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Use of a cyanoacrylate ester adhesive for splinting of replanted teeth

SHORT COMMUNICATION

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Abstract – This paper reports a case of tooth replantation in which the splinting was performed with stainless steel orthodontic wire and a widely marketed brand of quick-setting cyanoacrylate ester adhesive (Super Bonder®). The long-term clinical and radiographic success of the case reported in this paper indicates that the splinting technique using a quick-setting cyanoacrylate ester adhesive may be a feasible option for making a rapid, simple and efficient contention of replanted teeth in situations where the routinely used materials are not readily available.

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Splinting of a replanted tooth should be done to stabilize its position and aid the periodontal healing (1, 2). Nevertheless, one of the greatest difficulties in managing cases of dental avulsion is that emergency rooms and first-aid centers do not always have the materials required for fixation of splints. Therefore, every contribution that might facilitate and simplify this procedure is welcome.

This paper reports a case of tooth replantation in which splinting was performed with stainless steel orthodontic wire and a widely marketed brand of quick-setting cyanoacrylate ester adhesive (Super Bonder® Instant Adhesive, Henkel Loctite Adhesives Ltda, Itapevi, SP, Brazil).

Clinical case

A 14-year-old Caucasian female patient had the maxillary left central incisor avulsed on account of a bicycle fall (Fig. 1). The tooth was found on the street by the patient and taken by the paramedic staff to the emergency room, where it was readily stored in saline for approximately two hours and replanted after irrigation of the socket with sterile saline. A splinting involving teeth 12, 11, 21, 22 and 23 was made using a 0.05-mm stainless steel orthodontic wire (Dental Morelli, Sorocaba, SP, Brazil) and a quick-setting cyanoacrylate ester adhesive (Super Bonder® Instant Adhesive) (Figs 2 and 3). Clinical and radiographic follow up was performed 30 (Figs 4 and 5) months post replantation. The patient had no painful symptomatology, probing depth was normal and there were no signs of abnormal mobility, root resorption or ankylosis.

Discussion

Cyanoacrylates are liquid monomers with water-like viscosity and appearance. In contact with water or any kind of protein, cyanoacrylates undergo a polymerization exothermal reaction process that takes from 15 to 60 seconds (3).

Cyanoacrylate adhesives have already been investigated for bone repair (4), protection of hypersensitive teeth after periodontal therapy (5), in subcutaneous connective tissue (6) and in gingival mucosa epithelium and tooth socket after extraction (7). The clinical and histological findings of these studies have demonstrated the low toxicity of these materials. The effectiveness of cyanoacrylate ester adhesive for stabilization of the rubber dam during absolute isolation of teeth with extensive crown destruction (8) has also been shown. The favorable outcomes of these studies support the choice of

Fig. 1. Initial view after avulsion of the maxillary left central incisor.

Fig. 2. Cyanoacrylate ester adhesive (Super Bonder®) splinting.

Fig. 3. Immediate radiographic view after replantation and splinting.

this material for building a provisional contention that might be further replaced by a composite resin splinting and may be a good option for tooth splitting during first-aid care.

Fig. 4. Thirty-month radiographic view.

Fig. 5. Clinical control 30 months post-replantation.

The long-term clinical and radiographic success of the case reported in this paper indicates that the splinting technique using a quick-setting cyanoacrylate ester adhesive may be a feasible option for making a rapid, simple and efficient contention of replanted teeth in situations where the routinely used materials are not readily available.

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