An Unusual Accident during a Primary Molar Extraction

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Background: *Special care must be taken during surgical procedures in children, especially primary tooth extractions. However, despite dentist's effort to perform tooth removal carefully, some accidents may be unavoidable when defective instruments are unknowingly used.* ***Case Report:*** *This article presents a case of a pediatric dental elevator fracture during a primary mandibular right second molar extraction.* ***Conclusion:*** *Although uncommon, instruments breakage may occur during dental and surgical procedures. Therefore, dentists should always check the surgical instrument for signs of breakage and be prepared to solve a possible emergency.*

Keywords: *primary tooth, tooth extraction, dental instruments, child*
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INTRODUCTION

During surgical procedures, accidents can occur from an operator technique error[1] or from the quality of surgical instruments.[2,3]

Instrument manufacturing is rigidly controlled before they are released into the market.[2] This should be especially true regarding dental and medical surgical instruments that could cause serious injury to patients if manufactured inadequately. Occasionally, however, alterations in the manufacturing technique or ineffective quality control can lead dentists to use defective instruments unknowingly. Instrument breakage obliges us to search for a broken fragment and remove it to avoid possible infection or to prevent complications due to swallowing or aspiration of the fragment.[2]

The aim of the present article is to report the fracture of a pediatric dental elevator during the extraction of a primary molar.

CASE DESCRIPTION

A healthy 9-year-old male child presented to the Pediatric Dental Clinic of a dental school in the state of Rio de Janeiro in order to treat some carious primary teeth. One of these teeth, the primary mandibular right second molar, had an extensive carious lesion reaching the pulp. After partially removing pulp tissue, it was noticed that the pulp chamber floor also presented carious tissue. Therefore, it was decided to put a zinc oxide and eugenol dressing in order to extract the tooth on the next patient's appointment.

The primary molar extraction was performed using brand new pediatric dental elevator and forceps. However, after tooth removal, it was observed that the pediatric dental elevator (Cryer Patterns - Trinks - Dental Trinks Ind. e Com. Ltda., São Paulo, Brazil) had broken during the extraction. Initially, it was thought the fragment would probably be in the primary tooth socket. However, as it is not advisable to introduce instruments in the socket, we decided to examine the extracted tooth first. Surprisingly, the elevator's broken edge point was lodged in the lateral part of the distal root of the extracted primary molar (Figure 1). The metallic fragment was therefore dislodged to assure it completed the whole missing part of the elevator (Figure 2). After fragment's removal, molar's root presented a visible cavity in the region where the broken piece was found (Figure 3).

Suture and postoperative medication were not necessary.

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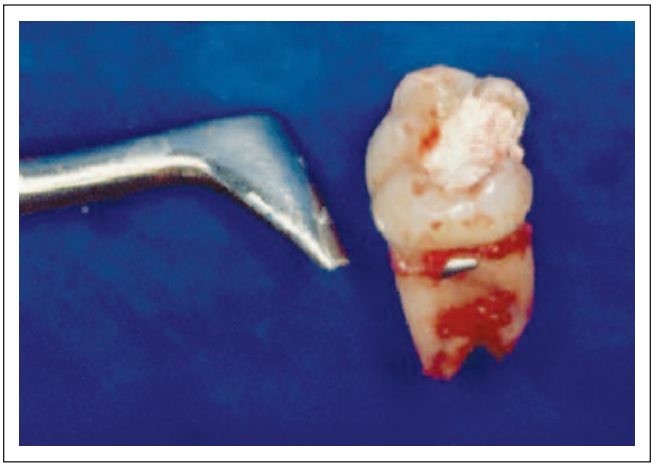

Figure 1. Broken elevator and its fragment lodged in the lateral part of the primary molar's distal root.

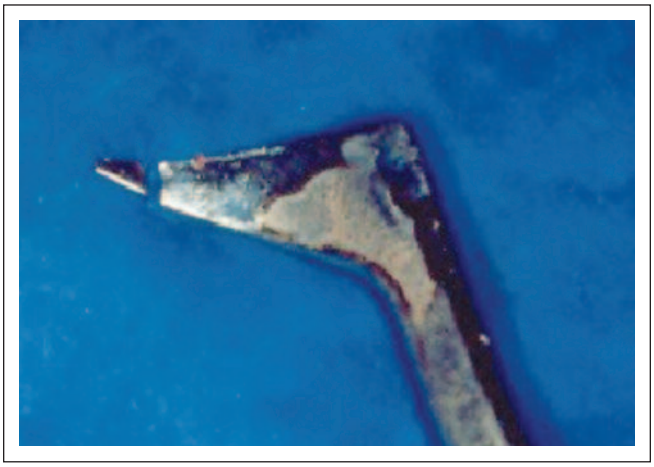

Figure 2. Broken elevator and its matching fractured piece.

The manufacturer was contacted and alerted of the poor quality control regarding his instruments. No response was given to us after one year.

DISCUSSION

Burs, endodontic files and occasionally other instruments break during surgical procedures and it is always considered wise to try to retrieve the fractured piece.[4] This case, in particular, was characterized by a quite unusual situation, but fortunately, the small fragment had been easily retrieved.

The location of fragments lost during surgery due to broken instruments is not a common problem in dental practice.[2] In the literature, only three papers were found about broken surgical instruments during extraction procedures.[2–3,5] One of them reported three cases of broken new extraction elevators, which were found to be defective. The instruments had broken during routine usage on three different patients on the same day and the fragments were found in the aspiration bottles, and were retrieved making unnecessary to radiate the patient to locate the fragment.[2] Another article reported two cases of broken dental forceps, where a broken fragment was rescued from the patient's mouth

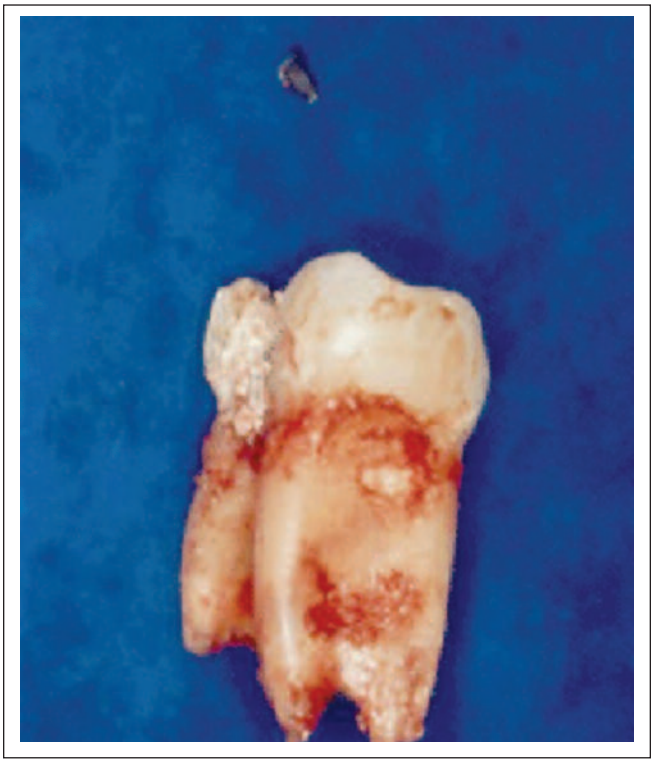

Figure 3. The primary molar after fragment's removal, showing a clear cavity where the fragment was located.

uneventfully, and in the other, the hinge pin came out of the forceps and was swallowed by the patient.[3] The last paper reported the retrieval of an elevator's end that broke during the extraction of a lower right third molar, and was found with the aid of a metal detector (Keeler metal detector – Goring Keeler Ltd., England).[5] It is important to emphasize that in all three situations, instrument's fracture happened during permanent teeth extractions and were not lodged in the tooth socket. If instrument breakage occurs, always look first in the extracted tooth[4] leaving the tooth's socket as the last option. Radiographs are helpful to locate the metal fragment, and early removal is desirable always taking care to maintain the integrity of the permanent tooth bud in case a primary tooth is involved.[5]

The use of a metal detector has proved to be effectively to pinpoint the metal presence in a surgical area. When placed near metal, the detector probe measures the change in the inductance, emitting different tones, thus locating the foreign body. The detector can also distinguish between different metals (steel, brass, aluminum, lead) emitting different signals, which can prove to be useful in a clinical situation.[5]

Despite all the difficulties that could emerge during a broken fragment removal, it is always prudent to try to remove the fragment in order to prevent it from migrating into a neighboring space. Although metallic fragments could be enclosed in a fibrous tissue capsule when recognized by the organism as a foreign body, objects dislodged into the soft tissues on the lingual side of the mandible may gain access to the submandibular and parapharyngeal spaces.[5]

Two causes of instruments' breakage are wrongful use of

the instrument by the dentist and defective manufacturing.[2,6–7] A safe and effective elevator should have extreme values for torque, and high stress values.[8] Although metal instruments used in clinical practice may be subjected to fatigue from sterilization,[5] the elevator used in the present case was a brand new and used for the first time.

Accidents like the one described in this report generally place pediatric dentists in a difficult situation increasing dentists' responsibility. These accidents may result in litigation although it is impossible for dentists to prevent them from happening or to warn parents about them. In the present case report, although the accident may be attributed to a defective instrument, the patient or his guardian has the right to prosecute the professional. Despite being a particular situation, it should be stressed out that accidents like the one here described should be dealt according to the different laws adopted by different countries.

CONCLUSIONS

All dental professionals should pay careful attention to the instruments used during dental procedures, especially the surgical ones. It is always advisable to afford reliable trademarks and products with quality control. Always, check the integrity of the instrument before and after the surgical procedure. If an accident happens, dentists should take the proper measures to solve the issue without further injury to the patient.

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