



## Midline Diastema = Case Series

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### Abstract

Midline diastema is an esthetically displeasing condition for the patient. Direct composite restorations have been the need for the patient for minimally invasive closure of midline diastema. Several benefits of composite restorations are single visit, esthetically pleasing, stable occlusion. This case report describes direct aesthetic midline diastema closure with direct composite technique.

**Keywords:** Midline Diastema; Composite Restorations; Diagnostic Wax Ups

### Introduction

In Greek diastema means interval, a gap or space between two or more successive teeth. Occurs more frequently in the median plane of the maxillary arch between the two central incisors and hence called the median, central or midline diastema.

Midline diastema in maxillary teeth is esthetically displeasing for the patient. Keene described midline diastema as anterior midline spacing greater than 0.5 mm between the proximal surfaces of adjacent teeth. Numerous studies have investigated the frequency/prevalence of diastema. Consequently, there was a wide range of findings from 1.6% to 25.4% in adults and an even greater range in groups of young people. Maxilla has shown higher prevalence of midline diastema than mandible. Keene described midline diastema as anterior midline spacing greater than 0.5 mm between the proximal surfaces of adjacent teeth [1-5].

Various etiological factors include physiological diastema, abnormal labial frenum, missing maxillary lateral incisor, ectopic maxillary canines, tooth size or shape discrepancy, mesio distal angulation of incisors, Inter arch relationship.

In this case report esthetic approach was made for the treatment. A direct composite build up was done and in few cases laboratory analysis was done for a wax up.

### Case Report 1

A patient named Anita came to the department of conservative dentistry and endodontics of Seema Dental College and Hospital Rishikesh with the chief complaint of gap and irregular teeth in upper front tooth region since 10 years. Clinical examination showed midline diastema in upper front tooth region. The oral hygiene of the patient was satisfactory, and no significant hard and soft tissue findings were found. The labial frenum associated with the diastema was normal in size and position. Various treatment modalities (conservative restorative and prosthetic procedures including veneers and crowns) were discussed with the patient, A minimally invasive approach with a direct composite resin restoration was planned to restore midline diastema.

On her first visit a preoperative maxillary and mandibular impression was recorded and cast was poured. A diagnostic wax up was made and putty impression was recorded. After isolation

shade selection was done with button method and a1 shade was selected. After isolation with rubber dam bevelling was done w.r.t 11 21. Etching and bonding was done and silicon matrix was placed. Palatal shelf was created with the help of silicon matrix. Composite build up was done layer by layer followed by finishing and polishing.

hospital, rishikesh with the chief complaint of spacing in upper anterior teeth. On clinical examination there was Ellis class I fracture i.r.t 11 and midline diastema. The oral hygiene of the patient was satisfactory, and no significant hard and soft tissue findings were found. The labial frenum associated with the diastema was normal in size and position. Various treatment modalities (conservative restorative and prosthetic procedures including veneers and crowns) were discussed with the patient, A minimally invasive approach with a direct composite resin restoration was planned to restore the fracture and midline diastema.

A superfine diamond bur was used to roughen the proximal enamel surfaces for optimal adhesion, extending from the facial line angle to the lingual line angle. The adjacent tooth was separated by Teflon tape. The enamel was etched with 37% phosphoric acid for 30 seconds. After rinsing and drying, bonding agent (One-Step) was applied according to manufacturer’s instructions and cured for 10 seconds using a LED curing unit. Resin composite was used for the composite build-ups due to its good handling property and shade matching. The composite was placed and polymerized using a layering technique to simulate natural tooth color and translucency. Each layer was light-cured for 40 seconds each from facial and lingual directions. Care was taken to achieve the desired proximal contour, especially in the gingival embrasure area. Polishing discs were used for detailed polishing from rough to fine grains by using a low speed handpiece.

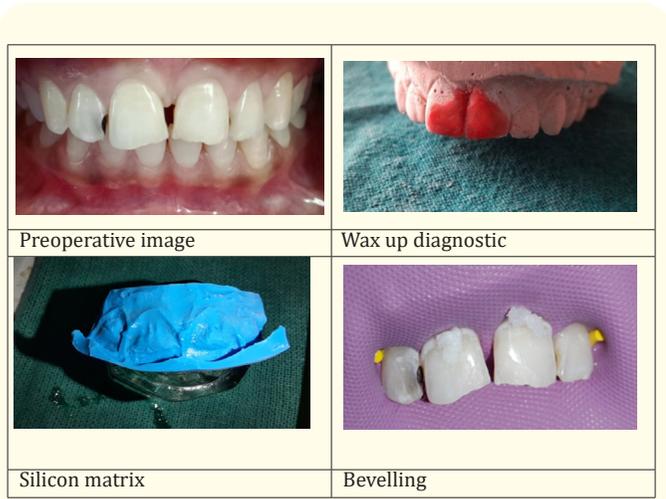


Figure 1

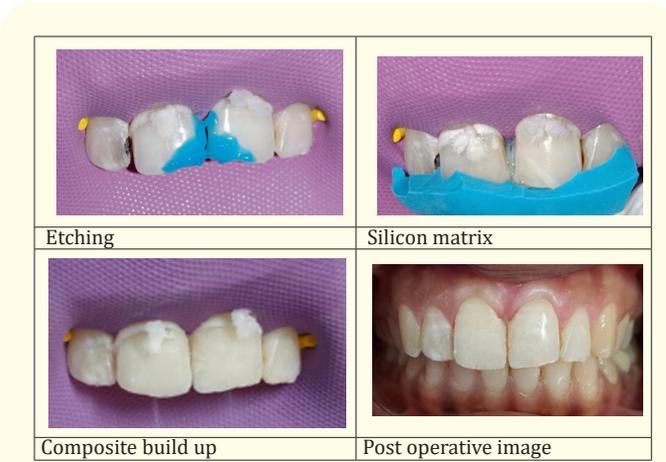


Figure 2

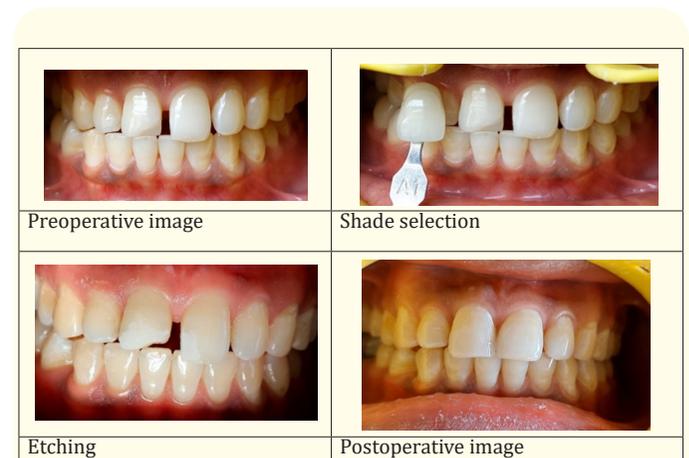


Figure 3

**Case Report 2**

A 25-year-old male patient reported to the Department of Conservative Dentistry and Endodontics of seema dental college and

### Case Report 3

A 32-year-old female patient reported with a complaint of unesthetic appearance and blackish discoloration in the anterior teeth region. Her history reveals that she had the spacing from the time of permanent dentition and he had problem with smiling because of the same. Patient medical history was noncontributory. She underwent a restorative treatment for the same few years back. Patient wanted an esthetic correction for the same, because it restrained her from her self-confidence. On examination there was a faulty restoration w.r.t 11 and 21. A treatment plan of minimally invasive composite restoration w.r.t 11 21 was made.



Figure 4

### Case Report 4

A 25-year-old female patient came to the department with a chief complaint of spacing in the upper front tooth region. A complete clinical examination was performed. This included radiographs, photographs, and a review of the periodontal condition. No pathologies were found which would impede esthetic enhancement. No contributory occlusal factors were noted that would require functional rehabilitation. There was a spacing of 3-4 mm between the central incisors.

After explaining all treatment modalities, patient decided to restore the teeth with direct composite restorations. Shade selection was done using button method and finally A1 shade was selected.

Isolation was done and bevel preparation was done on the central and lateral incisors. Etching was done using 37% phosphoric acid and was bonded using 5<sup>th</sup> generation bonding system. Composite build up was done with layering technique.

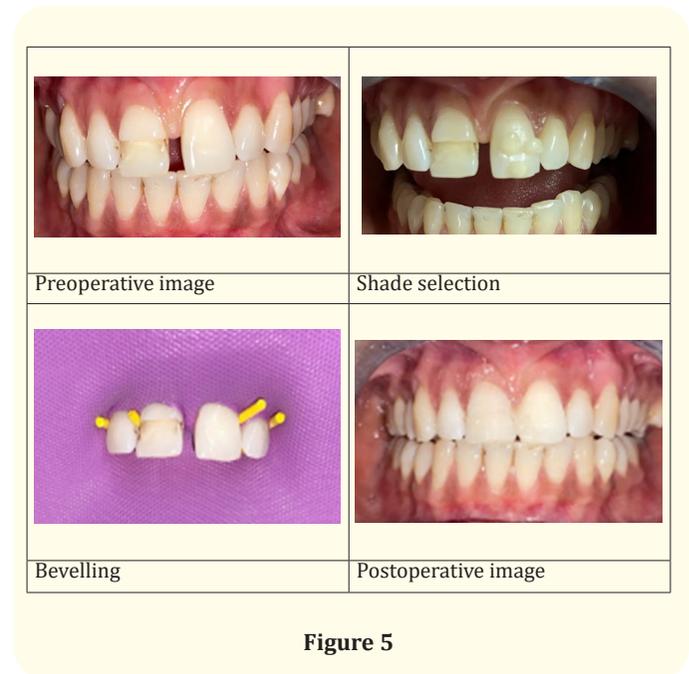


Figure 5

### Case Report 5

A 25-year-old male patient came with chief complaint of space in upper front teeth. Patient desired to get it corrected and was diagnosed with midline diastema i.r.t. 11 and 21. Patient was advised to undergo composite restoration to close the diastema space i.r.t 11 and 21. A superfine diamond bur was used to roughen the proximal enamel surfaces for optimal adhesion, extending from the facial line angle to the lingual line angle. The adjacent tooth was separated by Teflon tape. The enamel was etched with 37% phosphoric acid for 30 seconds. After rinsing and drying, bonding agent (One-Step) was applied according to manufacturer's instructions and cured for 10 seconds using a LED curing unit. Resin composite was used for the composite build-ups due to its good handling property and shade matching. The composite was placed and po-

lymerized using a layering technique to simulate natural tooth color and translucency.

tremely polishable and durable. As opposed to an indirect restoration, it is a conservative option.

In our first case report, a diagnostic wax up was performed to ensure that the new restoration would be compatible with ingrained movements like those involved in speech and mastication.

Numerous pieces of information are provided by the finished laboratory analysis via the diagnostic equilibration and wax-up, such as the number of restorative units required to effectively close the patient's dental midline diastema. The wax-up demonstrated how each restoration would look three-dimensionally and whether an occlusal/functional plan could be developed that would effectively manage force for the restorations' long-term durability.

The provisional restorations would be directly manufactured using the wax-up as the prototype design, allowing laboratory approximations to be modified and tested *in vivo*.

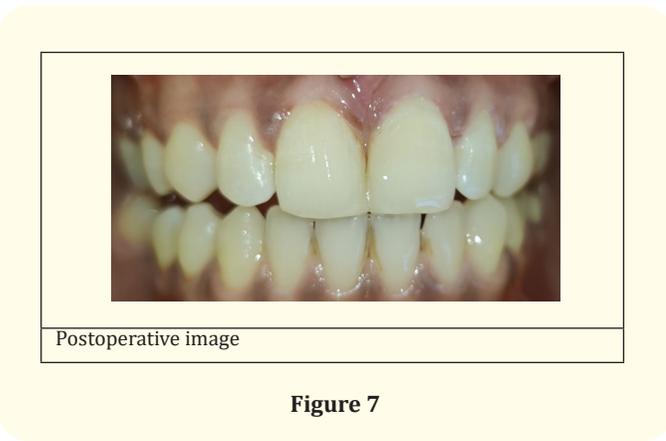
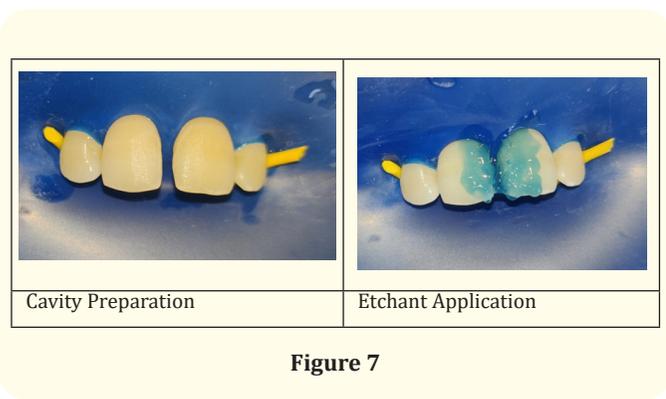
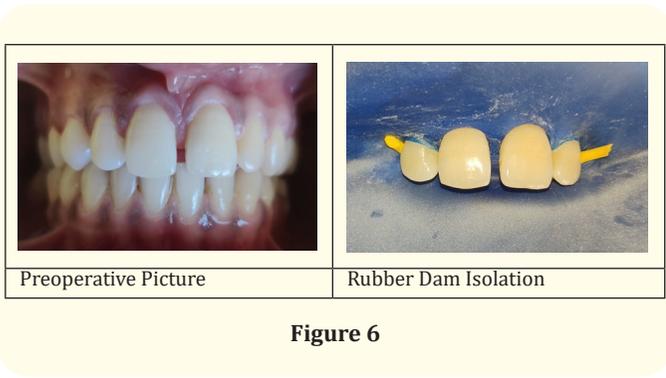
After the diagnostic wax up was made, a silicon matrix was recorded for guiding the composite restoration and the tooth was restored.

In other case reports the composite restoration was placed directly and was completed in a single visit, without the need for prior wax up or models.

Direct bonding of composite resin to anterior teeth is widely used because of the rise in patient need for minimally invasive aesthetic procedures and the better physical qualities of modern composite materials.

These restorations provide several benefits that other alternative treatments, including ceramic veneers and orthodontic therapy, do not, particularly in the field of aesthetic dentistry. The placement of direct composite resin restorations can be completed in a single visit, frequently without the need for prior models or wax-ups, and without the addition of costly lab expenses. In contrast to ceramic materials, they are more gentle on the opposing dentition.

Recent studies demonstrated that direct composite resin restorations accomplished with the use of appropriate procedures for patients with the optimal occlusion are thought to be functional, stable, appealing, and less expensive restorations.



**Discussion**

When restoring diastema closure, composite resin is the material of choice. It replicates the structure of actual teeth and is ex-

## Conclusion

Due to the lack of a laboratory technique and the ability to complete the work in a single session, direct composite restorations offer good aesthetic results at a lower cost and faster turnaround. In comparison to complete crowns, this less invasive procedure is a preferable option for treating dental fluorosis, peg laterals, and midline diastema.

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