



ORIGINAL RESEARCH PAPER

Dental Science

INTERDISCIPLINARY THERAPY IN ORTHODONTICS: A CASE REPORT

KEY WORDS: ceramic brackets, MBT, Bolton's discrepancy, Veneers, Interdisciplinary orthodontics

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ABSTRACT

Interdisciplinary approach is indispensable in patients with generalized spacing and microdontia. Team work is required when it comes to treatment of teeth with congenital defects. A combined interdisciplinary treatment approach will yield a result best suited for the patient as well as the clinicians. The role of orthodontist in such an interdisciplinary treatment approach can be primary or secondary. This case report describes the treatment of a class I malocclusion with generalized spacing and microdontia. Primary role of orthodontist in this case was to level and align the maxillary and mandibular arches, close the spaces such that enough space is left for restoration of microdontic teeth with veneers. It describes an interdisciplinary approach for improved esthetic result.

INTRODUCTION

In the recent times, the practice of dentistry is evolving from a single specialist or general dentist practice to that of a team approach. This ensures the skills and expertise of clinicians from different specialties can be utilized for the best possible treatment outcome in terms of occlusion, function and stability of the case. These three aspects are also triads of successful orthodontic treatment. Such joint care of a patient's dental needs is defined as interdisciplinary treatment.¹

Interdisciplinary approach is indispensable for patients with microdontia and generalized spacing. Patients with such malocclusion can be best treated with such a team work only. It is also of utmost importance in adult patients presenting with severe Bolton's discrepancy be treated with Orthodontics followed by restorative dentistry to fulfill the esthetic requirements of a particular case.²

The role of an orthodontist can be primary or secondary. In the present case report the role of an orthodontist is primary wherein an orthodontic patient requires adjunctive other speciality treatment like tooth build up to match a Bolton's discrepancy.

CASE REPORT

The present case report describes the importance of interdisciplinary approach in orthodontics to achieve an ideal esthetic result in a patient with Angle's class I malocclusion with generalized spacing and microdontia. (Figure 1) Microdontia is a condition in which one or more teeth appear smaller than normal. In the generalized form, all teeth are involved. In the localized form, only a few teeth are involved. The most common teeth affected are the upper lateral incisors and third molars.

DIAGNOSIS AND TREATMENT PLAN

An 18 year old male patient reported with a chief complaint of excess spacing in upper and lower front tooth region. Extraoral examination revealed a straight profile and orthognathic divergence. Nasolabial angle was normal. (Figure 2)

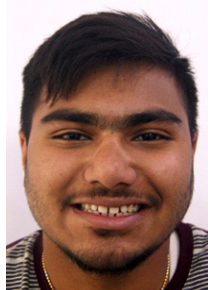


Figure 1: Frontal smile view



Figure 2: Left lateral view

Upon intraoral examination patient was diagnosed with a tongue thrust habit. The cause for generalized spacing was contributed by tongue thrust habit coupled with the small sized anterior teeth. (Figure 3, 4 and 5) Poor occlusal bite was a result of anterior and posterior tongue thrust habit. An Angle's class I molar relation was present bilaterally. 0mm overjet and 0mm overbite were also noted. No history of mouth breathing was found. Patient also had the habit of bruxism at night.



Figure 3: Intraoral frontal view



Figure 4: intraoral Maxillary occlusal view



Figure 5: Intraoral mandibular occlusal view

Following a comprehensive clinical and database analysis, we devised a treatment plan which was a non extraction approach since there was enough space in the anterior segment and patient had a straight profile. Training of correct swallow and posture of the tongue was done by myofunctional exercises.

TREATMENT PROGRESS

An MBT prescription with 0.022" slot ceramic brackets was used for the treatment. Banding of first and second molars was done to increase the posterior anchorage. Banding of the crowns on 46 and 47 was preferred over bonding as the bond strength over the crown achieved would be questionable. Use of TAD was advised for the patient to reinforce the anchorage in vertical direction and achieve some amount of intrusion of molars since there was reduced overjet and overbite and loosing anchorage in vertical direction was not beneficial for the treatment. But it was denied by the patient. In order to avoid any anchorage reinforcers a light force mechanotherapy was devised for the present case. Tight lacebacks made from 0.010" ligature wire were placed from second molars to the canine in all four quadrants. An initial 0.016" HANT wire was used for initial levelling. (Figure 6) The same wire was continued for two months. This was followed by 0.017x0.025" HANT and activation of the lacebacks which was then followed by 0.019x0.025" HANT wire in upper and lower arches. At the end of four months 3mm of canine retraction was achieved due to the tight lacebacks. This was followed by consolidation of posteriors with a figure of eight ligation (Fig. 4) and a tight lacebacks from second molars to canine in all four quadrants on a 0.019x0.025" SS wire for 5 months. E chain was used to close the spacing in upper and lower anterior segments.



Figure 6: Ceramic brackets with 0.016" NiTi wire

A joint decision was made to plan the amount of space that would be required for the placement of veneers in upper anteriors. 2mm of space was left on each side of 11, 12, 21 and 22. This space was left as planned by orthodontic treatment. (Figure 7)



Figure 7: Space management after orthodontic treatment for maxillary anterior veneers

This allowed enough space for veneer placement with minimal tooth preparation. Placement of veneers in upper anteriors solved the following problems: (Figure 8)

1. Bolton's discrepancy
2. Tooth width to height ratio
3. Microdontic appearance of upper anteriors
4. Consonant Smile arc



Figure 8: Maxillary occlusal view of veneers after cementation



Figure 9: Mandibular occlusal view at the end of orthodontic treatment with fixed lingual retainer



Figure 10: Consonant smile arc at the end of treatment

Orthodontic treatment alone cannot achieve a complete esthetic smile because of some congenital defects. Buccal corridor show was reduced due to widening of the maxillary and mandibular arches by NiTi archwires. (Figure 9) A night guard was delivered at the end of veneer cementation which acts as a retainer and habit breaking appliance for bruxism. A fixed lingual retainer was bonded in the lower arch. (Figure 8)



Figure 11: Pre-treatment extraoral smile frontal view

Figure 12: Post-treatment extraoral smile frontal view

DISCUSSION

Most common malformations encountered is the peg shaped lateral incisor (Figure No. 5), often presented with esthetic discrepancies in the anterior region with uneven space distribution, a midline deviation and disturbed occlusion. Management as such will consist of space management and bite correction by fixed orthodontic therapy followed by restorative reconstruction of the shape and size of the malformed teeth with the help of ceramic crown or veneers. If a full coverage restoration is planned, the overjet can be selectively increased by 0.5-0.75mm on the peg lateral to minimize lingual reduction. Thereby, minimizing intentional tooth structure reduction of an already malformed tooth. The overbite is kept minimal in cases when veneers are planned in the restorative treatment.³

This case report describes the importance of primary orthodontics followed by adjunctive other speciality treatment to achieve and ideal esthetic and occlusal results in a patient with reduced overjet, reduced overbite, microdontia, generalized spacing, poor occlusion and bolton's discrepancy. At the end of treatment a symmetric smile arc was achieved. Reduced buccal corridors and ideal tooth height to width ratio also contributes to an increased esthetic outcome of an orthodontic patient. A significant difference was noted on comparison of pre-treatment and post-treatment extraoral frontal smile photographs. (Figure 11 and 12)

CONCLUSION

Many a times a complete patient's care involves a multidisciplinary approach to achieve the best desired esthetic outcome possible. A thorough examination of patients chief complaint, habits, extraoral and intraoral examination is must to plan an interdisciplinary treatment. It is important that an orthodontist and other specialists plan a treatment which meets the needs of a patient in a realistic and ideal way possible. Constant interaction and communication is very important among all team members to achieve the highest quality of treatment possible.

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