



TOOTH FRAGMENT REATTACHMENT AFTER LATE RETRIEVAL (THREE MONTHS) FROM THE LOWER LIP: case report

*Colagem de fragmento dentário recuperado tardiamente (após três meses)
do interior do lábio inferior: relato de caso*

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Abstract

OBJECTIVE: To present and discuss a case of child who sustained a complicated crown fracture, with the lost portion of tooth embedded in his lower lip. **RESULTS:** Tooth fragment was surgically removed and successfully reattached to the tooth using acid etch and dentin bonding resin technique.

Keywords: Coronal fracture. Dental trauma. Lower lip. Dental fragment reattachment. Composite resin.

Resumo

OBJETIVO: Apresentar e discutir um caso de criança que sofreu fratura complicada de coroa dentária, com parte do dente perdida e alojada no lábio inferior. **RESULTADOS:** O fragmento dentário foi cirurgicamente removido do lábio e colado, com sucesso, ao dente, utilizando-se ataque ácido e cimentação com compósito.

Palavras-chave: Fratura coronária. Trauma dentário. Lábio inferior. Fragmentos dentários. Resina composta.

INTRODUCTION

Trauma to teeth is a common situation in a pediatric patient; every dental professional must be prepared to assess and treat when necessary. It may not only damage the dentition but also affect the patient psychologically. The teeth that are most commonly involved in trauma are the maxillary central incisors (1) as they occupy a more vulnerable position in the arch.

A number of techniques have been developed to restore the fractured crown. Early techniques include stainless steel crowns, basket crowns, orthodontic bands, pin retained resin, porcelain bonded crown and composite resin (2, 3). The first case of reattaching a fractured incisor fragment was reported in 1964 by a pediatric dentist at Hebrew University, Hadassah School of Dentistry (4). Tennery (1978) was the first to report the reattachment of a fractured fragment using acid-etch technique (5). Subsequently, Stalkey and Simonsen have reported similar case (6, 2).

The introduction of composite restorative materials in combination with the use of the acid-etch technique to bond composite to enamel made possible the restoration of the fractured incisor with little or no additional tooth preparation (3, 7). The use of such reattachment technique may offer several advantages over the conventional acid-etch composite restoration. Among the advantages of reattachment are (4):

- Good aesthetics, colour match to the remaining crown portion, preservation of incisal translucency;
- Conservation, maintenance of original tooth contours, preservation of adequate occlusal contacts;
- Wear similar to adjacent/opposed teeth;
- Financial and economic aspects of a conservative, one-visit treatment;
- More durable restoration than a class IV resins restoration;
- Color stability of the enamel;
- Positive emotional and social response from the patients for preservation of natural tooth structure.

The possibility of dentin hybridization allows successful performance of dentinal treatment which were previously difficult by means of conventional techniques. The purpose of this article is to discuss the considerations for dental fragment reattachment technique and to report a case of tooth fragment reattachment after retrieval from the lower lip.

CASE REPORT

A 12-year-old male patient reported to our department following trauma to the maxillary central incisor. Trauma occurred due to fall while cycling three months ago. Patient was attended by his general medical practitioner within one hour of trauma. The parents were concerned about the esthetics of the child. On inspection a swelling on the left side of lip was noticed. A firm nodule measuring approximately 1 cm in diameter in the same region was palpated. Intra oral examination revealed an horizontally fractured (involving enamel, dentin and pulp) left maxillary permanent central incisor (Figure 1).

No mobility of the concerned teeth was recorded and surrounding tissues were healthy. A periapical radiograph showed that the root formation was complete with no extrusion. Tooth showed no vitality for pulp tests. Radiograph of the lip confirmed the presence of a tooth fragment in the lower lip (Figure 2).



Figure 1 - Coronal fracture of maxillary central incisor



Figure 2 - Image showing the tooth fragment in the lower lip

The treatment plan was surgical removal of the tooth fragment from the lip and reattachment of the fragment to the tooth following root canal therapy.

Surgical removal of the tooth fragment from the lip

The patient was submitted to surgical excision of the fragment under local anesthesia. The lower lip was incised, tissues were reflected and the tooth fragment was located (Figure 3). The tooth fragment was carefully removed and maintained in normal saline during the whole period prior to restoration (Figure 4).



Figure 3 - The tooth fragment embedded in the lip



Figure 4 - The removed tooth fragment

Reattachment of the fragment to the tooth following root canal treatment

After placement of a rubber dam, pulp was extirpated; the canal dressed following instrumentation and then obturated. The temporary restorative material was removed from the pulp chamber and the entrance of the root canal was sealed with a glass ionomer plug (Vitrebond™, 3M ESPE, St. Paul, USA). The adaptation of the fragment was checked. Phosphoric acid gel 37.5% (Scotch Bond™, 3M ESPE, St. Paul, USA) was applied to the enamel of the fragment and the teeth for 20 seconds, limited to 2 mm beyond the fracture margin. Air-water spray was used to remove the acid and the surface was air-dried. An adhesive system (Adper Single Bond Plus™, 3M ESPE) was applied to the tooth fragment, which was then reattached to its proper position. Visible light polymerization (Z 100™, 3M ESPE, St. Paul, USA) was done for 60 seconds to the facial and palatal surfaces of the tooth, while the fragment was kept in position under pressure. The tooth was polished with Sof-Lex™ (3M, ESPE) polishing discs and the rubber dam was removed (Figure 5).



Figure 5 - Tooth fragment reattached, showing good aesthetic results

After 10 months follow-up, the repaired tooth showed satisfactory aspect with no periapical changes.

DISCUSSION

Fracture of teeth may be a most traumatic incident for a young patient. There is positive emotional and social response from the patient to the preservation of natural tooth structure (8, 9). The incidence of anterior teeth crown fractures in the permanent dentition is about 26-76% (10). Damage to the teeth and their supporting structures correspond to one of most frequent traumas to maxillofacial region. Usually a fractured or missed incisor does not pose any problem in diagnosis. However, when this situation is added to soft tissue laceration, attention should be paid to whereabouts of the teeth (11). The proper radiographic evaluation of the patients that missed partially or totally their teeth after maxillofacial trauma is extremely important, as long as teeth and dental structures may become foreign bodies at risk for ingestion, inclusion in surrounding tissue or aspiration. The worst complication is aspiration of foreign bodies that can lead the patient to a variety of chronic airway problems and even death if not precociously diagnosed (12).

Another important factor is the differential diagnosis, mainly in delayed traumas, because the radiographic image of dental fragments included in the mouth floor can be similar to sialolithiasis of the salivary glands (11). In the case presented here the tooth fragment was embedded in the lower lip

which was confirmed by the radiograph. There are few published reports of tooth fragments embedded in lip (11, 13-15). The latest paper was published in 2007 and reports the reattachment of a tooth fragment embedded in lower lip some 3 hours after initial trauma (15). The case reported here describes the surgical removal of tooth fragment embedded in the lower lip and its reattachment three months after the initial trauma.

The remarkable advancement in adhesive systems and resin composites has provided a favorable prognosis for the reattachment of a tooth fragment (16). However, this technique can be used only when the intact tooth fragment is available. When an intact fragment is available, incisal edge reattachment may offer a most functional and aesthetic treatment option (4). As with conventional restoration, restorative success hinges on proper case selection and strict adherence to sound principles of periodontal and endodontic therapies, and the techniques and materials for modern adhesive dentistry (17-19). Diagnosis of a pulpal lesion becomes extremely important when the restoration of fractured anterior teeth is considered (16). The success of restorative treatment will depend on steps taken to maintain pulpal vitality. Endodontic treatment is advised in case of pulp necrosis.

The present case represents an alternative to the use of composite resin or porcelain to restore fracture anterior teeth. The reattachment of a normal tooth fragment can eliminate the problem of wear and unmatched shades associated with different restorative materials and techniques (20). The use of a moist bonding procedure using fourth or fifth generation dentine bonding agents without additional retention features (such as internal or external preparation) has been shown to provide clinical restorative success. Research through laboratory findings and clinical observations show debonding failures when rapid loading is applied (simulating trauma to the reattached fragment); yet current adhesive agents provide sufficient bonding strengths to withstand slow loading from masticatory stresses. This bonded interface is undeniably susceptible to the effects of cyclic fatigue and hydrolytic degradation over time. Despite these factors, case reports and multicentre studies have described functional and aesthetic successes exceeding seven years (4).

CONCLUSION

Tooth fragment reattachment procedure offers ultraconservative, cost effective, safe, fast and esthetically pleasing results when fragment is available. Every attempt should be made to locate the missing tooth structure through a detailed history of the accident, careful examination and roentgenograms. The reattachment of the tooth fragment as a restorative procedure becomes possible only when it is available. This can be improved with different adhesive techniques and restorative materials.

CONFLICT OF INTEREST STATEMENT

The authors declared no conflict of interest in the present manuscript.

INFORMED CONSENT STATEMENT

The patients signed an informed consent, kept in the records, in the archives of the Chhattisgarh Dental College.

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