

## An Integrated Perio - Ortho Approach For Pathologically Migrated Teeth-a Case Series

### Abstract

Orthodontic tooth movement may provide a substantial benefit to periodontal therapy. Today many adult patients with periodontal disease exhibit problems with tooth malpositioning that compromise their ability for proper mechanical tooth cleaning of approximal tooth surfaces. The correction of malpositioned teeth permits the patient better access for oral hygiene and can improve the morphology of marginal soft and hard tissues. Adequate periodontal and orthodontic treatments have been shown to improve the periodontal condition and to re-establish a well-functioning dentition provided that an efficient plaque control is maintained. Moreover, orthodontics gives the opportunity to improve the appearance of the esthetic zone. However, a different orthodontic treatment approach is required in periodontally compromised patients in terms of stabilizing anchorage system, force system, retention, as well as plaque control during treatment. This article presents three cases of periodontitis treated with a multidisciplinary approach by orthodontist and periodontist in achieving an esthetic and functional occlusion.

### Key Words

Pathological tooth migration, adult orthodontic, perio-ortho relation.

### Introduction

New treatment philosophies with improved clinical techniques and changes in patient's awareness of malocclusion have resulted in increased demand for orthodontic treatment. The primary motivating factor is to enhance esthetics and desire to improve dental appearance. A successful outcome of orthodontic treatment is largely influenced by the patient's periodontal status before, during and after active treatment. Patients with periodontal problems seeking orthodontic treatment have to be assessed in an interdisciplinary fashion with orthodontist and periodontist contributing to a comprehensive treatment plan in reconstruction of the occlusion not only to prevent any further progress of the disease, but also to satisfy patient's functional and esthetic demands. In treatment of such patients, the differences in the anatomic structure and tissue response must be considered prior to treatment.<sup>[1]</sup>

Pathological tooth migration (PTM) is defined as the change in tooth position resulting from imbalance of tooth retention forces.<sup>[2]</sup> Prevalence of PTM is 30 to 55% of periodontitis patients.<sup>[3]</sup> Degrees of migration vary from tooth to tooth, according to periodontal destruction and resultant of forces acting in the teeth.<sup>[4]</sup>

It is believed that as the periodontal

disease begins, the normally tightly adapted gingival tissues loose their tonicity and swelling produces a continuous light load on the tooth surface. This destruction of periodontium along with pressure from inflamed tissues,<sup>[5]</sup> occlusal factors,<sup>[6,17]</sup> oral habits such as bruxism,<sup>[8]</sup> tongue thrusting,<sup>[9]</sup> lip forces,<sup>[10]</sup> loss of teeth without replacement,<sup>[11]</sup> a labial frenulum,<sup>[12]</sup> gingival enlargement and iatrogenic factors,<sup>[2,13]</sup> can cause disruption in equilibrium in tooth position causing PTM. However, according to the literature, the destruction of tooth supporting structures is the most relevant factor associated with pathologic migration.<sup>[3]</sup>

Several case reports are mentioned in the literature showing spontaneous correction of PTM after doing periodontal therapy alone, however the treatment of severe cases can be complex, time consuming and improvement is often unpredictable and multidisciplinary approach is often required.<sup>[14]</sup>

This paper describes combined periodontic and orthodontic treatment of three cases of PTM caused by severe periodontitis.

### Case Report I

A 28 year old patient was referred to the Deptt. of Orthodontics, after periodontal

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treatment for severe periodontitis and PTM which included scaling and root planing, followed by periodontal flap surgeries. A period of 3months was given between the periodontal treatment and start of orthodontic treatment. On clinical examination, his maxillary anterior teeth had spaces (8mm), deep bite (80%), increased over jet (8mm), incompetent lips with lip trap with class I buccal occlusion. Patient was interested to improve his appearance but that did not improve at all 3 months after periodontal treatment.

Goal of orthodontic treatment was to retract and intrude maxillary incisors, intrude and align mandibular incisors. Position of pathologically migrated teeth only was corrected. Brackets were placed on maxillary teeth [0.22x0.28inch Mc Laughlin Bennett Trevisi (MBT)]. Alignment wires were .012 Nickel-Titanium (Ni-ti) followed by .016 Niti, .016 x.022 Niti, .016 x .022 Stainless Steel (SS). Space closure was done with very light E-chains, which were changed after every 6weeks. The first molars were continuously ligated with premolars so that it does not get heavy force. Lower bonding was done 3 months after the

upper. In the lower arch, after the alignment stage, .017 x .025 Titanium Molybdenum Alloy (TMA) intrusion arch was used for leveling. After one year two months of treatment, case was debonded followed by .0175 multistranded lingual bonded retainers in both upper and lower anteriors, along with upper removable Hawley's retainer with anterior bite plane.

Periodontal maintenance procedures consisted of oral hygiene instructions, with scaling and root planing performed at 3-month intervals and whenever necessary to prevent further progression of the disease and maintain healthy gingival tissue.

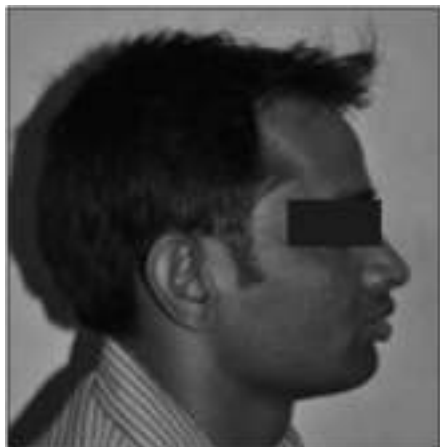
### Case Report II

A 55 year old diabetic patient reported with PTM of 21. She was diagnosed with chronic periodontitis and generalized pockets. The treatment plan was periodontal therapy to eliminate cause, tooth movement for alignment of maxillary incisors followed by lingual bonded retainer.

With light forces, upper incisors were retracted, bite opening was done with reverse curve of spee (RCS) wires in lower arch. After achieving retraction of



Case Report 2.4



Case Report 1.1



Case Report 2.1



Case Report 2.5



Case Report 1.2



Case Report 2.2



Case Report 2.6



Case Report 1.3



Case Report 2.3

anterior, anterior bite plane was given along with cross arch elastics for scissor bite correction but patient had to discontinue the treatment for personal reasons. She was given lingual bonded retainers alongwith removable Hawley's retainer.

### Case Report III

A 22 year girl patient reported with complaint of her upper teeth coming outward. On examination it was found



Case Report 3.1



Case Report 3.2



Case Report 3.3



Case Report 3.4



Case Report 3.5



Case Report 3.6

that the maxillary incisors were flared and extruded with spaces and deep bite. 27 and 37 were in scissor bite. Apart from malocclusion patient had periodontal pockets in both upper and lower anteriors. Periodontal treatment included scaling and root planing which was followed by flap surgeries of the isolated areas. Following a healing period of 3 months fixed orthodontic treatment was rendered. Hawley's retainer along with lingual bonded retainers were given. Periodontal maintenance visits were planned at intervals of 3 months.

### Discussion

The long term successful outcomes of orthodontic treatment are influenced by the patient's periodontal status before, during and after active orthodontic therapy. Prior to start of orthodontic treatment in periodontally compromised patients, treatment should be aimed not only to allow any further progress of periodontal disease and but also to free the periodontium from active inflammatory sources. A clinician should assess each patient for periodontal factors that can develop periodontal disease and should monitor carefully who has had periodontal disease before to prevent any outbursts of active disease.

The localized loss of periodontal attachment in patients can present with varying degrees of over eruption, tipping, rotations, migration, and spacing commonly in anteriors with increase in pocket depth. Once this malocclusion has occurred, the traumatic occlusion can further cause breakdown of the periodontal tissue making brushing procedure difficult thereby failing to remove plaque, thus aggravating the periodontal destruction. However, if

alveolar bone loss has not yet occurred, it is wise to start periodontal treatment at earliest to prevent spreading of inflammation further into supporting tissues. Force applied on such infected tooth can result in more periodontal breakdown. These teeth are defenceless to bacterial infection and regeneration in such teeth is hindered.<sup>[15],[16]</sup>

In treatment of such cases, factors to be considered are as follows:

- Controlling periodontal disease
- Reducing force magnitude
- Producing higher moment to force ratio for more translator/Bodily movements.<sup>[17]</sup>

According to Melson et al (1989) the combination of orthodontic and periodontal treatment can induce generation of new attachment if the patient can maintain good oral hygiene<sup>[18]</sup>. Brunsvold et al (1997) have reported spontaneous recovery of PTM with only periodontal treatment attributed to elimination of inflammation, regeneration of fresh collagen, reduction of vascular engorgement of tissue and control of bacterial infections.<sup>[19]</sup>

### Conclusion

Orthodontic treatment is no longer a contraindication when bone loss has occurred because of periodontal disease. Periodontally compromised patients can be treated with fixed appliances provided health of periodontal tissues is maintained and mechanics involves use of light forces. A systematic multidisciplinary Orthodontist – Periodontist approach in treating such periodontally compromised patient has not only given an alternative to replacement of infected teeth but also has contributed to promotion of oral health to improve the possibilities of saving and restoring a compromised dentition.

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