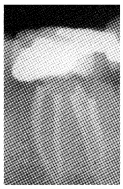

CASE REPORT

Cemental tear: a case report

M. L. Stewart & S. B. McClanahan
Endodontics Department, Naval Postgraduate Dental School, National Naval Medical Center, Bethesda, MD, USA

Abstract

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Aim To report a case of a cemental tear.

Summary A case is reported of a patient with a history of trauma, root canal treatment and retreatment procedures to eliminate recurring sinus tracts. An exploratory surgery, extraction, and biopsy resulted in a diagnosis of cemental tear.

Key learning points

- The detachment of a fragment of cementum is described as a cemental tear.
- Cemental tears have been reported in the periodontal literature associated with localized, rapid periodontal breakdown. Common causative factors are aging and traumatic occlusion but the exact aetiology is unknown.
- Trauma may be considered as a potential aetiologic factor for cemental tears in addition to occlusal traumatism and aging.

Keywords: cemental tear, periodontitis/aetiology, trauma, traumatic occlusion.

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Introduction

Cemental tears have been explained as the detachment of a fragment of cementum from the root surface (Carranza 1990). The phenomenon has been reported in the periodontics literature (Haney *et al.* 1992, Ishikawa *et al.* 1996, Leknes *et al.* 1996, Leknes 1997, Harrel & Wright 2000, Camargo *et al.* 2003, Chou *et al.* 2004) and other case reports of periodontal procedures (Muller 1999, Marquam 2003). The aetiologic factors that lead to tearing of cementum are not known. The most frequently suggested causes are occlusal trauma and ageing (Ishikawa *et al.* 1996, Haney *et al.* 1992). The incidence is not known but cemental tears are probably under-reported (Leknes *et al.* 1996). Cemental tears may cause odontogenic pain, which may be difficult to locate and to diagnose (Haney *et al.* 1992).

Correspondence: Dr S. B. McClanahan, 5419 Flint Tavern Place, Burke, VA 22015-2109 USA (Tel.: 703 764 7220; fax: 703 764 7219; e-mail: captsmcnj@aol.com).

The cemental tear has been described as a 'complete separation along the cemento-dental border or a partial split within the cemental tissues along an incremental line' (Haney *et al.* 1992, Leknes *et al.* 1996). A substantially greater loss of attachment at the site of the tear as compared with the opposite intact root surface has been demonstrated and consideration of cemental tears as a potential aetiology in localized, rapid periodontal breakdown has been recommended (Leknes *et al.* 1996). Cervical and apical types of cemental tears have been reported. They have been observed in exposed and unexposed cementum. If the tear is not exposed to the oral cavity, repair often occurs (Ishikawa *et al.* 1996).

Case report

A 22-year old, healthy male reported to the Endodontics Department for follow up of tooth 11. The patient had a history of trauma from wrestling with a sibling and initial root canal treatment had been performed about 4 years previously. The pulpal diagnosis at the time of the initial treatment was not available. The tooth had been retreated twice by a second provider within the past year because of a persistent sinus tract. The sinus tract had not resolved.

The patient denied pain or swelling but reported that he was 'aware' of tooth 11. During clinical examination, multiple sinus tracts were traced with gutta-percha points and a radiograph exposed (Fig. 1a). Mesial and distal bone loss was noted on the radiograph and the tooth demonstrated Miller Class II mobility (Miller 1943). Periodontal probings were >1–4 mm around the maxillary central and lateral incisors. A detailed occlusal analysis was not performed.

The Periodontics Department was consulted and an exploratory surgery with both departments was elected. Treatment options with associated risks and benefits were discussed as well as the potential for extraction at the time of surgery. Informed consent was obtained.

During the surgical procedure, once the buccal flap was reflected, an unusual pattern of bone loss was observed buccally (Fig. 1b). Surgical treatment options including regenerative therapy with the possibility of an implant at a future date were discussed with the patient. The patient was scheduled to move from the area within the next 3–4 months and elected the definitive option of extraction. After the tooth was atraumatically extracted with forceps, a $4 \times 3 \times 0.5$ mm U-shaped fragment of hard tissue remained in the socket attached by the periodontal ligament (Fig. 2a). The fragment was removed from the socket and was found to perfectly match an area denuded of cementum on the distal and lingual surfaces on the root of the extracted tooth (Fig. 2b,c). The fragment was submitted for histopathological evaluation. Inspection of the extracted tooth demonstrated no evidence of fracture, cracks or other aetiology for the breakdown of the buccal bone.

The extraction site was irrigated, the flap was approximated and sutures were placed. As the potential for extraction had been considered during diagnosis and treatment planning, a temporary partial denture had been fabricated and was fitted. The patient's course of healing was routine. Restorative treatment options of a fixed cemented bridge or an acid etched fixed bridge were discussed but the patient moved before a restorative treatment plan could be initiated.

The microscopic examination revealed a sliver of cementum with numerous Sharpy's fibres identified along one edge of the cementum. The diagnosis was 'tooth 11: consistent with cemental tear'. Photomicrographs of the specimen are seen in Fig. 3.

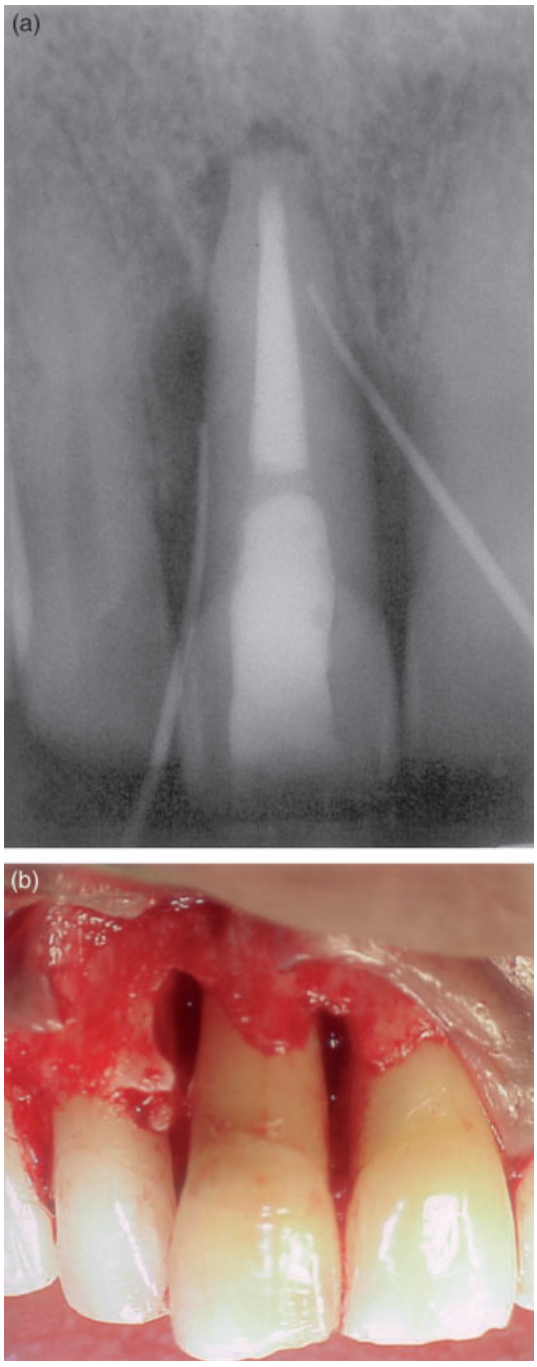

Figure 1 (a) Pre-operative radiograph with sinus tracts traced, (b) buccal flap reflected.

Discussion

An unusual case of a cemental tear is presented. The tear could have been the result of the extraction. Although unlikely, it must be considered as a possibility. This case differs from other case reports in that the patient was a younger individual. Also, uncharacteristic

Figure 2 (a) Cementum fragment remaining in extraction site (indicated by arrow), (b) extracted tooth and fragment and (c) 'match' of cementum fragment repositioned on root surface.

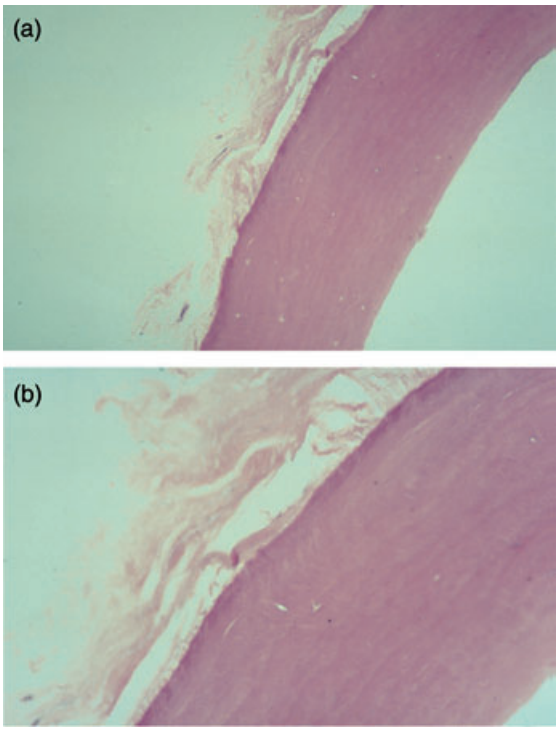

Figure 3 Photomicrographs of fragment. (a) sliver of cementum with Sharpy's fibres along one edge (40×), (b) higher magnification (100×).

of other descriptions of localized, rapid periodontal breakdown associated with cemental tears, the periodontal probings were essentially normal with an intact sulcus. Furthermore, greater attachment loss has been seen at the site of the cemental tear and in this case, the periodontal breakdown was on the opposite side of the tooth from the cemental tear. The radiographic appearance of loss of bone had been attributed to nonhealing root canal treatment after a traumatic event, which had occurred several years previously.

The tooth demonstrated Miller Class II mobility. An occlusal analysis was not performed because the aetiology of the persistent sinus tracts was suspected to be nonhealing endodontic therapy or perhaps a root fracture. Possibly, occlusal traumatism subsequent to the trauma was the aetiology of the cemental tear in this case.

Cemental tears may present a diagnostic challenge. Although rare, cemental tear may be considered in the differential diagnosis when routine root canal treatment fails to resolve sinus tracts or isolated periodontal defects are noted.

Conclusion

Trauma may be considered as a potential aetiologic factor for cemental tears in addition to the often-reported occlusal traumatism and aging.

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Disclaimer

The opinions or assertions expressed in this article are those of the authors and are not to be construed as official policy or position of the Department of the Navy, Department of Defense or the USA Government.

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