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Treatment planning in Orthodontics: An Overview

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Abstract

This overview enlightens to form a logical problem list from information gathered during the orthodontic assessment. It also gives importance to achieve clear treatment aims based on the problem list. It facilitates in utilizing different approaches to correct anomalies, Appreciate the basic process of formulating an orthodontic treatment plan and perform space analysis and utilize the space for treatment outcomes.

Keywords: Treatment planning, crowding, orthodontic records

Introduction

Treatment planning is one of a complex aspects in Orthodontics. Clinician should be well versed in complete history taking, patient examination, diagnosis and collection of appropriate records and eventually come forth with an appropriate treatment plan. Thorough knowledge of growth and development and understanding of embryology are few of the essentials of a good clinician should have. A good understanding of growth and development, facial and dental aesthetics, occlusion, the etiology of malocclusion helps the clinician in better understanding physiology of tooth movement along with associated risks and benefits of treatment,. This review highlights logical approach to treatment planning.

General objectives of orthodontic treatment planning

Aesthetics, good oral health, maintenance of function and Stability

Problem list

Problem list can be classified into six aspects which include; patients concern, aesthetic concerns, symmetry and alignment, relationship of skeletal and dental components in transverse, vertical and anteroposterior plane.

Aims

A logical summary is created from history collected by patient's examination and after taking diagnostic records. Following that an orthodontic problem list is created to analyze as to setting up a priority for addressing problems. Hence aims of the treatment are set. Once aims are decided, plan is made to meet the aims.

Classification

Skeletal and dental component is classified. Treatment plan according to skeletal problems includes an

orthodontic camouflage, growth modification and combination of an orthodontic and surgical approach.

Principles in treatment planning

After setting up the aims of treatment, treatment planning can begin which includes; maintaining good oral health, setting up of lower labials on basal bone such that an appropriate balance between tongue on lingual aspect and lips and cheeks on labial aspect can be maintained. Once lower arch is planned, upper arch can be planned where teeth are brought in class I molar, canine and incisor relationship with an adequate overjet and overbite. Resisting an unwanted tooth movement is planned by anchorage planning. Once aims of the treatment are set, objectives are mentioned, the set objectives are met using different treatment mechanics. After achieving desired results, a proper retention plan is formulated to prevent relapse.

Space Analysis

It helps in deciding whether treatment aims are feasible along with it helps in providing an assistance with treatment planning. Planning is done in two phases: the first is to determine the space required and the second is to calculate the amount of space that will be created during treatment. Space required is utilized to correct crowding, proclination of incisors, leveling the curves of spee, transversely to widen the narrowed arches and for correction of incisor angulation and incisor inclination.

Methods of Space gaining

1. Extractions
2. Distal movement of molars
3. Enamel stripping
4. Expansion
5. Proclination of incisors
6. Combination of any the above

Extractions

Factors affecting decision of extraction include prognosis and position of teeth to be extracted, amount of space required and anchorage requirements.

Distal movement of molars

Distalisation of upper molars is one of a way to gain space. It can be achieved by using extra oral appliance like headgear. Extra-oral traction using headgear usually produces up to 2–3 mm space per side. Clinical scenarios when it is used include: mild crowding cases with Class I incisor relation, Class II division 1 incisor relationship with minimal overjet, unilateral loss of a deciduous molar which has caused mesial drift of first permanent molar Another way is use of Temporary bone anchorage devices (TADS).These devices are placed intra orally and provide an esthetic environment unlike extra oral traction appliances.

Enamel stripping

Interproximal reduction is removal of a small amount of enamel proximal sides teeth and is also known as reproximation. In anterior teeth reduction which can be achieved is 0.5 mm . Teeth can be topically treated with fl uoride which aids in mineralization of enamel. This technique provides 3–6 mm of space in each arch. Disadvantage of this technique involves damage to teeth and periodontal tissues.

Expansion

Space in upper arch can be gained by expanding arch laterally which gives around 0.5 mm of space for every 1 mm of posterior arch expansion. Presence of crossbite is an ideal requirement for expansion. Lower arch expansion is done in case of lingual crossbite.

Proclination

Space can be gained by proclining incisors. Each millimetre of incisor advancement creates approximately 2 mm of space within the arch.

Conclusion

Diagnoses and treatment planning is an important aspect of orthodontics. Though different mechanics and approaches can be utilized to achieved desired treatment results. Broadly orthodontic problems are divided as dental and skeletal problems which have different approaches for treatment planning. Skeletal problems can be treated by orthodontic camouflage, growth modification or a combination of both. Problem list is created and different treatment approaches are considered to address the problem list . Space analysis is performed to judge the assessment of space available and required in each arch. Finally different methods of space gaining are considered and appropriate one is choosen from it. Then a definitive treatment plan is formulated and discussed patients. Finally treatment execution is done to obtain desired results followed by a definitive retentive plan.

References

1. Downs WB: The role of cephalometrics in orthodontic case analysis and diagnosis. Am J Orthod 38:162-182, 1952
2. Steiner CC: The use of cephalometrics as an aid to planning and assessing orthodontic treatment. Am J Orthod 46:721, 1960
3. Tweed CH: The Frankfort mandibular incisor angle (FMIA) in orthodontic diagnosis, treatment planning and prognosis. Angle Orthod 24:121-169, 1954
4. Ricketts RM: Planning treatment on the basis of the facial pattern and an estimate of its growth. Angle Orthod 27:14-37, 1957
5. Ricketts RM, Roth RH, Chaconas SJ, Schulhof RJ, Engel GA: Orthodontic Diagnosis and Planning. Vol. 1. Denver, Rocky Mountain Data Systems, Rocky Mountain Orthodontics, 1982
6. Jacobson A: The “WITS” appraisal of jaw disharmony. Am J Orthod 67:125138, 1975
7. Arnett GW, Bergman RT: Facial keys to orthodontic diagnosis and treatment planning. Part I. Am J Orthod Dentofacial Orthop 103:299-312, 1993
8. Sarver DM: Esthetic Orthodontics and Orthognathic Surgery. St Louis, Mosby, 1998
9. Idiculla AJ, Harrell WE, Ayala J, O’Brien JM, Secchi AG: 3-dimensional morphometric facial analysis to determine the effects of altering the occlusal vertical dimension.Masters thesis, University of Pennsylvania, 2006
10. Harrell WE: Three-dimensional diagnosis and treatment planning: the use of 3D facial imaging and 3D conebeam CT in orthodontics and dentistry. Austral Asian Dent Pract J July/August, 2007
11. Harrell WE, Stanford S, Bralower P: ADA initiates development of orthodontic informatic standards. Am J Orthod Dentofacial Orthop 128:153-156, 2005
12. Harrell WE, Hatcher DC, Bolt RL: In search of anatomic truth: 3-dimensional digital modeling and the future of orthodontics. Am J Orthod Dentofacial Orthop 122:325- 330, 2002
13. Shortliffe E, Perreault LE, Wiederhold G, Fagan LM: Medical Informatics: Computer Applications in Health Care and Biomedicine. 2nd ed. New York, Springer, 2001
14. Johnston LE: A statistical evaluation of cephalometric prediction. Am J Orthod Dentofacial Orthop 38:284- 304, 1968
15. Moshiri M, Scarfe WC, Hilgers ML, Scheetz JP, Silveira AM, Farman AG: Accuracy of linear measurements from imaging plate and lateral cephalometric images derived from cone-beam computed tomography. Am J Orthod Dentofacial Orthop 132:550-560, 2007

16. Adams GL, Gansky SA, Miller AJ, Harrell WE, Hatcher DC: Comparison between traditional 3-dimensional cephalometry and a 3-dimensional approach on human dry skulls. Am J Orthod Dentofacial Orthop 126:397- 409, 2004
17. Broadbent BH: A new x-ray technique and its application to orthodontia. Angle Orthod 45-46, 1931 13.
18. Horfrath H: Bedeutung der Roentrenfern und Abstands Aufnahme fur die Diagnostik der Kieferanomalien. Fortschr der Orthod 1:231-238, 1931