MEDWIN PUBLISHERS
Committed to create value for Researchers

Open Access Journal of Dental Sciences
ISSN: 2573-8771

The Prevention of Malocclusions

Vithanaarachchi VSN*

Faculty of Dental Sciences, University of Peradeniya, Sri Lanka

***Corresponding author:** Vithanaaarachchi VSN, Senior Lecturer, Division of Orthodontics, Faculty of Dental Sciences, University of Peradeniya, Sri Lanka, E-mail: nvithanaarachchi3@gmail.com

Mini Review

Volume 2 Issue 3

Received Date: July 05, 2017

Published Date: August 05, 2017

DOI: 10.23880/oajds-16000140

Abstract

Most of the malocclusions which are in present are cured by orthodontics are induced by functional and environmental factors and they can be prevented. Therefore proper identification, control and guidance of the environmental factors to adjust the cranio-facial structures would be the main target of a prevention of malocclusions. Parent education, maintenance of good oral hygiene, care of deciduous dentition, early intervention for supernumerary teeth and prevention of oral habits are some of the important measures in prevention of malocclusions.

Introduction

For a long period of time, genetic has been primarily involved in malocclusions. Therefore, the development of occlusion has been considered as a result of non-balanced growth of the craniofacial structure due to genetic combination. The separation of the genetic and environment effects was made after 1970, with the development of the new genetic methods [1]. With the results of many studies showed that a large part of the malocclusions are determined by the environmental factors [2]. Therefore application of preventive measures has been promoted under the influence of environmental factors. And early intervention promotes the compliance of the child to get successful outcome of the treatment [3]. Currently prevention of malocclusions is a part of orthodontic practice which is concerned with patient's and parent's education, supervision of the growth and development of the dentition and the craniofacial complex [4].

The following are some of the procedures undertaken in preventive orthodontics.

- Parent counseling/education
- Caries control
- Care of deciduous dentition
- Space maintenance
- Management of oral habits
- Extraction of supernumerary teeth
- Management of ankylosed deciduous teeth
- Management of ectopic eruption of permanent first molar
- Prevention of y canine impactions

Parent Counseling/Education

Parent counseling is the most effective way to practice orthodontics and which is included prenatal counseling and post natal counseling. Preventive dentistry should ideally begin before the birth of the child. The pregnant mother should be educated regarding the intake of foods containing calcium and phosphorous specially during third trimester, as they would allow adequate formation of deciduous crowns. During post natal counseling, parents should be educated on the maintenance of good oral hygiene in their children. Brushing with the help of finger brush and cleaning of the deciduous teeth with clean and soft cotton cloth dipped in warm saline is recommended in early stages. This is important to prevent the initiation of rampant caries. Further, bottle feeding should be discouraged by the age of 18- 24 months to decrease the potential for nursing caries. The

child should be encouraged to begin brushing on his own and should practice it twice a day. Parents must be advised to bring their children for regular dental assessment with the completion of the deciduous dentition in order to assess any anticipant decay and other dental problems.

Caries Control

Caries involving the deciduous teeth, especially proximal caries is the main cause of development of malocclusion. If proximal caries of deciduous teeth is not treated, it may cause mesial migration of adjacent teeth. This would lead to increase potential for crowding resulting in malocclusion with the eruption of succeeding larger permanent teeth [5]. Therefore early detection of deciduous tooth caries and immediate intervention are important to prevent malocclusion. Initiation of caries can be prevented by dietary counseling, topical fluoride application, pit and fissure sealants and educating parents. Once caries is detected, the affected teeth should be restored with appropriate restorative materials. Sometimes it may be indicated to fit stainless steel crowns for badly decayed teeth to restore the functional occlusion and arch integrity.

Care of Deciduous Dentition

There is a gross misconception among lay people regarding maintenance of deciduous teeth as they are eventually replaced by permanent teeth, there is no reason to take care of them. However, deciduous teeth by themselves act as the best natural space maintainers. Deciduous teeth not only maintain the space for their succeeding permanent teeth, but also guide the permanent teeth into their proper position preventing malocclusion [6]. Therefore it is important to maintain full complement of deciduous dentition in children to establish a proper occlusion in permanent dentition.

Space Maintenance

A tooth is maintained in its correct relationship in the dental arch as a result of the action of a series of forces. If one of these forces is altered or removed changes in the relationship of adjacent teeth will take place and result in drifting of teeth and eventual crowding. When primary teeth are lost prematurely, migration of adjacent primary or permanent teeth can occur leading to crowding in the permanent dentition due to loss of space and reduction in arch length [7]. Therefore, it is needed to indicate a space maintainer to maintain entire mesio-distal space created by the loss of space, restore the function as far as possible and to prevent over eruption of opposing tooth.

The following factors are important to consider when planning a space maintainer.

Time elapsed from loss of tooth: Maximum loss of space occurs within 2 weeks to 6 months of the premature loss of deciduous tooth, it is recommended to fabricate the space maintainer before the extraction and to fit immediately following extraction.

Dental age of the patient: The dental age is more important than the chronological age of the patient.

Amount of bone covering the developing tooth bud Stage of root formation: The developing tooth buds begin to erupt actively if the root is three- fourth formed.

Sequence of eruption of teeth: The status of the developing and erupting tooth buds adjacent to the space created by the premature loss of deciduous tooth is important.

More emphasis should be given in following two clinical situations.

Premature loss of deciduous second molar tooth: If the level of eruption of second permanent molar is at a level higher than that of the second premolar, then there is likelihood of permanent first molar to tip mesially and impede the eruption of second premolar tooth.

Premature loss of deciduous first molar tooth: If the permanent lateral incisor is erupting, which tend to push the deciduous canine thus affecting the eruption of first premolar tooth.

Management of Oral Habits

Parafunctinal habits such as thumb sucking, nail biting, lip biting, tongue thrusting and mouth breathing have deleterious effects on oral health including development of malocclusion. The dentofacial changes will vary with the intensity, duration and frequency of the habit and the position of the digit in the mouth. The dentofacial changes include the proclination of the maxillary incisors, retroclination of the mandibular incisors, maxillary constriction and anterior open bite [2]. Education of parents about the consequences of abnormal oral habits, educating and motivating the child to stop the habits, elimination of oral habits using habit breaking appliances are important initial measures in prevention of parafunctional habits.

Extraction of Supernumerary Teeth

Teeth that appear in addition to the regular number of teeth are named as supernumerary teeth. Extra teeth, which closely resemble the normal teeth are called as supplemental teeth, which are often observed to occur on lateral incisors. The most common supernumerary tooth is a mesiodens, which is a malformed, peg-like tooth that occurs between the maxillary central incisors. An extra tooth adjacent to the molar is called as a paramolar and when present distal to the last molar is called as distomolar. Supernumerary teeth may cause arch length tooth material discrepancy resulting crowding in the arch and prevent eruption of succeeding permanent teeth creating more orthodontic problems [8]. Sometimes supernumerary tooth can be joined to the adjacent tooth creating a fusion [9]. Early diagnosis and extraction of supernumerary teeth is recommended to prevent all deleterious consequences which are associated with supernumerary teeth.

Management of Ankylosed Deciduous Teeth

Ankylosis is a condition where in a part or whole of the root surface is directly fused to the bone. Clinically these teeth are fails to erupt to the normal level and are called "submerged teeth". This usually has a profound effect on the occlusion. Deciduous teeth become ankylosed far more frequently than do permanent teeth, with an approximate ratio of 10:1. Ankylosis of deciduous teeth prevents the eruption of succeeding permanent teeth. Treatment depends upon the time of onset, the time of diagnosis, and the location of the affected tooth. If the ankylosed tooth is deciduous and has a successor, the general rule is to extract it immediately and, if necessary, to insert an appropriate space maintainer. If the tooth is deciduous and without a successor and the onset is early so that "submergence" is threatened, treatment involves extraction and space maintenance [10]. If the tooth is deciduous and without a successor and the onset is late, proximal and occlusal contacts may be built up at maturity.

Management of Ectopic Eruption of Permanent First Molar

Ectopic eruption of first permanent molar represents a local disturbance in eruptive behavior. These teeth appear to deviate from normal eruptive path ways and become "locked" behind the distal surface of deciduous second molar. Distal resorption of a second deciduous molar is common sequelae of this condition [11]. Ectopic eruption of the permanent maxillary first molar resulting in premature exfoliation of primary second molar and loss of arch length. This result is not only crowding but also a class II molar relationship. Slight distal (proximal) stripping of second deciduous molar allows the permanent first molar to erupt in its proper place. Interproximal wedging with separating module, brass seperator or with helical orthodontic separating spring may facilitate the eruption of first permanent molar tooth [12].

Prevention of Y Canine Impactions

Maxillary canines are the most commonly impacted teeth, second only to third molars [13]. Maxillary canine impaction occurs in approximately 2% of the population and is twice as common in females as it is in males. The function of maxillary canines is not limited to tearing of food, as commonly thought. They have a more important role in dynamic occlusion and relatedly, in lateral excursions of the mandible [14]. When the clinician detects early signs of ectopic eruption of the canines, an attempt should be made to prevent their impaction to prevent its potential sequelae. Selective extraction of the deciduous canines around the age of 8- 9 years has been suggested by Williams as an interceptive approach to canine impaction in Class I uncrowded cases. Ericson & Kurol [15] suggested that removal of the deciduous canine before the age of 11 years will normalize the position of the ectopically erupting permanent canines in 91% of the cases if the canine crown is distal to the midline of the lateral incisor. However, the success rate is only 64% if the canine crown is mesial to the midline of the lateral incisor [15].

Conclusion

Prevention could be thus considered the best possible alternative to the active orthodontic treatment. The preventive strategies should target the provision of normal function of oro-facial structures and normal craniofacial growth targeting the decrease the occurrence of malocclusion.

References

1. Graber TM (2000) Orthodontics Principles and practice, Missouri: Mossby C.

2. Proffit WR, Fields H (2007) Contemporary Orthodontics. Missouri: Mossby year book.

3. Vithanaarchchi VSN, Ngarathne SPNP, Chantha Jayawardane, Nawarathne LS (2017) Assesment of factors associated with patient's compliance in orthodontic treatment. Srl lanka Dental J 1: 1-12.

4. Varrela J, Alanen P (1995) Prevention and early treatment in Orthodontics. J Dent Res 74(8): 1436-1438.

5. Anusavice KJ (2005) Present and future approaches for the control of caries. J Dent Edu 69(5): 538-554.

6. Levine RS (2008) How should we manage caries in deciduous teeth? Dental Update 35(6): 406-410.

7. Puja K, Sangeeta S, Sunny M (2015) Keep My Space- A Review. International Journal of Oral Health Dentistry 1(1): 11-15.

8. Andlaw RJ, Rock WP (1996) A Manual of Paediatric Dentistry. 4th (Edn), New York: Churchill Livingstone pp. 156.

9. Vithanaarchchi VSN, Herath E Muck, Ngarathne SPNP (2014) Hemi section and orthodontic management of a fused tooth: A review and case report. Srl lanka Dental J 44(01-03): 49-54.

10. Sigurdsson A (2009) Decoronation as an approach to treat ankylosis in growing children. Pediatr Dent 31(2): 123-128.

11. Hsiao CC, Boynton JR (2016) Etiology, Classification and Management of Ectopic Eruption of Permanent First Molars. J Mich Dent Assoc 98(1): 26-30.

12. Yassen SM, Naik S, Uloppi KS (2011) Ectopic eruption: A review and case report. Contemp Clin Dent 2(1): 3-7.

13. Litsas G, Ahu Acar (2011) A review of early displaced maxillary canines: Etiology, diagnosis and interceptive treatment. Open Dent J 5: 39-47.

14. Edirisooriya EMSA, Wettasinghe KA, Vithanaarchchi VSN, Gamage PA, Gamage SPU (2013) Interdisciplinary management of bilateral congenitally missing maxillary canines: A review and case report. Srl lanka Dental J 43(02): 88-97.

15. Ericson S, Kurol J (1986) Longitudinal study and analysis of clinical supervision of maxillary canine eruption. Community Dent Oral Epidemiol 14(3): 172-176.