



ESTHETIC MULTIDISCIPLINARY REHABILITATION OF PATIENT WITH SPACED DENTITION, MISSING MOLARS AND TONGUE THRUSTING HABIT- A CASE REPORT 6 MONTH FOLLOW UP

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ABSTRACT

Smile design in restorative dentistry embraces facial esthetics, gingival esthetics, the relationship between soft and hard tissues and dental aesthetics. Smile design requires assessment of facial soft tissues and skeleton, followed by intraoral examination of the teeth and their relationship with lips and soft tissues.^{1,2} A diastema is a black space between adjacent teeth that are separated from each other, with no presence of a contact area. Possible origins of this defect include an excessively wide dental arch, anomalous tooth size, tongue thrusting habit, congenital tooth absence and gingival frenum hypertrophy.^{3,4} The present article describes multidisciplinary management of the abnormal tongue thrusting habit in a 23 year-old female patient with a habit breaking appliance, direct composite resin and PFM crowns for missing teeth. Composite resin used to close diastema should have adequate convexity from gingivo-incisal direction to avoid this problem. Various techniques have been introduced to close diastema, some of which are time-consuming or cannot provide proper contour. The use of composite offers a conservative, time saving approach which ceramic veneers and orthodontic treatment do not have. They are kinder to the opposing dentition and in case of the event of an unforeseen fracture and can be repaired easily which saves precious time of the clinician and the patient.

KEYWORDS : Diastema, spaced dentition, habit breaking appliance, direct composite

INTRODUCTION

Spaced dentition is characterized by interdental spaces and lack of contact points between the teeth. Spacing can be localized or generalized due to the number of teeth included.¹ It is a common esthetic problem for many patients.

The causes of generalized spacing may be hereditary, acquired, or functional. Hereditary causes include tooth size-arch size discrepancies, congenitally missing teeth, macroglossia, supernumerary teeth, small teeth, and hypertrophic frenum. Functional causes include oral habits. The pathologic conditions increasing tongue size, missing teeth, delayed eruption of permanent teeth, and periodontal disease are classified as acquired problems.^{2,3}

While an orthodontic treatment can be time consuming, careful consideration is needed as orthodontic anomalies need to be treated first before the diastema can be treated, so that the occlusion of the patient is not hampered and a functional aim is achieved.⁴

Less time consuming procedures for treatment of MMD (Maxillary midline diastema) include the use of laminates/veneers, crowns and composite build up. While the use of crowns/ laminates and veneers are the desired treatment modality, the use of composite build-up is said to be a treatment option desired by many, especially, in which time is a constraint as the use of crowns and veneers require the need of crown cutting which is not preferred by many patients.^{5,6}

Tongue crib is an orthodontic appliance which induces a change in the resting position of the tongue and thus allowing normal tooth eruption and closure of an anterior open bite. Some authors have found the crib appliance to be successful in modifying the tongue behavior. The present article describes the management of the abnormal tongue thrusting habit in a 23 year-old female patient with a habit breaking appliance.^{7,8}

A 24-year-old adult woman was concerned about the unesthetic appearance of her spaced dentition localized at both upper and lower arches while smiling. She was reluctant to smile. The patient's medical history did not reveal any systemic disease.



Fig1

Temporomandibular joints were normal, with no history of dysfunction. Although the patient's visits to the dentist had been infrequent, clinical examination evidenced good periodontal health, with no probing depths >3 mm and periapical radiography studies showed adequate bone levels. A mild tongue thrust while swallowing was noted.

Intraoral examination revealed missing 36,46 for long time resulting in tilting of premolar on one side of a quadrant. Among the different possible approaches to this case, we selected the most conservative because of the good periodontal status of the patient and his desire to improve his appearance.

The appropriate technique and material for a patient is based on time, physical, psychological, and economic limitations. Composite bonding between teeth fills spaces and improves the appearance of diastemas. Composite bonding is completed in one appointment and patients like the instant results. Composite can be added or reduced to fit a patient's desired goal. Addition or removal of composites can be done to suit patient's desired goal. It can be completely removed if the patient desire was not satisfied. Composite also can be placed without light curing to confirm patient acceptance. Patients also like that little to no tooth reduction is done, and the restorative procedure can be completed without any anesthetic needed.^{9,10}

Case Report

Fixed prosthodontic crowns and bridges planned for lower arch and direct composite restorations along with habit breaking appliance for upper arch.

FPD for missing 36,46

Fixed prosthodontics treatment completed quadrant wise rehabilitating missing 36,46 with 3 unit PFM crown bridge respectively.



Fig3 PFM Crowns irt 35,36,37,45,46,47

Direct composite restorations for anterior spacing

Shade selection was done using A1 shade of Vita shade guide for the teeth to be restored. And composite shade A1 (Dentsply sirona, Neospectra) was chosen for the composite restoration. Prior to the commencement of the MMD closure, the maxillary incisors were isolated. The central incisor adjacent to 21 was covered with PTFE while the other was restored using a 37% phosphoric acid was applied on the mesial surface of 21, for 15 seconds, rinsed for 20 seconds, and dried with a slight blast of air.



Fig4 PTFE and 37% phosphoric acid

Following the etching, the microporosities were then bonded using an applicator tip and polymerized for 20 seconds with a LED light (ivoclar bluephase).

The bulk composite was placed, shaped and cured accordingly. The same procedure was repeated for tooth number 11,12,22. With an articulating paper, bite was adjusted then finishing & polishing of the restoration was done with smooth tapered diamond bur (Shofu preparation set) and Enhance polishing kit (Dentsply).



Fig5

Habit Breaking Appliance- Tongue crib

Tongue thrust is an oral habit pattern related to the persistence of an infantile swallow pattern during childhood and adolescence and thereby produces an open bite and protrusion of the anterior tooth segment. Functional examination suggested that she had tongue thrusting habit.

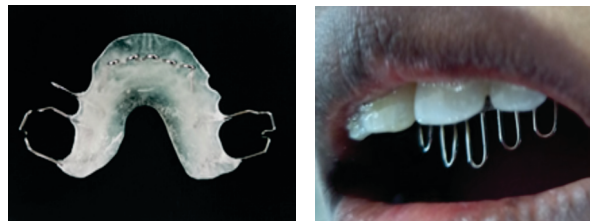


Fig 6 Habit Breaking Appliance- Tongue crib



6 month follow up

DISCUSSION

Before the practitioner can determine the optimal treatment, he or she must consider the contributing factors. These include normal growth and development, tooth size discrepancies, excessive incisor vertical overlap of different causes, mesiodistal and labiolingual incisor angulation, generalized spacing and pathological conditions.

The present case, in which the MMD was treated within a time period of 1 hour using bulk fill composite resin restorations, which often do not require preliminary models or wax-ups, and do not involve laboratory fees that leads to escalated costs. The use of composite offers a conservative, time saving approach which ceramic veneers and orthodontic treatment do not have. They are kinder to the opposing dentition and in case of the event of an unforeseen fracture and can be repaired easily which saves precious time of the clinician and the patient.

In cosmetic treatment, the direct-bonding restoration technique represents the preferred therapeutic option. It preserves maximal tooth structure and helps to restore function and aesthetics in only a few clinical visits.

In addition, the technique is economical and the possible need for sophisticated indirect restoration can be postponed.

Direct-bonding restorations demand excellent clinical skills. The clinician is required to incorporate various clinical techniques, tips and tricks.^{11,12}

There are also some disadvantages of direct composite resin restorations compared to some indirect porcelain alternatives. Most composite materials possess less fractural toughness, shear, and compressive strength and are not ideally suited for ultra-high-stress areas found in certain clinical situations. Additionally, the presence of parafunctional forces such as bruxism, Class III end-to-end

occlusal schemes combined with undesirable oral habits such as nail biting, consumption of abrasive food or materials, can substantially jeopardize the life-span of a direct composite restorations.⁸ Regardless of these disadvantages, the constant introduction of newer and more stable composite restorations give clinicians the chance to a perform substantially conservative, functional, aesthetic restorations within a short time frame and with desirable results.^{13,14,15}

CONCLUSION

This clinical report presented the treatment of multiple spaces in the anterior maxillary region in the patient with mild tongue thrust habit and missing 36,46 with direct composite restorations, tongue crib habit breaking appliance and PFM crowns. Habit breaking appliance can act as a device for retraining the associated musculature, a mechanical restrainer and a reminder to discontinue the habit. This painless conservative approach results in complete patient satisfaction leading to a successful outcome. Restorative method with composite resin is the least invasive, reversible, economic and aesthetic treatment which can be done in a single visit in comparison with all other available treatment options.

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