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LIMITATIONS OF ADULT ORTHODONTICS- A REVIEW

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LIMITATIONS OF ADULT ORTHODONTICS – A REVIEW

ABSTRACT:
The number of adult patients seeking orthodontic treatment has increased over the past few years. While treating adult patients various factors like their psychosocial factors and systemic factors have to be considered in addition apart from the regular treatment planning. Also while treating the adult patients an interdisciplinary approach is often necessary. The treatment for adults differ from that of adolescent patients and has certain limitations to it.Hence the aim of this review article is to throw light on the various limitations of adult orthodontics.

KEYWORDS: adults, orthodontic treatment

1. INTRODUCTION:

Currently, there is an increased demand for orthodontic treatment among adults. 20-25% of orthodontic patients are accounted for to be adults furthermore, this pattern is probably going to ascend significantly in the not so distant future taking into account that the society getting more informed and esthetically concerned. Subsequently, it is basic to investigate and comprehend different parts of orthodontic treatment where adults need uncommon contemplations as opposed to young people. Adult orthodontics is essentially same as adolescent orthodontics for tissue changes related with tooth development, phases of treatment and objective of treatment. Yet, there are sure contrasts in a few angles in particular psychosocial, mechanical and biological angles where adults need exceptional thought for social and clinical administration [(1)].

2. REASON FOR THE INCREASE IN ADULT ORTHODONTIC TREATMENT'S DEMANDS RECENTLY

- Improved dental and orthodontic awareness and social acceptance of orthodontic treatment
- Nowadays, the teeth are kept longer because of the improvement of the dental health causing increase in the demand for orthodontics to facilitate restorative and/or periodontal care
- Adult patients may be more financially and mentally prepared for treatment
- Dissatisfaction with previous orthodontic treatment.
- Newly developed orthodontic appliance that is less visible and more practical in treating problem that were difficult to be treated before.

3. GOALS OF ADULT ORTHODONTIC TREATMENT

Extra treatment destinations are resolved to encourage what's more, improve adequacy of perio restorative treatment by:

- Improving axial inclination of teeth (to have adequate bone between roots for good vascular supply and good contact region)
- Achieving parallelism of abutment teeth (to limit tooth cutting and appropriately estimated substitution for creation of prosthesis)
- Most positive appropriation of abutment teeth (to get prosthesis)
- Uprighting and extrusion of posterior teeth with occlusal equilibration once in a while followed by endodontic treatment (to improve vertical crown-root proportion)
- Forced extrusion of those teeth which get damaged upto 33% of cervical line (to improve availability)

4. ISSUES TO BE CONSIDERED

Different components must be given contemplations, which demand special considerations among grown-ups.

- Psychosocial factors
- Absence of growth
- Periodontal issues
- Maturing of tissues
- Closure of old extraction spaces
- Increased chances of Root resorption
- Temporomandibular disorders
- Age related complications

To deal with these significant issues, adult orthodontics frequently requires interdisciplinary way to deal and provide effective treatment result including numerous medical care suppliers like Periodontist, Restorative Dentist, Prosthodontist, Endodontist, TMJ authority, Oral and Maxillofacial Surgeon and so on [(2).]

5. LIMITING FACTORS & TREATMENT CONSIDERATIONS:

An adult patient requires a different treatment approach from adolescents due to following limiting factors

Psychosocial factors:

It is critical to get desires and disposition of grown-up patients so as to design social administration prior to clinical administration. Grown-up patients have high treatment desires. They are more curious about the detail of the treatment as treatment time, multifaceted nature of treatment, number of visits, probability of rectification and so on. They have been appeared to have more uneasiness from machines. They are more co-usable in adhering to the guidelines from orthodontists, for example, versatile wear, cleanliness upkeep, keeping their arrangements and so on however they don't resolve to long haul treatment [(3)]. In other words, grown-ups request best treatment brings about a short time. Thus, it is very essential to advise these patients about the restrictions and unpredictability of the treatment, expanded treatment time and high backslide potential.

Grown-up patients may have wavering in tolerating perceivability of orthodontic apparatuses. They may request tasteful apparatus for example tasteful sections, lingual apparatus, invisalign and so forth regardless of their restrictions [(3)].

Absence of growth:

While treating adult patients, growth modifying appliances cannot be utilized. Hence the treatment modalities are limited to dentoalveolar corrections, surgical corrections or camouflage treatment. Overbite correction if needed have to be corrected by posterior teeth extrusion rather that anterior teeth intrusion [(4,5)] because of absence of vertical development focusing on the TMJ muscles and result in descending and in reverse development of the mandible, which in this manner tend to relapse. In the event that singular tooth extrusion is needed to level the related vertical bone imperfection, the tooth is occlusally equilibrated[(6)]

Perio restorative problems:

Before starting of the orthodontic treatment in adults a quantitative and qualitative check of the bone has to be taken into consideration. The amount of periodontal support available has an influence of on the anchorage consideration[7].Presence of any active periodontal disease has to be diagnosed first and brought under control before starting of the treatment. In cases of severe periodontal damage periodontal procedures maybe necessary and a consent from the periodontist has to be obtained before the start of treatment.in cases of periodontal breakdown and anchorage considerations mini implants can be very useful.

Also adult patients have an increased number of restorations like amalgam restorations or porcelain and metallic crowns in their dentition. Hence while bonding special considerations may have to be taken [8] Excess adhesives on the surface of attachments have to be removed as the rough surfaces attract more plaque accumulation. All restorations must be properly polished to reduce the tendency of plaque retention. Stainless steel ligatures may be preferred to elastomeric modules due to less retentive to plaque[9].

Choice of extraction for orthodontic treatment may be affected by perio restorative problems or already extracted tooth. Adults have many pre existing conditions which makes the adult orthodontics different from adolescent orthodontics.

Additional treatment objectives are determined to facilitate and improve effectiveness of perio restorative treatment by:

- Providing better axial inclination of teeth, thereby altering root positioning with sufficient bone between roots for good vascular supply and proper contact area
- Achieving parallelism of abutment teeth to minimize tooth preparation for fabrication of prosthesis.
- Uprighting and extrusion of posterior teeth with occlusal equilibration sometimes followed by endodontic treatment to improve vertical osseous defects and crown root ratio
- Forced extrusion of teeth damaged upto one third of cervical line to provide better support at the margin of the prosthesis
- To restore functional occlusion keeping in mind existing skeletal relationship.
- Achieving better lip support for flaccid & long upper lip by maintaining anterior teeth position.
- Restoring vertical dimension with bite plate before placing prosthesis in bite collapse and tooth mobility.

Indications of root resorption or vulnerability to root resorption

Adults should be educated about the danger of root resorption furthermore, assessed for the chances to root resorption. [10,11] All measures ought to be taken to oversee root resorption. Prior to beginning orthodontic treatment, the patient must be deliberately assessed for systemic conditions, perio restorative issues, TMD and vulnerability to root resorption separate from routine indicative method. All the systemic and dental conditions must be managed with interdisciplinary methodology toward the beginning of orthodontic treatment and progressed throughout the treatment. Adult orthodontics frequently requires interdisciplinary methodology to convey proficient treatment result.

Temporomandibular disorders:

Adult patient may seek the orthodontic treatment due to TMD and there is a higher risk of developing TMD in adult patients. Hence, adult patient needs a thorough check up for the signs of TMD and he needs to be explained about the risk of developing TMD not necessarily related to orthodontic treatment and also limitations of orthodontic treatment in the management of TMD.[12,13]

Physiological age changes of varying degree:

Haversian canals increase in size making the bone porous. Spongy bone is decreased with increasing age leading to change in the structure from honeycomb appearance to lace like network.[14] Bone volume decreases either by an increase in resorptive surfaces and osteoclastic activity[15] or by a decrease in the fraction of true forming surfaces.[16] Adult bone is also found less reactive to mechanical forces and risk of loss of attachment as well as bone loss is much more with mild gingival infections as compared to children and adolescents.[17] Age changes in periodontal ligaments are also seen. Decreased number of fibroblasts

with more irregular structure, decreased organic matrix production and epithelial cell rests and increased amounts of elastic fibres have been reported to occur in periodontal ligaments with increasing age.
Light forces are used due to varied reasons. Firstly, initially it takes longer time (delayed response) due to reduced cellular activity in adults.[18,19] Secondly, bone loss at alveolar crest due to aging or periodontal disease leads to apical shift of centre of resistance increasing the likelihood of tipping than bodily movement necessitating low force and large moment ratio.[20,21] Thirdly, dense cortical bone and decreased periodontal width may lead to root resorption.[22,23,24s] Retraction force has a larger extrusive force component if the marginal bone loss is most pronounced, hence light continuous intrusive force should be maintained during retraction in such cases. Prolonged retention is required due to reduced cellular activity thereby increase in lag time to form bone in adult patients

6. CONCLUSION:

While treating an adult for orthodontic concerns, an individualised custom-made treatment plan according to the patients's need and condition is very essential for a proper outcome and treatment success. The treatment plan needs to be formulated on the basis of careful evaluation of a complex interaction of various biological, psychosocial and mechanical factors.

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