



Root Canal File Stick Into the Epiglottis: A Dangerous Complication of an Endodontic Procedure

Kerem Kökoğlu¹ , Tuğrul Aslan² , İmdat Yüce¹ , Sedat Çağlı¹

ABSTRACT

Root canal treatment is one of the most frequently performed operations in dentistry. Some complications regarding the instruments used during operation include breakage of root canal file, inhalation, or ingestion. There are some reports in the literature on ingestion of dental instruments, and these could be life threatening because of the possibility of airway obstruction or tubular organ perforation. In this paper, an interesting case of root canal file stick into the epiglottis and its management are presented.

Keywords: Foreign body ingestion, root canal file

INTRODUCTION

Root canal treatment may be defined as the combinations of procedures including mechanical instrumentation of root canal system, its chemical debridement, and filling with an inert material to restore or maintain the health of periradicular tissues (1). Some complications may develop during these procedures, such as instrument breakage, ingestion, or inhalation inherently. Inhalation and ingestion can potentially cause pneumonia, mediastinitis, peritonitis, or sepsis, which may be life threatening (2).

There are some data regarding incidences of inhalation and ingestion of endodontic instruments during root canal treatment. Susini et al. (3) in a French population, reported an inhalation incidence of 0.001 per 100,000 root canals and ingestion incidence of 0.12 per 100,000 root canals. Grossman (4) stated that these type of complications occurred more often when treating posterior teeth and also reported that 87% of foreign bodies entered the alimentary tract, whereas 13% aspirated into the respiratory tract (5). Webb presented that 10%–20% of cases require non-surgical intervention, whereas $\leq 1\%$ require surgery (5, 6). Hou et al. reported that cases of inhalation and ingestion owing to dental procedures have shown a five-fold increase in 2013 and 2014 (7).

There is no report about root canal file stick into the epiglottis in the literature. In this paper, a case of root canal file stick into the epiglottis is presented.

CASE REPORT

A 20-year-old male patient was redirected to Faculty of Medicine Otolaryngology clinic from Faculty of Dentistry to examine the root canal file that was dropped to the pharynx during root canal treatment. Discussion with the dental practitioner revealed that the accident was happened while the practitioner was working with a Ni-Ti rotary instrument without using a rubber dam. She realized that the file did not fit well to endodontic hand piece, but it was too late. She mentioned that she was performing root canal preparation in tooth 47 (FDI), and the complication occurred in seconds.

There was a metallic body in the vallecula on the patient's plain graph, which was obtained before coming to otolaryngology clinic (Fig. 1a). Patient's respiration was normal, and findings about upper airway obstruction such as stridor and supraclavicular and suprasternal retractions, were not observed. Both hemithoraces were symmetric in the course of respiration. The patient only mentioned pain during swallowing. On endoscopic examination, it was found that there was a foreign body (root canal file stick) into the epiglottis (Fig. 2a). Because the plain graph was obtained earlier, there was a high possibility of the file moving from the vallecula to epiglottis. It was decided to remove the root canal file in the operating room to be prepared for emergency conditions. Attempts were made to remove the root canal file using curve forceps without anesthesia in the operating room. However, unfortunately, the file accidentally reached the hypopharynx (Fig. 2b). Fortunately, it was removed at the second attempt (Fig. 1b). Owing to the possibility of the root canal file accidentally reaching deep organs of the foreign body, preparations

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¹Department of Otolaryngology, Erciyes University Faculty of Medicine, Kayseri, Turkey

²Department of Endodontics, Erciyes University Faculty of Dentistry, Kayseri, Turkey

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Correspondence
Kerem Kökoğlu,
Department of
Otolaryngology, Erciyes
University Faculty of
Medicine, Kayseri 38039,
Turkey
Phone: +90 507 540 72 70
e.mail: dr.kokoglu@gmail.com

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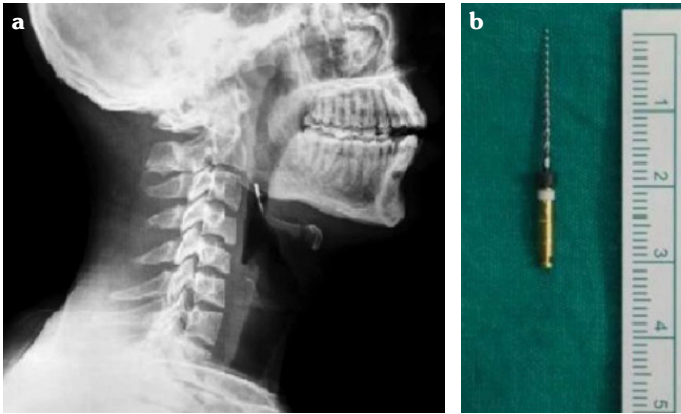


Figure 1. a, b. (a) Metallic foreign body behind the ramus mandible. (b) Removed file

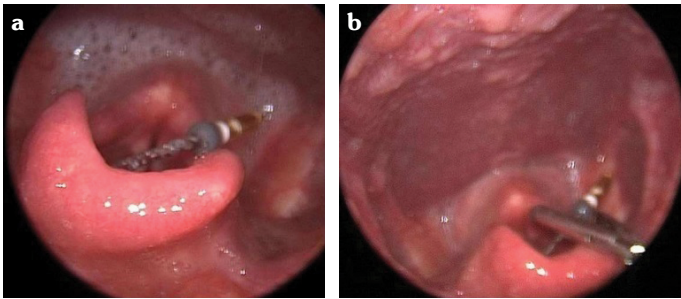


Figure 2. a, b. (a) Root canal file stick into epiglottis. (b) Curve forceps to remove the file

for general anesthesia and bronchoscopy were done. There was no complication during the procedure and after 2 weeks.

DISCUSSION

Root canal file is used in endodontic treatment to prepare and shape the root canals. There are various sizes, lengths, and designs of endodontic files in the market; it is made of stainless steel or nickel–titanium alloy (Ni–Ti). In spite of its rare occurrence, endodontic instruments could be ingested or inhaled during the procedure and cause some dangerous complications. Most of them pass through the gastrointestinal system (4, 5). Endodontic instruments are sharp and therefore, there is a high risk of perforation (8).

Presence of a foreign body in the airway is a life-threatening condition and requires immediate intervention. A total obstruction owing to a foreign body in the larynx may require life-saving first aid and Heimlich's maneuver. A previous study reported that inhaled endodontic instruments and dental items required statistically more frequent hospitalization than the ingested items (3). The presented patient had a foreign body in the epiglottis, and it did not cause respiratory distress. However, the airway of the patient was endangered.

Because of the metallic composition, plain graphy is the first option to image root canal file falling into the pharynx. Postero-anterior and lateral graphies are also useful (9). Root canal file made of Ni–Ti alloy was seen on direct graphy in the presented case.

Removing foreign body from the airway is a procedure requiring

advanced planning and proper equipment (5). Many challenging situations during the removing procedure have been encountered. If we had chosen induction of general anesthesia, the file could have fallen into the trachea during mask-ventilation or intubation, and if we had chosen sedation, airway could have been endangered because it was unprotected without the intubation tube. Preparations for emergency and bronchoscopy were done owing to possibility of complications.

Rubber dam is an essential system for enhancing the success rates of endodontic treatment and is accepted as a gold standard of care (10); its usage provides a number of advantages to the clinician. Some of the most important advantages are preventing salivary contamination of the root canal space during root canal treatment as well as protecting patients from ingesting or aspirating endodontic instruments and irrigation solutions (11). Almuhttin et al. (12) reported a case of root canal file ingestion in 2017. In this case, the major problem was using endodontic file without rubber dam again. These case reports reminded clinicians that the usage of rubber dam is obligatory.

CONCLUSIONS

A foreign body in the larynx is a life-threatening condition; hence, a good removing plan must be done. Procedures must be performed in emergency conditions against the possibility of complications. It is better to avoid such errors, and all precautionary procedures must be fulfilled; especially, usage of rubber dam should not be ignored during dental procedures.

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