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Camouflaging with composites: A case report

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ABSTRACT

Increased patient demand for esthetics with less invasive procedures has led to increased utilization of free hand composites for esthetic rehabilitation. A young girl with multiple diastemas and peg lateral in the upper anterior region was treated with composite recontouring and reshaping of the concerned teeth. Composites propose a minimally invasive means of esthetic rehabilitation in such cases as opposed to prosthetics and the time consuming orthodontic treatment modalities. Additionally, composites are durable, less time consuming, inexpensive and easily repairable.

Keywords: diastema, esthetic, composite, reshaping

INTRODUCTION

We live in an esthetically driven society where appearance plays a significant role in a person's achievements and relationships both at a personal and professional level. Most patients walking into a dental office today have a clear picture of their desired outcome. The increased exposure to the print, electronic and social media has resulted in an increased sense of awareness of their external appearances. Thus, there is a surge in the esthetic demands of the patients.

The teeth are an indispensable part of a person's face and play a significant role in the overall appearance of an individual. Smile, they say is a person's most beautiful asset. Malaligned teeth with diastemas make for an ugly smile and are not desirable to any patient. A diastema is a non physiological space (or gap) between two adjacent teeth. Anterior diastemas create ugly smiles which

hamper a person's confidence and thus affect the person's personal, professional and social life.

The specific goals of treating diastema are: creating a tooth form in harmony with adjacent teeth, arch, and facial form; maintaining an environment for excellent gingival health; and attainment of a stable and functional occlusion. The final result should be one that is harmonious and pleasing to the patient. These goals can be met and clinical success achieved by applying contemporary principles of smile design and following an appropriate sequence of treatment.¹

In this article we wish to discuss the case report of a young girl, coming from the outskirts of Ahmedabad, looking for esthetic correction of multiple diastemas present in maxillary anterior region

CASE REPORT

A young girl 23 years of age reported to the Department of Conservative Dentistry and

Endodontics, Government Dental College, Ahmedabad with the chief complaint of gaps in the upper front teeth region.

Detailed history from the patient revealed the patient had previously undergone orthodontic therapy for four years. However, non compliance on the patient's part resulted in the orthodontic treatment getting stranded midway. The patient was seeking a matrimonial alliance and had faced multiple rejections due to her unesthetic smile. The patient had finally found a suitable match for herself and now wanted esthetic correction of the anterior teeth before her wedding day which was 2 months away.

Clinical examination revealed diastemas in the upper anterior region among the teeth from upper right canine to upper left canine (Fig 1). Upper right lateral incisor was peg shaped (Fig 1). The upper right and left premolars and lower left lateral incisor were missing. The patient had a cross bite (Fig 1) on the right side of the upper lower arches. The dental midline was shifted 3 mm (Fig 1) to the left side. Radiographic examination was done using OPG. Upper and lower diagnostic impressions were made and casts were poured. OPG confirmed the clinical findings of missing teeth. The diagnostic cast was used to study the patient's occlusion and dental anatomy. Treatment planning was done on the study cast.

All treatment options were explained to the patient. Orthodontic correction in collaboration with restorative correction of malformed teeth and prosthetic rehabilitation of the missing teeth was one option. Another alternative was to go for fixed dental prostheses (indirect restorations) correcting the shape, size and contour of the maxillary anterior teeth. The other alternative given to the patient was the use of composite resin to camouflage the diastemas and recontour the maxillary anterior teeth to improve the esthetics.

The patient chose to go ahead with the last option as it was least time consuming and the least expensive amongst all the available options.

TREATMENT

Upper lower diagnostic casts were studied and wax mock up performed (Fig 2). A putty template was made using addition silicone (AFFINIS putty soft, ColteneWhaledent).

On the scheduled appointment, patient was comfortably seated and the mock up cast was shown to her. Prophylactic scaling followed by polishing was done using rubber cup and pumice slurry. Once the patient was satisfied with the expected result as seen on the mock up cast, shade selection was done using Ivoclar Vivadent shade guide in natural daylight. Lip and cheek retractor (Optragate, Ivoclar Vivadent) was applied to improve access and visibility. A bevel preparation was done in the enamel of the teeth that were to receive the restoration i.e. upper canine to canine. Teflon tape was applied on the right and left premolars.

Total etch technique was used. 37% phosphoric acid (N -Etch, Ivoclar Vivadent) was used to etch the teeth for 15 seconds. Bonding agent (Tetric N – Bond Universal, Ivoclar Vivadent) was applied using an applicator tip and cured using a curing light (Bluephase N, Ivoclar Vivadent) for 20 seconds.

The putty template was placed and palatal wall was built using flowable composite (Tetric N-Flow, Ivoclar Vivadent). The composite (Tetric N-Ceram, Ivoclar Vivadent) was placed and condensed in increments using the Optrasculpt instrument (Ivoclar Vivadent) (Fig 3). Each increment was light cured using a curing light (Bluephase N, Ivoclar Vivadent) for 10 seconds. Flossable contacts were created using cellophane strips.

The occlusion was checked and adjusted. The restorations were then finished using finishing burs

and polished using polishing strips and discs (Coltene Swissflex strips and discs). Postoperative introral view as seen in Fig 4. Comparison of preoperative and 6 month follow up frontal view as seen in Fig 5 and 6. It has been one year since the restorations were performed. The restorations are intact and the patient happy and satisfied with them so far.

DISCUSSION

Orthodontic correction in collaboration with restorative treatment would have resulted in correction of the midline shift and cross bite followed by esthetic rehabilitation of the peg lateral and closure of any remaining diastemas using composite recontouring. However, due to time constraint of the patient this option was not feasible. Prosthetic rehabilitation was another option. However, that would involve unnecessary loss of sound tooth structure.

Direct composite resin restorations are a conservative therapy that can provide a good treatment outcome in diastema closure. Both esthetics and function are enhanced and, in most cases, little or no preparation of the tooth is required.¹ Good esthetic outcome, durability, affordability are some of the advantages of the contemporary composite materials. Additionally, their longevity of adhesion to enamel is well documented. Physical and chemical improvements over the years have optimized color stability and improved wear resistance.² Also, composites are kinder to the opposing dentition as compared to ceramics used in case of veneers and crowns. The added advantages of direct bonding include ease intraoral reparability, the opportunity to sculpt the restoration, low costs, and possibility of completing the restoration in a single visit without the need to incur laboratory fees.³ Further, direct bonding is advantageous in that it allows modification while the patient is still undergoing

orthodontic treatment. However, the use of direct composites for diastema closure must be limited to patients with excellent oral hygiene. In order to discourage the retention of plaque, and its associated loss of gingival health, it is essential to polish the direct composite restoration to a high gloss. Meticulous maintenance of oral hygiene in addition to well-polished restorations can prevent adverse periodontal affects of even overcontoured and intrasulcular direct composite restorations.⁴ The main disadvantage of composite resin is the possible need for multiple replacements during the lifetime of the patient. The passage of time is not as kind to composite as it is to porcelain and discoloration or degradation usually develops.⁵ Therefore patients should be made aware that the shade and texture of the composite material will probably change with time, and that it may require periodic replacement.⁶ Arguably, the surface texture of composite veneers is not as natural in appearance as porcelain.

In addition, most practitioners find it harder to create teeth directly in the mouth compared with a technician working at a laboratory bench. If anatomic nuances are not followed, an unesthetic V-shaped diastema closure may result.³

A 5 year follow up study by Frese et al on diastema closure and recontouring of teeth using direct composite build up revealed an overall survival rate of 84.6% after 5 years and clinically acceptable quality parameters at follow up. The authors also stated that the functional survival rate of 100% is attributable to the ease of reparability of such restorations.⁷

The diagnostic mock up technique used in this case gives the patients a fair idea of the anticipated results simply by looking at the diagnostic casts making it easier for the clinician and the patient.⁸ The use of the specialized instrument

Optrasculpt in this case, minimized the need for finishing and polishing making the procedure less cumbersome for both the patient and the dentist. Tetric N-Ceram composite material was used for its nano-optimized filler content which is responsible for the material's unique chameleon effect and natural esthetic results. It demonstrates an exceptionally high level of radiopacity and thus significantly facilitates the diagnosis of secondary caries. The Nano-fillers results in low shrinkage and shrinkage stress, low wear, fast polishability and high gloss. The nano-modifier ensures optimum stability, excellent sculptability and convenient handling properties. The biggest advantage is that polymerization in only 10 seconds ($\geq 1.100 \text{ mW/cm}^2$ per increment) is possible.

The patient's needs should be the prime concern governing treatment planning. In this case the time constraint and the esthetic correction were the two main concerns of the patient. The decision to go ahead with esthetic rehabilitation without correction of midline shift and crossbite was keeping in mind the patient's needs and its

urgency. The best possible treatment plan in the minimum available time was thus, adopted.

CONCLUSION:

There has been a significant shift from need based treatment modalities to esthetically defined treatment modalities in dentistry. The patient today is more concerned and aware of his appearance and does not wish to compromise on that. Thus, it is upon the dentist to strike a balance between function and esthetics to deliver the best to his patient.

Composites provide for a minimally invasive, durable, inexpensive and easily repairable treatment modality in such cases. Additionally, it is less time consuming and allows for any number of manipulations to the restorations to suit the patient's desires.

With all its advantages, composite camouflaging as a treatment modality is here to stay and must be explored by the dentist alone or in collaboration with other specialities such as orthodontic and prosthetic corrections, in order to deliver best results to their patients.



Fig 1. A Pre-operative intraoral view



Fig 1 B Pre-operative intraoral view



Fig.2 Diagnostic cast mock up with wax



Fig 3.OptraSculpt Composite Instrument (Ivoclar Vivadent)



Fig.4 Post operative intraoral view



Fig 5. A Preoperative frontal view



Fig 5 B Preoperative frontal view



Fig 6. 6 month follow up frontal view

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