deficiency. This condition is related to sex too.[2]

Considering that orthodontic treatment reason improving the appearance, increased confidence and satisfaction, it seems that these treatments for patients with systemic diseases, compared with normal subjects, it can be useful. In this manuscript following are "do people with hemophilia can have orthodontic treatment?" and "what special considerations for orthodontic treatment will be provided to these patients?" and "do people with hemophilia can have orthognathic surgery?"

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Materials and Methods

There are few articles about orthodontics treatment in hemophilic patient. This could indicate that few reports have been published on this subject and make it necessary that dentists must increase their information in this field.

Our searches were done by using keywords "hemophilia," "orthodontic treatment" and "bleeding disorder." Articles are from 1975 to 2012. All of them were searching via Google, Google scholar, Pub Med, Medline and Science Direct. We removed articles that were only abstract and non-English language was written and selecting papers that were attention to dental treatment and orthodontic treatment in hemophilic patients.

Results

Orthodontic considerations for patients with hemophilia have been supported. Because of the significant findings that show people with hemophilia have needed extra orthodontic treatment (or at least equal to other populations).[4]

Two issues need to be considered in the orthodontic treatment of hemophilia patients: Iatrogenic viral infection, bleeding risk (especially when extraction or in orthogenetic surgery).

Infection Transmission Problem

Because patients who have a bleeding disorder may be infected with viruses: Human immunodeficiency virus, hepatitis B, C. Course this was largely due to a blood transfusion before 1985. Although improved screening methods, but the virus transmission cannot be completely eliminated. Therefore, we have implemented more stringent health strategies and infection control for these patients during orthodontic services.[3]

Bleeding Risk

Does not seem to orthodontic treatment is inherently increasing the risk of bleeding.[1] According to reports from orthodontists who have treated patients with hemophilia, bleeding gums caused by orthodontic treatment, is not more than from normal patients.[5]

Perhaps it can be said, reason that can raise the risk of bleeding in patients are poor oral hygiene and gingivitis. The modes are worse along with orthodontic appliances. In these cases, special attention must be considered: Traumatic actions while the use of orthodontic appliances, necessary to tooth extraction or orthognathic surgeries.

Oral health

As we know dental plaque is the main cause of dental caries and gingivitis and just brushing or other oral hygiene methods to be eliminated.[6] In patients with hemophilia, brushing once or more per day are 67% (in healthy patients is 93%). Daily brushing is also 15% (in healthy patients is 2%). Bleeding after brushing in the hemophilia population is 17% (in healthy patients is 11%). This indicates that hemophilia patients are less than others to use a toothbrush.[4]

The need for oral hygiene in orthodontic patients is much higher. This is due to increase in areas prone to plaque accumulation (due to orthodontic appliances). Even in healthy individuals oral hygiene is a necessary condition for a successful orthodontic treatment. Hemophilia patients must to observe their oral health by regular brushing, without fear of bleeding gums.[5]

It is seen that gingival tissue reactions in patients with hemophilia is different from another tissue. Hence bleeding gums after brushing is not considered a serious problem (however, providing keep health cares at home). Toothbrush can cause gum massage and resulting in healthy gums. If there was any way of bleeding from the crushed with extreme pressure to the area for 5 min will stop.[5]

Before or during the orthodontic treatment, there is the possibility of polishing and supragingival scaling. Before orthodontic treatment because the calculi are reduces the bond strength of orthodontic appliances and are local accumulation of plaque and subsequently gingivitis too. During and after orthodontic treatment because to removing additions resin and cement.[5]

It seems unlikely that polishing and supra gingival scaling cause prolonged bleeding and usually specific measures to reduce the bleeding is not needed. However, if condition of gum is weak (severe gingivitis) and patient tend to have moderate to severe bleeding, use of tranexamicacid mouthwash 5% is required. It is best to consult with a Hematologist.[7]

Archwires to be prevent contact food with gums naturally. Even an ordinary toothbrush cannot do this job well. Is recommended that people with hemophilia, after brushing use Butler stimulator [Figure 1]. This device will not only stimulate gums even also remove the remaining dental plaque (materia alba).[5]

Tooth extraction and orthognathic surgery

In these cases, special measures must be taken to avoid bleeding. Before anything, you should consult

Figure 1: Butler stimulator

with Hematologist. We should remember: Block anesthetic injection is contraindicated unless there is no a better alternative. In which case, we should be take necessary measures to avoid hematoma.[8] Before tooth extraction, to prevent infection, antibiotic and antiseptic (chlorhexidine, povodin iodine) should be used. Coagulation factor levels in this people are very important (with a Hematologist, should be consulted). If the patient had moderate to severe hemophilia infusion of Factor eight should be done before tooth extraction.[9] Production of factor eight genetically, reduces the risk of virus transmission in these patients.[10] If the patient had severe coagulation problem it is better the patient is hospitalized and blood transmission (contains needed clotting factors) is done. According to a study, it is better all teeth that to be extracted for orthodontic treatment was removed in one session.[2] While in another study stated that it was better the teeth that to be extracted for orthodontic treatment, reduced to a minimum.[11]

If the patient requires tooth extraction by surgery and it is inevitable, careful surgical technique should be used and is also trying to primary close the wound.[3] However, after 24 h, requires no sutures unless dental surgery is very extensive. You had to after tooth extraction prescribed amoxicillin (500 mg) taking, for a week was appropriate.[12]

Dentist could with build a surgical stent to protect from the surgical area. Principles of surgery in these patients are as follows:

- Enter a minimum of trauma
- Decrees the flap size
- Use wound closer techniques
- Attempts to primary closure
- Removed all tissue inflammatory granulation.[11]

If despite these measures, postoperative bleeding occurred should be consulted with Hematologist.[7]

Hemostatic regimen in these cases is usually performed by Hematologists, include the following:

- Increases factor eight by 1-desamino-8-D-arginine vasopressin
- Factor eight replacement with cryoprecipitate, factor eight, fresh frozen plasma, pure factor
- Antifibrinolytic treatment by tranexamicacid or epsilon-amino caproic acid.[13]

For all adult patients after tooth extraction use of tranexamicacid pill 500 mg, 4 times a day, for 10 days recommended. This dose in children is different according to age and size.[12]

In patients with hemophilia orthognathic surgery has not any contraindications, but with the careful management and replacement of clotting factors.[10] Of course has been said that risk-benefit ratio was undesirable.[7] In this field is compulsory consultation with the Hematologist.

Orthodontic techniques

Orthodontic treatments usually did not need to consult a Hematologist unless tooth extraction was needed (that explained above).

Overall, all devices that are used in hemophilic patient's orthodontic treatment naturally should be had at least potential to cause injury.[7] Or alternatives could be used with fewer traumas. In these patients, fixed appliances are preferred because removable appliances will stimulate gums.[5] "self-ligation" brackets compared to "conventional" brackets are more appropriate. If dentist cannot be use "self-ligation" brackets, should arch wire in conventional brackets be closed by "elastic modulus" (instead of "ligature wire").[5]

Dentist should be very careful when placing arch wires because they contain sharp end.[7] The dentist should extra careful that end wire is completely cut-off. Overall duration of treatment should be reduced to a minimum so that was less complex problems.[14]

Although laceration of the gingiva by "pinch band" (a tool that to form the orthodontic wire is used) is not serious but better for less problems is better than "preformed band" is used. Nowadays, due to success of direct bond brackets to teeth, fixed appliances have no complete direct contact with teeth. Today, plastic appliances are a good alternative to "space closure" and "ligature wire] because have no sharp edges or end while there have sufficient of strength.[5]

Using wax (periphery) can be useful to reduce tissue trauma after appliance placement.[6,7]

Discussion

The significant findings that show people with hemophilia have needed extra orthodontic treatment (or at least equal to other populations).[4] Hemophilia patients can make use of all orthodontic treatment (even orthognathic surgery). For conventional orthodontic treatment need no consult with the Hematologist. However, when tooth extracting or orthognathic surgery will be in treatment plan, consult with a Hematologist is essential.

Two points should be considered in treatment of hemophilic patients: (1) Possibility viral infection and (2) bleeding risk. Although medical science in the field of blood transfer and blood factors has been many advance, but still not possible to eliminated transmit the virus in these patients completely. Hence the dentist must follow infection control and health measures severely.

Orthodontic treatment does not increase the risk of bleeding intrinsically. In hemophilic patients, gingival bleeding does not than more normal people. It can be said that three things can increase bleeding risk in this patients (during orthodontic treatment).

Poor Oral Hygiene

It is essential to note that the importance of oral hygiene in orthodontic patients is higher and in hemophilic patients is much greater.

Tooth Extraction and Orthognathic Surgery

In this case, it is essential consult with a Hematologist. Dentist must go step by step with Hematologist.

Orthodontic Techniques

All devices that are used in hemophilic patient's orthodontic treatment have the potential to cause injuries. For these patients, fixed appliances are preferred. The dentist must be careful and ensure that there is no area of sharpness in the appliances. In cases where it is inevitable it is better to use wax as a protective shield (put wax on the sharp areas).

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