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ORTHODONTIC MANAGEMENT IN A CASE OF AVULSION AND INTRUSION OF MAXILLARY ANTERIORS IN SEVERE HEMOPHILIC CHILD, CASE REPORT AND REVIEW ARTICLE

Dental Science

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ABSTRACT

Hemophilia (deficiency of factor VIII & XI), an X-linked recessive hereditary disorder, is the commonest encountered congenital medical compromisation, that the today's oral and dental surgeons are facing. The incidence of hemophilia is approximately one in every 10,000 population. Though the maximum cases are excluded while taking the thorough medical history, but some of the milder form are diagnosed by dental surgeon as bleeding gum, severe post extraction bleeding, as presented by the patient. The dental and oral management of the diseased case has been an objective of interest to today's dental professionals in recent advanced dentistry. The orthodontic corrections of malocclusions of various degrees of and forms had been neglected in anticipation of hemorrhage. All efforts are made now a days to avoid any kind of soft tissue damage with the help of modern tissues friendly appliance, instruments & techniques. Here, we are going to report an interesting case of a nine and half year old child of known case of severe hemophilia A, who had been treated by multidisciplinary approach following the avulsion & intrusion of maxillary incisors with soft tissue laceration, in an accidental trauma.

KEYWORDS

Hemophilia, Avulsion, Intrusion, Factor VIII deficiency

INTRODUCTION: -

The modern dentistry is not restricted only within the normal and healthy individual, but also the medically and surgically compromised patients are also being provided the various oral and dental surgical treatments of various ranges. One of the most challenging medical compromisation is bleeding disorder, be it of deficiency in clothing factors, platelet disorders of qualitative and quantitative deficient, fibrinolytic disorders, vascular defects etc. Among these, hemophilia (deficiency of factor VIII & XI) is the commonest encountered congenital medical compromisation, that the today's practitioners are facing. The incidence of hemophilia is approximately one in every 10,000 population.

Hemophilia, an X-linked recessive hereditary disorders, occurs due to deficient of factor VIII, IX, XI and hemophilia A (deficiency of factor VIII) is the commonest among its family (accounts for 80-85% if cases)[1] The disease is carried through female and it affects males [1]. Von Willebrand's disease is another most common congenital disorder which is not sex linked and occurrence rate is 1:1,00,000[1]. There are normally three form of hemophilic A exist, namely mild variety (deficiency in 5-25% of Factor VIII), moderate variety (1-5%) and severe factor (where deficiency is <1%). Though the maximum cases are excluded while taking the thorough medical history, but some times the mild form of hemophilia A are diagnosed by dental surgeon as bleeding gum, severe post extraction bleeding, as presented by the patient.

Many patients present with Hep B/C virus infection as a result of transfusions of appropriate human concentrate while managing the hemorrhage or shock (hypovolumic shock as a result of excessive hemorrhage)[1]

The dental and oral management of the diseased case has been an objective of interest to today's dental professionals in recent advanced dentistry. The orthodontic corrections of malocclusions of various degrees of and forms had been neglected in anticipation of hemorrhage as they can develop various complications during the orthodontic treatment. All efforts are made now a days, not only to avoid any kind of soft tissue damage with the help of modern tissues friendly appliance, instruments & techniques but also we can bring about predictable outcome by moving the tooth/teeth to reach the goal in nearly same period of time[1]

Here, we are going to report an interesting case of a nine and half year old child of known case of severe hemophilia A, who had been treated by multidisciplinary approach, where he had got the H/O avulsion of 11 & intrusion of 12 with soft tissue laceration in intra & extra-orally, both.

Case Report :-

A nine and half year old boy reported to our hospital OPD with the chief complaint of complete avulsion of Right upper front tooth & complete intrusion of Right upper second front tooth(Fig:1&2) as a result of accidental slip, while pumping out the water with hand pump in house.

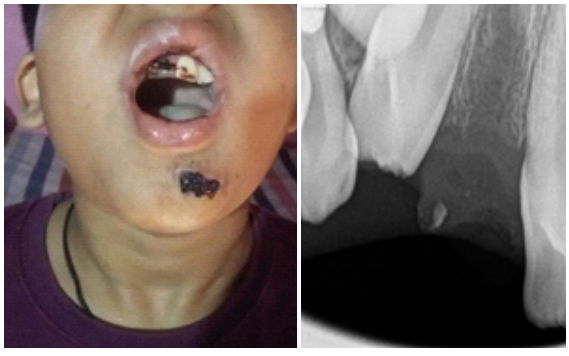

Fig :-1 Immediate post injury photograpg and RVG X-Ray of 11 & 12 of the child after achieving the homeostasis

Fig:-2 Extra-oral photographs of patient (frontal view, frontal photo with smile, oblique view, lateral view, after 15 days of accident)

Intraoral examination showed, empty socket of 11 with bleeding and 12 was intruded completely with laceration of gingiva in relation to 11, 12. Detailed medical history revealed, patient was suffering from severe hemophilia and was receiving 1gm of Factor VIII thrice a week prophylactically presently as prescribed by hematologist, along with hemostatic agents. At first patient was administered 1000 mg of factor VIII after consultation with medical specialist and as per the laid down guidelines by treating hematologist. Patient was also prescribed Cap. Amoxycillin 1500gm in divided doses and tab paracetamol 500 gm as and when required basis to provide broad spectrum antimicrobial coverage and analgesia. Patient was advised for IOPA X-Ray of the 11, 12 and OPG X-Ray along with lateral cephalometric X-Ray to exclude any bony injury like (TMJ, or in any party of mandible & maxilla) & to chalk down the future treatment plan

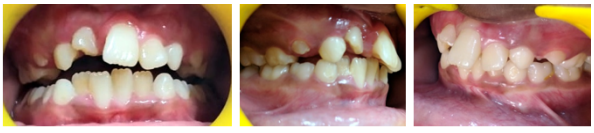

Fig:-3 Intraoral photographs, front and oblique lat

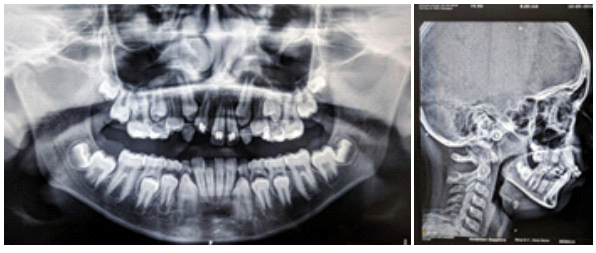

Fig:-4 OPG and Lateral cephalometric X-Ray of patient (Pre-treatment)

Patient was also advised for screening of HIV, HCV, HBV and which was found negative. Impressions of upper & lower arches were recorded in subsequent review visit to prepare a study model. A diagnosis of avulsion of 11 and intrusion of 12 along with mild crowding, class 2 malocclusion in a case of severe hemophilia was established. Parents were counseled for the entire treatment plan which includes immediate and subsequent stages, after carrying out of basic hemogram in pathology lab. In first phase extrusion of 12 along with necessary esthetic and subsequent endodontic treatment was planned to prevent future trauma from erupting(mal-aligned) 12 and also to provide adequate esthetic to the child , to give him relieve from psychological trauma. They were also advised for the requirement of late stage intervention for the correction of malocclusion, in form of stable molar relation and correction of crowding, once the permanent successors of deciduous will erupt.

In subsequent visits and under laid down guidelines, prefabricated brackets & molar tubules were fixed with light cure composite adhesive and elastic traction was initiated for the guided eruption of 12 (Fig:-). After complete eruption of 12, labial veneering was done to provide optimum esthetic, till the time full veneer restoration was offered for 12. RCT of 12 was postponed till, the root completion. Presently patient is under follow up, for RCT of 12.

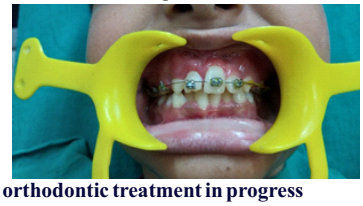

Fig 5 :- shows orthodontic treatment in progress

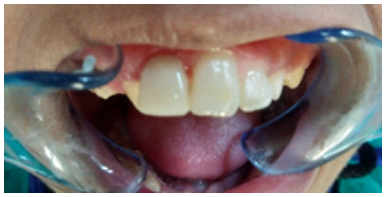

Fig 6 :- shows photograph after labial veneering of 12

DISCUSSION :-

In the cases of hemophilia affected patients, the best dental treatment is preventive [3] & interceptive one as this will can not only resolve the further malocclusion, but also we can restrict the treatment with minimum or non invasive approach. Therefore it is really important for the professionals to diagnose and access the future occlusal disharmony as it can reduce the complications of bleeding disorders [3]

Even few years ago, the patients were being avoided by dental surgeons / orthodontists not only due to ignorance or lack of comprehensive knowledge of the professionals to manage the bleeding disorders, but also due to non availability of co-ordination between the[3] hematologists & treating surgeons, lack of prefabricated & replaceable tubeless and direct bonding system with tooth/teeth.

The protocol for management of hemophilic patients in dental & oral surgical point of view is paramount for the treating surgeons. According to guidelines, as advised by ministry of health in 2009 and amended in 2012 [4] it is recommended that all patients with hemophilia are to be treated by recombinant or plasma derived clothing factors concentrates and treatment success lies mostly by multidisciplinary approach and better understanding between treating surgeons , hematologist and pediatrician/ medical specialist.

The dose for factor VIII is calculated based on following considerations,[4]

(a) Patients' weight in kilogram
(b) Multiplying factors level desired times 0.5

Invasive Procedures[4], like extractions, surgical manipulation of periodontal tissues, replacement of bands with sublingual extensions, orthognathic surgeries,[3] the deficient factors are to be raised by 100% and in less invasive procedures, like recording of impressions, replacement of fixed appliances with direct bonding, stripling, routine adjustment of equipment and insertions and & adjustment of removable appliances[3] it is recommended the required factor to be raised by 40-60% one hour before the procedure. Generally in case of treatment of mandibular molars by pterigopalatine block, the available factor VIII concentration should be at least 50%[4] by using an appropriate replacement therapy anticipating the muscular bleeding risk, together with likely involvement of airways due to hematoma formation in the retromolar. or pterigomadibular spaces.

CONCLUSION

Thanks to the advancement of dental sciences, hemophilia of any severity is not considered contraindicated at all for orthodontic treatment and any noninvasive procedures. We, the oral and dental surgeons, are truly responsible for spreading the awareness of maintenance of good oral hygiene and preventive & interceptive orthodontia among these type of high risk patients. Though the management of bleeding can be taken care of by replacement of missing Factor VIII , but all efforts should be made to prevent any degree of soft tissue damage during the treatment. Though there are very little literature, standardized documented protocols for management of hemophilic cases , but we are supposed to follow few precautions like;- (a) avoidance of high level of forces which will reduce the periodontal complications, (b) self- ligating brackets are preferably to be used in place of conventional orthodontic brackets which will reduce accumulation of plaque, (c) if there is a requirement of any invasive procedure like extraction of tooth or teeth or exposure of an unerrupted tooth, patient must be admitted and closely monitored after adhering the standardize protocol for invasive surgeries, (d) treating surgeons must be extremely careful while placing the arch wire and should take extra effort to round of the edges to avoid any trauma, (e) one should look for the extra wire projected out of the tubes and should cut the extra, (f) the overall duration of treatment to be shortened whenever possible, (g) not all the patients knows their disease so we must ensure the correct history of systemic diseases, (h)

probably it will be the best practice to approach this type of cases in a multidisciplinary approach which may include hematologist or pediatrician or medical specialist in the team, which will not only ensure smooth outcome of the treatment but also help us to counter any unprecedented situations very effectively and confidently.

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