

Midline Diastema Closure with Composite Resin: Case Report of Two Cases

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ABSTRACT

Midline diastema, a gap between the maxillary central incisors, is a frequent aesthetic concern. Treatment options include orthodontic therapy, prosthetic rehabilitation, and direct composite restorations. This report discusses two cases where direct composite resin restorations were used to close midline diastema, outlining the clinical approach and results.

INTRODUCTION

Midline diastema is considered an aesthetic issue, although some cultures view it as a beauty trait or sign of good fortune. The condition can be caused by genetic factors, frenum attachment, oral habits, tooth size discrepancies, and irregular dental arch formation.

Several treatment options exist for diastema closure, such as orthodontics, porcelain veneers, and direct composite resin restorations. Composite resins provide a conservative, cost-efficient, and minimally invasive method for closing midline diastema while ensuring aesthetic harmony. This report describes two cases where direct composite restorations were used to close midline diastema, emphasizing the clinical steps and patient outcomes.

CASE REPORT 1

Patient History A 23-year-old female patient visited the dental clinic, seeking an aesthetic solution for the gap between her maxillary central incisors. She had no significant medical history and preferred a non-orthodontic, immediate solution.

Clinical Examination An intraoral examination revealed a 2 mm midline diastema between the maxillary central incisors. The occlusion and soft tissues appeared normal, and the patient demonstrated good oral hygiene with no abnormal frenum attachment.

Treatment Plan A direct composite resin restoration was chosen to close the diastema. The patient was informed about the procedure, material selection, and expected outcomes.

Procedure

1. **Shade Selection:** A suitable composite shade (nanohybrid) was chosen under natural light.
2. **Isolation:** A rubber dam was placed to ensure a clean working field.
3. **Tooth Preparation:** The enamel was lightly roughened with a fine diamond bur for enhanced bonding.
4. **Etching and Bonding:** 37% phosphoric acid (D-Tech Etching Gel, Kerr, USA) was applied for 30 seconds, rinsed, and air-dried. A bonding agent (Adper Single Bond, 3M ESPE, USA) was applied and light-cured for 20 seconds.
5. **Composite Application:** Composite resin (Filtek Z350 XT, 3M ESPE, St. Paul, MN, USA) was incrementally layered and shaped to close the diastema.
6. **Finishing and Polishing:** The restoration was contoured, finished with fine burs, and polished with discs and rubber points (KG Sorensen, Brazil).

Outcome The diastema was successfully closed, providing natural aesthetics with excellent shade matching. The patient was highly satisfied with the result.



Fig 1-Preoperative photograph



Fig 2-Post-operative photograph

CASE REPORT 2

Patient History A 28-year-old male patient presented with concerns about a midline gap affecting his smile. He had no systemic conditions and requested a quick, non-invasive solution.

Clinical Examination A 2 mm diastema was observed between the maxillary central incisors. Gingival health was satisfactory, and the frenum attachment was normal.

Treatment Plan A direct composite restoration was selected as the preferred treatment.

Procedure

1. **Shade Selection:** A composite shade closely matching the natural dentition was selected.
2. **Isolation:** A rubber dam was applied for moisture control.
3. **Surface Preparation:** Enamel was roughened using a bur (based on a micrograined aluminum oxide grit; Dura-white stones, Shofu Dental GmbH, Ratingen, Germany).
4. **Bonding Protocol:** 37% phosphoric acid etching (Tetric-N-etch) was applied, washed for 20 seconds with water spray, and gently dried. Total etch adhesive agent (Tetric- N- Bond) was applied in thin layers with a brush to prepared tooth surfaces and polymerized for 20 seconds with a light-curing device (Woodpecker Lux curing light).
5. **Composite Layering:** Composite resin (Tetric-N-Ceram, Ivoclar, shade A2 composite)was applied in increments and sculpted to ensure a natural contour.
6. **Final Adjustments:** Finishing was completed using polishing burs and discs (Ultra Gloss Composite Polishing System, Axis, USA) to achieve a seamless appearance.

Outcome The diastema was successfully closed, and the patient was pleased with the improved smile. A six-month follow-up showed stability and no discoloration.



Fig 1-Preoperative photograph



Fig 2-Post-operative photograph

DISCUSSION

Using direct composite resin for midline diastema closure is a reliable, minimally invasive technique. It provides immediate and aesthetically satisfying results without requiring extensive tooth preparation. The composite resin restorations in these cases successfully restored the natural appearance of the maxillary central incisors.

Benefits of composite resin for diastema closure include:

- Preservation of tooth structure with minimal preparation.
- Instant improvement in a single visit.
- Cost-effective alternative to veneers or crowns.
- Simple repairs if minor adjustments are needed.

However, composite restorations may stain over time and require periodic polishing and proper oral hygiene to maintain their longevity.

CONCLUSION

Direct composite resin restorations provide a conservative, aesthetic, and affordable solution for midline diastema closure. The cases in this report highlight the technique's effectiveness in delivering immediate aesthetic enhancement while maintaining tooth integrity. Regular follow-ups and maintenance play a crucial role in long-term success.

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