

Reorienting Smile: A Biological Approach

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ABSTRACT

Tooth fragment reattachment offers a conservative, esthetic, and cost-effective restorative option that has been shown to be an acceptable alternative to the restoration of the fractured tooth with resin-based composite or full-coverage crown. Reattachment of intact natural tooth fragment is advantageous compared to crowns since color, morphology, translucency can be retained and treatment is immediate. This article describes a technique for the adhesive reattachment of an intentionally sliced central incisor with the goal of maximum esthetics in minimum time.

Keywords: Minimal invasive technique, Prefabricated post, Reattachment.

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INTRODUCTION

Tooth fragment reattachment offers a conservative, esthetic, and cost-effective restorative option that has been shown to be an acceptable alternative to the restoration of the fractured tooth with resin-based composite or full-coverage crown.^{1,2} Reattachment of a fragment to the fractured tooth can provide good and long-lasting esthetics (because the tooth's original anatomic form, color, and surface texture are maintained),² can restore function, can result in a positive psychological response, and is a reasonably simple procedure.³ In addition, tooth fragment reattachment allows restoration of the tooth with minimal sacrifice of the remaining tooth structure. Furthermore, this technique is less time-consuming and provides a more predictable long-term wear than when direct composite is used.⁴

Factors that influence the success of reattachment include the site of detachment, size of the tooth remnants, periodontal status, pulpal involvement, maturity of the root formation, biological width invasion, occlusion,

time material used for reattachment, use of post, and prognosis.⁵ Reattachment of intact natural tooth fragment is advantageous compared to crowns since color, morphology, translucency can be retained and treatment is immediate.

This article describes a technique for the adhesive reattachment of an intentionally sliced central incisor with the goal of maximum esthetics in minimum time.

CASE REPORT

A 22-year-old male patient reported to the department of prosthodontics with a complaint of malaligned upper front teeth. Soft tissue examination revealed healthy, well-scalloped marginal gingiva. The gingiva was bright pink in color, firm and resilient in consistency and well stippled. Hard tissue examination revealed a full complement of maxillary and mandibular dentition with a mesiodens in place of maxillary left central incisor and causing rotation of maxillary left central incisor (Fig. 1).

The patient wanted an immediate treatment as the situation was a constant reason for psychosocial embarrassment. After thorough clinical and model analysis and discussion, a planned treatment was first evaluated on study models duplicated from the diagnostic casts. After observing satisfactory outcome, the procedure was explained to the patient and with his informed consent, it was decided to conceptualize the procedure clinically.

Slicing of the maxillary left central incisor at its base, recontouring the sliced crown portion, and reattachment using self-etching adhesive and a prefabricated post was planned. Patient was also advised oral prophylaxis and elective root canal treatment of maxillary left central

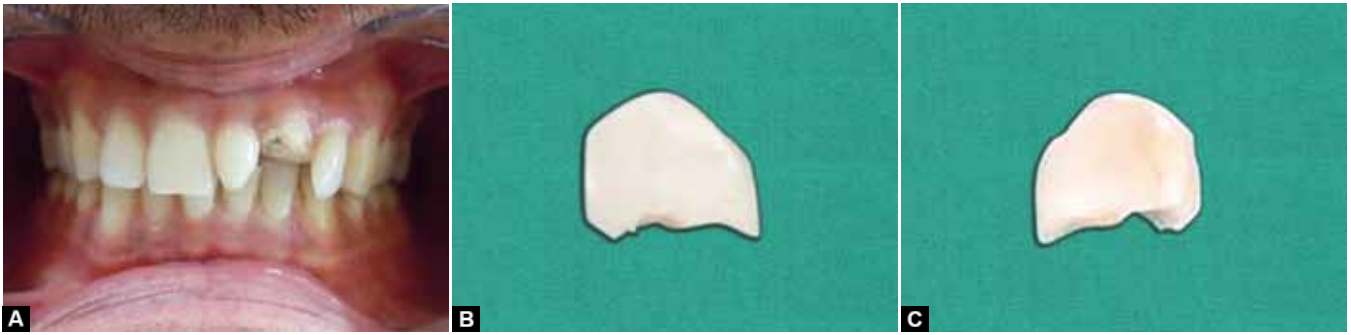


Fig. 1: Preoperative view

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Figs 2A to C: (A) Slicing of the tooth at its cervical third, (B) labial view of sliced crown and (C) palatal view of sliced crown



Fig. 3: Postspace



Fig. 4: Prefabricated post in place



Fig. 5: Postoperative view



Fig. 6: Postoperative view showing the recontoured mesiodens

incisor. For the mesiodens, recontouring and composite build-up was planned.

Clinical Procedure

A single sitting elective root canal treatment was done in maxillary left central incisor. After 2 days, the patient was recalled and the tooth was reported to be asymptomatic. The tooth was sliced at its cervical third level (Figs 2A to C). Post-space was prepared both on the sliced coronal portion of the tooth and the remaining tooth (Fig. 3). Post space of 10 mm was prepared in the tooth, leaving behind 4 mm of gutta-percha. The resected crown was

also prepared 2 mm for receiving the post. The sliced crown part was kept in normal saline. A 10 mm length prefabricated post (Nordin Screw Post, Harald Nordin Switzerland) was selected and luted with glass ionomer cement (GC Gold Label 1, GC Fuji) (Fig. 4). The sliced crown and base of the tooth were etched and were bonded with composite resin (Filtek™ Supreme Ultra Universal Dental Restorative, 3M ESPE) after shade selection followed by finishing and polishing (Fig. 5).

After 2 days, the patient was recalled and the tooth was evaluated and was found in excellent condition. The mesiodens was minimally prepared, etched and after

shade selection, composite build up (Filtek™ Supreme Ultra Universal Dental Restorative, 3M ESPE) was done, followed by finishing and polishing (Fig. 6).

DISCUSSION

Reattachment of intact coronal fragment is an economical and less time consuming procedure. The reattached tooth is restored to its original form, contour and margins and tends to be more compatible with the gingiva. The psychological trauma caused to the individual due to loss of esthetics can be managed by this procedure successfully.

The wide range of materials available in the market today makes the choice of material difficult. Various materials such as flowable composite, dual cure or resin modified glass ionomers can be used.²

Various treatment options are available to provide the best esthetic results in the clinical situation described in this case report, *viz.*

- Orthodontic treatment for correcting the alignment.
- Extraction of the left central incisor, recontouring of the extraction socket and immediately reimplantation of the tooth.
- Extraction of the mesiodens and maxillary left central incisor and restoring the edentulous region with a fixed partial prosthesis. Because the time taken for healing after extraction and definitive restoration was long, this treatment option was also discarded.

The patient did not agree for orthodontic treatment because of long treatment time and high cost involved in the procedure.

Since, the recontouring of the extraction socket is a tedious procedure with questionable prognosis regarding the reattachment of the periodontal fibers and the adaptability of the extracted tooth in the extraction socket, this treatment was not selected.

Because the time taken for healing after extraction and definitive restoration was long, extraction of the mesiodens and maxillary left central incisor and restoring the edentulous region with a fixed partial prosthesis treatment option was also discarded.

The procedure finally selected of intentionally slicing #21 at base and reattaching it after elective endodontic treatment was the most viable option in this case as it provided the best esthetic results in shortest available time with minimally invasive technique and well accepted by the patient.

A prefabricated post was used as it is economical and increases the retention and distributes the forces along the root.

The medium of dental fragment conservation is important to maintain fragment hydration. The best medium for a short duration is physiological solution but because of clinical procedure was being performed in the mouth, the coronal fragment was kept in normal saline.⁶

CONCLUSION

Reattachment of the intact sliced coronal segment of tooth can be considered as an ultraconservative method for esthetic rehabilitation. The concept of reattachment began in 1964 when Chosak and Eidelman used a cast post and conventional cement to reattach an anterior crown segment.⁷ Progress in adhesive technology and composite resin materials allows not only for the creation of esthetic restorations, but for the preservation and reinforcement of tooth structure, as has been demonstrated herein.

This procedure helps to preserve maximal natural tooth structure with adhesive material of adequate strength but long-term follow-up is necessary in order to predict the durability of the tooth-adhesive-fragment complex.

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