IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 14, Issue 11 Ver. IV (Nov. 2015), PP 77-80
www.iosrjournals.org

Orthodontic Correction of Midline Diastema in Aggressive Periodontitis: A Clinical Case Report

Dr. Gurudutt Desai[1], Dr. Heli Desai[2], Dr.Nikunj Patel[3], Dr. Priyadarshani Gir[4]
[1](Department of Orthodontics, Maharaja Ganga Singh Dental College, RUHS, Rajasthan) [2](Department of Periodontics, Maharaja Ganga Singh Dental College, RUHS, Rajasthan)
[3&4](Department of OMFS, A.C.P.M.D.C, Dhule, Maharashtra)

Abstract:
Purpose: *Midline diastema in periodontally compromised patient with aggressive periodontitis is very uncommon situation and can represent negative impact on esthetics and function. The purpose of this article is to describe a rare case report of 19 year old male patient with midline diastema due to aggressive periodontitis treated successfully by removable orthodontic appliance.*
Case description: *After periodontal diagnosis, patient was treated to correct periodontal condition first by oral prophylaxis followed by periodontal flap procedures. Six months after completion of periodontal treatment patient was treated for midline diastema by removable orthodontic appliance followed by retention.*
Conclusion: *1. To ensure good and long term results any periodontally compromised condition must be treated first before starting orthodontic procedure .*
2. Not all orthodontic procedure should be fixed orthodontic treatment, removable can also be an option in some circumstances like lack of time, unwillingness of patient and cost.

I. Introduction

As esthetic is of very much concern now a days, the treatment of various malocclusion like midline diastema, protrusion, crowding etc. are in demand. The continuing presence of a diastema between in adults often is considered an esthetic or malocclusion problem. Not all diastemas can be treated the same in terms of modality or timing. The extent and the etiology of the diastema must be properly evaluated. Proper case selection, appropriate treatment selection, adequate patient cooperation, and good oral hygiene all are important.[1]

Multiple factors may contribute to a midline space including oral habits, soft tissue imbalances, physical impediments, tooth size discrepancies. [1] Associated inflammation and bony defects are the main etiological factor in this case report.

Since aggressive periodontitis usually develops during adolescence and during this period orthodontic treatment is common with frequent visits to the orthodontic clinic, it would be intuitively logical to call upon the orthodontist, in full co-operation with the periodontist, to screen patients for early signs of aggressive periodontitis and initiate interceptive measures when needed. [2]

Since there is a lack of information in the literature regarding patients with midline diastema in association with to aggressive periodontitis, it is necessary to report clinical cases in order to facilitate the knowledge of this issue .

Therefore, the purpose of this article is to present clinical a case report of a 19 year old boy with midline diastema in association with aggressive periodontitis treated by removable appliance achieving satisfactory results.

II. Case Report

A 19 year old male patient came to the out department of MGS Dental college with the complaint of space between maxillary anterior teeth since one year. Patient was apparently alright 1 year back, after that he started noticing increase in the space between his two front teeth. He also felt slight mobility in his lower front two teeth and food lodgment in both right and left lower back tooth region.

Patient was referred to the department of orthodontics, where he was diagnosed with midline diastema, with compromised periodontal condition which needed primary attention. Therefore, consultation of periodontist was mandatory and patient was then referred to the department of periodontics.

Periodontal findings were as followed clinically and radiographically: gingiva was slight red in color with rolled out margins and soft edematous consistency in almost all the teeth. Generalized bleeding on probing was present. Generalized pocket were present. Miller's grade I mobility was present in relation to 31, 36, 41, 42, 46. Grade II furcation was present in relation to 46(fig.2) Pathologic tooth migration was also present in relation

to 17. Radiographically, generalized bone loss was present along with arc shaped bone loss in relation to 45, 46, 47.(fig.3) On the bases of all these findings, patient was diagnosed with generalized aggressive periodontitis.

Periodontal treatment was necessary before orthodontic treatment. Therefore, patient was first undergone two visits of scaling and root planning. Three weeks after oral prophylaxis periodontal flap was performed in area required and remaining areas were treated nonsurgically.

Six months after completion of periodontal treatment patient was reffered to department of orthodontics . On orthodontic examination following' findings were observed: midline diastema of 3mm. Little mesial tilt in relation to 16 was present. The molars was in class I m relation in right side and left side lower molar is missing. Frontal view of patient as well as profile view of patient was good. As the patient was not willing for fixed treatment because of cost and increased chair side time,in that condition, it was decided to treat the patient by removable orthodontic appliance using split labial bow for the correction of midline diastema (fig.4) and results were achieved (fig.5,6)

Lastly, patient referred to prosthetic department for restoration of missing 36, to prevent drifting of neighboring teeth and supraeruption of opposing tooth.

III. Discussion

The midline diastema is a space between the maxillary central incisors. The etiology, pathogenesis, and diagnosis of maxillary median diastema have been somewhat controversial over the years. [2]

As in 1907, Angle suggested the frenum as a cause of midline diastema and outlined a method for its removal, frenum was believed a very common cause of midline diastema. [3] By the middle 1900s, the abnormal labial frenum was believed to be an effect rather than a cause. Enlarged and low frenum do exist in the absence of a median diastema. Also, diastemas can exist without an abnormal frenum. [2] Bergastrom and coworkers intimated that frenum is not an important etiologic factor in midline diastemas. [4] Ceremello also demonstrated no relationship between diastema and the frenum configuration. [5]

There are many other etiological factors responsible for midline diastema other than frenum like midline bony clefts and various multifactor etiologies including oral habits, soft tissue imbalances, physical impediments, dentoskeletal disharmonies. [2] In this case the cause of midline diastema is amongst multifactorial etiology, which may be 1. Because of foreign body and associated periodontal inflammation, and 2. Abnormal maxillary arch support due to loss of bone support by periodontal disease. Aggressive periodontitis in this case plays an important role being the cause of diastema.

Orthodontic therapy is not contraindicated for patients with advanced periodontal destruction, provided that factors such as inflammation, plaque, calculus and occlusal trauma are well controlled both before and during the orthodontic treatment. The application of light forces might have a better effect on the cell biology of tooth movement. [1]

Therefore, before starting orthodontic treatment, it is mandatory to treat periodontal disease. The success of the orthodontic treatment depends heavily on their periodontal management. Preorthodontic periodontal therapy is directed toward the etiologic factors including plaque, calculus, and occlusal trauma. [1]

Ong and Wang stated that tooth movement during orthodontic therapy is the result of placing controlled forces on the teeth[6], which means light forces by fixed or removable orthodontic appliance will give good results in the treatment of midline diastema.

The first permanent molar, usually involved in aggressive periodontitis, is the first tooth to erupt in the oral cavity. This tooth is frequently in use as an abutment for different active or passive orthodontic appliances in which molar bands or tubes may be attached to the first molars of the maxillary and mandibular dental arch. The intimate contact of the orthodontic appliance often results in increased plaque accumulation and negative influence on gingival health. [7] So, proper treatment of midline diastema will depend upon its etiology and success of it will again depend on proper treatment planning.

Several studies have addressed the impact of fixed orthodontic treatment, myofunctional and orthopaedic appliances in relation to gingival plaque accumulation and gingivitis.[8] A positive increase in clinical signs of subgingival inflammation, i.e. bleeding on probing (BOP) and periodontal probing depth (PPD) [9,10,11]and in crevicular fluid volume[12,13]has been observed during fixed orthodontic treatment. Patient was also not willing for fixed treatment because of cost, increased chair side time and limitations to maintain oral hygiene properly. That is why we chose removable appliance like split labial bow to correct midline diatema and achieved successful results within four months.

IV. Figures

Fig.1 before treatment

Fig.2 grade II furcation

Fig.3 opg

Fig.4 removable appliance

Fig.5 retainer after treatment

fig.6 after treatment

V. Conclusion

Although a simultaneous midline diastema and aggressive periodontitis is a very uncommon situation, it could be negative in the esthetic and functional views. Satisfactory results can be carried out with removable appliances.

References

[1] Mavreas D. Self-Ligation and the Periodontally Compromised Patient: A Different Perspective. Seminars in Orthodontics, Vol 14, No 1 (March), 2008: pp 36-45
[2] Huang W J, Creath C J. The midline diastema: a review of its etiology and treatment. Pediatric dentistry 17:3,1995
[3] Angle EH: Treatment of malocclusion of the teeth, 7th Ed. Philadelphia: SS White Co, 1907.
[4] Bergstrom K, Jensen R, Martensson B: The effect of superior labial frenectomy in cases with midline diastema. Am J Orthodont 63:633-38, 1973.
[5] Ceremello PJ: The superior labial frenum and the midlin diastema and their relation to growth and development ofthe oral structures. Am J Orthodont 39:120-39, 1933.
[6] Ong M M A and Wang H L. Periodontic and orthodontic treatment in adults. Am J Orthod Dentofacial Orthop 122(4); 420-428
[7] Hazan Molina H, Levin L, Einy S. Aressive periodontitis diagnosed durin or before orthodontic treatment. Acta Odontologica Scandinavica, 2012; Early Online, 1–9 nts.
[8] Gomes S C, Varela C C, Veiga S L, Rosing C K, Oppermann R V. Periodontal conditions in subjects following orthodontic therapy: A preliminary study. Eur J Orthod 29 (2007) 477–481
[9] Zachrisson B U , Alnæs E 1973 Periodontal condition in orthodontically treated and untreated individuals. I: loss of attachment, gingival pocket depth and clinical crown height . Angle Orthod 43 :402 – 411
[10] Alstad S , Zachrisson B U 1979 Longitudinal study of periodontal condition associated with orthodontic treatment in adolescents . Am J Orthodont 76 : 277 – 286
[11] Huser M , Baehni P , Lang R 1990 Effects of orthodontic bands on microbiologic and clinical parameters . Am J Orthod Dentofacial Orthop 97 : 213 – 218

[12] Samuels R H , Pender N , Last K S 1993 The effects of orthodontic tooth movement on the glycosaminoglycan components of gingival crevicular fl uid . J Clin Periodontol 20 : 371 – 377
[13] Pender N , Samuels R H , Last K S 1994 The monitoring of orthodontic tooth movement over a 2-year period by analysis of gingival crevicular fluid . EurJ Orthod 16 : 511 – 520