

## ADJUNCTIVE ORTHODONTIC TREATMENT OF A PERIODONTALLY AFFECTED ADULT PATIENT : A MULTIDISCIPLINARY CASE REPORT

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### ABSTRACT

Adjunctive orthodontics for adult patients is increasingly gaining popularity. Orthodontics for adult patients mostly comes with numerous periodontal and prosthetic considerations to deliver best possible occlusion, esthetics and stability. Periodontal disease is characterised by loss of attachment and reduction of the alveolar bone support which may lead to pathological migration of teeth and poor facial aesthetics.

### INTRODUCTION

Orthodontics for adult patients is increasingly gaining popularity. The number of adult patients undergoing orthodontic treatment has increased over the last 2-3 decades<sup>1</sup>. The primary motivation for adults to undergo orthodontic treatment is to improve dentofacial appearance<sup>2,3</sup>. About 12% of adults seeks orthodontic therapy to prevent progression of periodontal disease<sup>4</sup>. Adult patients in their 40s-50s often seek treatment due to other dental problems and need orthodontics as an adjunctive therapy that includes other dental specialities too<sup>5</sup>. It has been found that approximately 80% of patients accept orthodontic therapy because of the aesthetic aspect rather than dental health and function<sup>6</sup>. Orthodontics can be justified as a part of periodontal therapy used to correct abnormal gingival and osseous forms, improve aesthetics and facilitate prosthetic replacement<sup>7</sup>. Periodontal disease is characterised by loss of attachment and reduction of the alveolar bone support which may lead to pathological migration of teeth and poor facial aesthetics. This case report describes orthodontic treatment of 52 year old female patient with spaced out upper front teeth, missing lower front teeth, convex profile and an unpleasant smile.

### KEY WORDS

Adult orthodontics, Adjunctive orthodontics, Multidisciplinary, Periodontally compromised

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### CASE REPORT

A 52-year-old female patient presented with spacing and flaring in upper front teeth and attachment loss of 4-5 millimetres in different areas of upper and lower dental arches. There were also generalised deposits of dental plaque and calculi and gingival recession in many areas. Lower incisors were already lost and the lower inter canine space widened due to distal tipping of lower canines. Upper second molars of both sides were also previously lost. Lower left first molar was carious with grade 1 mobility and gingival recession. She had convexity in facial profile and incompetency of lips. (Fig.1) There was presence of wide spaces between the anterior teeth in the upper arch and pathological migration of teeth due to attachment loss.(Fig.2) Panoramic radiograph revealed horizontal bone loss in the entire dentition. (Fig.6)

## TREATMENT OBJECTIVES

Our treatment objectives included improving the patient's smile esthetics and facial profile while maintaining the best possible periodontal health and creating a more favourable occlusion to facilitate prosthetic replacement of missing teeth.

This included:

- creating a normal overbite and overjet relationship.
- Intrusion of upper incisors keeping orthodontic forces very light.

- reducing the lower inter canine width to facilitate prosthetic replacement of missing lower incisors.

## TREATMENT PROGRESS

Extraction of lower left carious and mobile first molar was done before starting orthodontic therapy. Scaling and root planing was done in all 4 quadrants. During orthodontic treatment the patient was trained to maintain proper oral hygiene at home. Orthodontic treatment was continued for 10 months with frequent



Fig. 1- Pre-treatment facial photographs



Fig. 2- Pre-treatment intraoral photographs



**Fig. 3- Treatment progress intraoral photographs**

professional oral-prophylactic sessions every 3 months. 0.2% chlorhexidine mouthwash was prescribed twice daily for initial two weeks, followed by once daily thereafter. 022 slot MBT (preadjusted edgewise) appliance was bonded. Alignment and levelling of the teeth were done with light forces using .013 CuNiTi wires. To keep intrusive forces as low as possible we used .014 AJ Wilcock wire with mild curve added for upper arch and flat .014 AJW wire for lower arch. In the second phase we used elastic chain to consolidate spaces (Fig.3). The orthodontic treatment took about 10 months. Fixed palatal retainer was then bonded in upper arch which served the dual purpose of working as a splint and would prevent future relapse (Fig.5a). Flexible removable partial dentures were given for missing teeth in both arches.(Fig.5b)

## TREATMENT RESULTS

After an active orthodontic phase of 10 months, the spaces between upper incisors were closed and lower inter canine space was adequately reduced to help fabricate proper prosthesis. Gingival recession in upper anteriors improved post treatment. Improved lip relationship, smile and facial esthetics were achieved (Fig.4). Patient's cooperation in oral hygiene maintenance was satisfactory. The patient was very satisfied with the treatment and had improved psychosocial confidence. The post treatment panoramic radiograph showed overall parallelism of roots. No significant root resorption was noted (Fig 6).

## DISCUSSION

Age is not a contraindication to orthodontic treatment. Orthodontic treatment can actually help

rescue and restore a deteriorated dentition<sup>8</sup>. A viable periodontal ligament is a pre-requisite for cell proliferation on the application of orthodontic forces. There is reduction in periodontal ligament vascularity with ageing and insufficient source of preosteoblasts. It is important to use light controlled forces particularly in adults because there is a risk of iatrogenic damage to the periodontium with uncontrolled forces. Light continuous force must be applied to minimise the risk of root resorption and the patient must be informed of the potential risks before starting the treatment<sup>1,7</sup>. Advanced periodontal disease is characterised by loss of attachment and reduction of alveolar bone support, leading to tooth mobility, pathological migration, tooth extrusion, tipping, loss of contact, spacing between the teeth and gingival recession. Maintaining good oral hygiene at home and regular scaling are very important during and after the end of an active orthodontic therapy<sup>9</sup>. A combination of orthodontic intrusion and periodontal treatment in animals with good oral hygiene and healthy tissue showed an improvement in the periodontal health<sup>10</sup>. A reduction of probing depth in bone defects following tooth extrusion can also be achieved by orthodontic treatment<sup>11</sup>.

## CONCLUSION

Orthodontic therapy of periodontally affected dentition is possible and beneficial after administration of a periodontal therapy. In fact it helps maintain the periodontal status better and many a times aids in proper prosthesis fabrication. A multidisciplinary approach is mostly necessary for adult patients with complex dental and periodontal problems. It is necessary that periodontal therapists too recognise the importance of orthodontic intervention in attaining results not possible with periodontal therapy alone<sup>12,13,14</sup>. Adult orthodontic





**Fig 5a. - Post-treatment (without prosthesis) intraoral photographs**



**Fig 5a. - Post-treatment (without prosthesis) intraoral photographs**



**Fig 5b. - Post-treatment (with prosthesis) intraoral photographs**



**Fig. 6- Pre and post treatment panoramic radiographs**

treatment can not only improve smile and facial appearance, it can also improve the functioning of teeth and boost self-esteem.

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