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RESEARCH ARTICLE

ORTHODONTIC MANAGEMENT IN CHILDREN WITH SPECIAL NEEDS: A REVIEW

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ABSTRACT

Children with special needs have a physical or mental condition. As there is increased prevalence of severity of malocclusion, these children have high orthodontic treatment need than the general population. The parents are also highly motivated in improving the quality of life of their child by improving their appearance as well as their oral function. This review article discusses about difficulties encountered during treatment and their management.

INTRODUCTION

Special needs refer to those individuals suffering from developmental disability like mental retardation, cerebral palsy, autism/attention deficit hyperactivity disorder [ADHD], Down syndrome, or who are medically compromised, high-risk patients and who may require special attention.¹In spite of the improvement in prenatal diagnostic techniques and identification of congenital anomalies, the number of children with special needs have increased.² The face and the oral region are of primary importance in determining attractiveness. Children are often teased on the appearance of their teeth.³An unesthetic dental appearance may affect their self-esteem and evoke unfavourable social response.⁴ The incidence of malocclusions are more in physically or mentally retarded children than in general population.⁵ On the other hand, a higher prevalence of dental malocclusion is found in mentally retarded children compared to physically handicapped children.⁶Malocclusion may compromise all aspects of oral function and generate adaptive alterations in chewing, swallowing or speech.⁷ The needs for the orthodontic management in case of special children have increased with the advent of advanced sophisticated medical care which has increased survival rate along with the enlightened attitude of the society towards them.¹

Goals: The aim of orthodontic treatment is to improve the facial esthetics. This is done by aligning and improving the occlusion of the teeth but it cannot provide satisfactory result for every situation.¹ Patients' own concept about themselves are strongly influenced by their parents and help them gain individual benefits.

Hausdorff recommended that orthodontic treatment should be done on a selective basis and must be adapted to the needs of the specific patient.⁸

Treatment Planning: In general, treatment is aimed to eliminate pain and subsequent disease. Behaviour modification is encouraged for completion of a successful treatment plan. In case of children with special needs, general behaviour is problematic due to reduced understanding, increased apprehension and limited tolerance. They are unable to sit still with uncontrolled limb and head movements. So level of co-operation is significantly reduced. Exaggerated gag reflex, increased drooling is very common in these cases.⁹That is why orthodontics is still considered to be an elective procedure rather than an essential one.¹

Impact of the society: Improvement in facial appearance is the motivating factor in case of healthy children. A study has reported that the special children who lived with their parents asked for orthodontic treatment.¹⁰Most of these parents requested treatment either on their own or they were referred by their dentists. They expected the improvement of life of their children and their acceptance in the society which directly have an influence on their social status. On the other hand, some parents are more concerned about the disability of their children rather than the dental anomaly. They consider orthodontic treatment as superfluous and trivial.¹

Behaviour Management: A high level of technical expertise assures a successful treatment outcome. As patient co-operation factor is eliminated in cases of special children, it is necessary to consider the

basic factors required for a successful orthodontic treatment outcome. Becker¹¹ has demonstrated four basic requirements which are as follows: A) The patient should be self-motivated and comply with the demands of treatment. B) The patient should maintain oral hygiene properly as the presence of the appliances increase the chances of caries and gingival inflammation.¹² C) The patient should follow the instructions thoroughly for the care of the provided appliances. D) The patient should be able to move the limbs properly as it is required for the placement of removable appliances and fixed appliance accessories. Frankel et. al¹³ has classified behaviour into four categories such as definitely negative, negative, positive and definitely positive. On the other hand, Owen and Graber¹⁴ has classified the special children into three categories which are mild, moderate and severe. The treatment of special child is challenging. They require more chair-side time along with increased number of appointments. Combining several procedures into a single sedative session requires the presence of several professionals.¹⁵ The orthodontist should approach these patients with understanding and care. The aim of pre-treatment visit is to assess the level of compliance of both the patients and their parents, to raise the level of confidence in the dental operatory and to evaluate the degree of co-operation.¹

Treatment modalities: Orthodontic treatment is a multi-visit of extended period of time. Patient communication is important as it impacts the quality of treatment outcomes. Conscious sedation, deep intravenous sedation or general anaesthesia can be used depending upon the disability of the patient. The choice of sedation depends upon the needs of the specific work to be performed as it is used to achieve motionless state of the patient for an extended period of time. Conscious sedation is a pharmacologically induced state of relaxation in which the patient remains conscious. It is aimed at changing the patient's mood and degree of compliance throughout the dental treatment¹ but its limited sedation potency makes it largely inadequate for the long and complicated procedures, such as orthodontic bracket bonding.¹⁶ General Anaesthesia can be used for time consuming orthodontic procedures.¹⁶ Jackson (1967) was the first author to report the use of general anaesthetics to facilitate orthodontic treatment.¹⁷ The patient needs to be hospitalized and there is a chance of intra-operative and post-operative complications which further increases the potential morbidity and the overall cost.¹⁸ Recently there is a trend of using intravenous deep sedation as an alternative to general anaesthesia.¹⁹ It requires neither hospitalization nor operating theatre; rather it can be performed by the anaesthesiologist in the orthodontist's office. Induction and recovery are rapid. The risk of aspiration and other medical emergencies are minimal.¹⁹ Patient acceptance has increased and more complex and non-orthodontic procedures can be incorporated into the session simultaneously.

In case of special child, treatment should be directed towards more limited goal as the conditions are compromised by the existence of adverse factors. Orthodontists should apply treatment procedures upto the tolerance level of the child.¹ It is of utmost importance to set reasonable goals and should be reassessed after each stage. Clinical examination can be done by using behaviour modification techniques, but problems occur while taking impression and radiographs. Simple explanation and good communication is the key to success in a compliant healthy child with gag reflex while taking impressions or radiographs but this is not possible in case of children with special needs. Adjunctive measures should be taken. Though orthopantomogram is the basic radiograph for assessment, restricting a frightened child in a cephalostat would further increase their fear. Alternative radiographs, such as multiple intraoral periapical views or lateral extra-oral jaw views, should be considered in such cases. Computed tomographic scan is an option if it is planned to sedate the patient.¹ It is wise to combine all the dental procedures, such as bonding of brackets, if sedation is planned. Chaushu and colleagues²⁰ have recommended the use of a rubber dam as a useful aid during bonding of brackets in case of sedated patients. An oropharyngeal pack is mandatory, when rubber dam placement is impossible, to block fluids and small particles from entering the upper respiratory tract. Indirect bonding of brackets is faster, reduces sedation time, and minimizes the possibility of aspiration.²¹

Non-routine extraction plans shorten treatment time and should be considered. Space closure is done using intra-arch mechanics. It is done to eliminate the use of intermaxillary elastics and to decrease the burden of changing rubber bands on a daily basis. Adjustment of fixed appliances can cause unpleasant sensations of pressure due to the manipulations of instruments inside the mouth. Maintaining oral hygiene is also difficult. On the other hand, removable appliances require a proper impression. Adjustments are made extra-orally and maintenance of hygiene is also easier.¹ Orthodontic appliance with longer range of action are preferred. Becker and Shapira found excellent acceptance and rapid results with the full-time wearing of removable splint for the treatment of severe Class II malocclusions.¹⁶ Post treatment retention is essential if the combined efforts of the orthodontist, parents and the child are not to be lost. Children with vertical discrepancies or with large tongue might never achieve stability. Though removable retainers hold the teeth in maxillary and mandibular arch, bonded lingual retainers are preferred over them. Active retention is required for open bite cases.¹

Treatment failures: Failures occur in every orthodontic practice and there is no exception in cases of the special needs child. Adverse factors, such as an aberrant growth pattern, a sudden and unexpected change in the environment, degradation of the child's general health or deterioration in behaviour associated with puberty, are hindrance of achieving a good and long-lasting orthodontic result.

DISCUSSION

Though the use of general anaesthetics has decreased in the clinics after the publication of Poswillo report, there has been a rise of usage in the hospital.²³ The report stated that the usage should be avoided if possible but in certain circumstances its usage can never be denied. If it is used, routine dental procedure including extraction of teeth to relieve crowding should be done in such cases. According to Strauss²⁴, treatment for the handicapped child should not depend on their estimated level of cognitive potential or present functioning. Lemperle²⁵ expressed support to such parents who felt that elective surgery was a positive step which could be taken for a child with special needs and advised that the parents' decision should be respected.

CONCLUSION

The treatment for the special needs child might arise many ethical questions and some steps undertaken might not be ideal. Discrimination of any type against an individual with a disability, regardless of the nature or severity of the disability, is morally, ethically and legally indefensible.²² It is still possible to offer treatment which can provide both functional and aesthetic improvement in a selected group of patients with special needs.

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