Aspiration of Broken Portion of a Dental Clamp: An Unusual Case Report

Dental Klempin Kırılan Parçasının Aspire Edilmesi: Sıradışı Bir Vaka Raporu

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ABSTRACT Sometimes there is the danger of aspiration of the foreign body by a patient during dental treatment. The aim of this study is to present an unusual accident in which a patient aspirated a broken part of a dental clamp when the clamp was placed on the maxillary posterior tooth, and to discuss prevention and management of such events. In this incident, bronchoscopy was performed and the aspirated foreign body was removed from the bronchial lumen. The follow-up controls revealed no complication. To prevent an aspiration of a dental clamp or a broken portion of it, we suggest that a piece of dental floss should be tied through both holes of the clamp and the patient should be placed in more upright position during the dental clamping procedure.

Key Words: Dental materials; respiratory aspiration; rubber dams; bronchoscopy

ÖZET Dental tedavi süresince bazen hasta tarafından yabancı cisim aspirasyonu tehlikesi oluşabilir. Bu çalışmanın amacı dental klempin kırılan parçasının hasta tarafından aspire edildiği sıradışı bir vakayı sunmak ve bu gibi durumların önlenmesini ve değerlendirilmesini tartışmaktır. Klemp, üst çenede molar dişe yerleştirilirken kırıldı ve kırılan parça hasta tarafından aspire edildi. Yapılan değerlendirmede kırık parçanın akciğerde olduğu tespit edildi ve göğüs cerrahı tarafından bronkoskopi uygulamasına karar verildi. Kırık alet parçası bronşiyal lümenden çıkarıldı. Dental klempin kendisinin veya kırılan parçasının aspirasyonunu engellemek için önerimiz belirli uzunluktaki diş ipi ile klempi her iki halkasından bağlamak ve hastayı dental klemp uygulaması boyunca daha dik bir pozisyonda tutmaktır. Sonrasında hasta ideal tedavi pozisyonuna getirilebilir.

Anahtar Kelimeler: Dental materyaller; aspirasyon; diş izolasyon lastiği; bronkoskopi

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Foreign body aspiration is a life-threatening emergency.[1] It can arise from the routine delivery of dental care, especially endodontic therapy.[2] Endodontic procedures performed without a rubber dam may lead to aspiration or another complication such as accidental ingestion. The use of a rubber dam protects patients from such complications.[3] It has been widely accepted that the use of a rubber dam is essential to maintain a sterile field in dental therapy, and to avoid the risk of ingestion or aspiration of the small devices used.[4] However, the rubber dam itself also could cause some problems. Aspirations have occurred due to the absence of a rubber dam, as well as aspiration of the rubber dam clamp itself. Precautions should be taken in the application of the dam itself-especially the clamps.[5] In addition, delayed diagnosis may result in life-threatening complications.[6]

Treatment of foreign body aspiration entails reasonably prompt endoscopic removal under conditions of maximum safety.[1]

This case describes an unusual accident in which a patient aspirated a broken portion of a dental clamp. The aspirated material was removed without any discomfort.

CASE REPORT

A 34-year-old man was referred to the Endodontic Department, School of Dentistry, Atatürk University, Erzurum, Turkey, for endodontic treatment of a badly decayed maxillary first molar. After diagnosis, the patient was anesthetized. The position of the patient was semi-supine when a clamp was placed on the molar to place the rubber dam. At that time, the clamp was broken and the patient aspirated a small part of it.

In the immediate evaluation of the patient, mild dyspnea and coughing were observed. No cyanosis was seen. The patient was hyperpneic. The patient was referred for consultation to the Department of Thoracic Surgery, Faculty of Medicine, Atatürk University urgently. An X-ray of the chest was taken, and it showed that a small part of the clamp was lying in the left lung (Figure 1). Bronchoscopy was performed, and the aspirated foreign body was removed from the bronchial lumen (Figure 2). A small part of a clamp and another part were removed and checked (Figure 3 and 4).

The follow-up controls revealed no complications. The patient's general health appeared good, and a physical examination revealed no abnormalities.

DISCUSSION

Foreign body aspirations are a known complication of dental procedures. While undergoing dental treatment, patients may swallow or inhale endodontic instruments, crowns, burs, and copper bands.[3] Although an accidental swallowing case of a dental clamp was reported by Mejia et al in 1996 [4], aspiration of a dental clamp or broken portion of a dental clamp is very rare.

FIGURE 1: X-ray of the chest revealed a part of clamp in the left lung.

FIGURE 2: Control X-ray taken a month later.

FIGURE 3: Removed foreign body (part of clamp) from the lung of patient.

FIGURE 4: The parts of clamp was checked.

It has been stated imperatively that rubber dam usage is mandatory in all endodontic procedures to avoid the risk of aspiration.[4] Patients who aspirated foreign bodies most commonly present with the symptoms of coughing, wheezing, decreased air entry, and rhonchi.[7] When a dental patient has a coughing paroxysm and a foreign object can not be accounted for, chest radiography is necessary.[1] If the foreign body is aspirated, its removal is mandatory,[8] because some complications such as laryngeal edema, dyspnea, pneumothorax, asphyxia, bronchiectasis, bronchial strictures, pneumonia, lung abscess, empyema, and even death may occur.[9] Bronchoscopy is the preferred procedure for removal.[10]

Aspirated foreign objects most commonly appear on the right, because of anatomical differences between the right and left main bronchi and the patient's position at the time of the event.[8,9] Debeljak et al. reported the locations of 63 foreign bodies as: in the trachea in one patient (1%), in the right bronchial tree in 42 (67%), and in the left bronchial tree in 20 patients (32%).[10] In our case, the broken portion of the clamp was localized in the left bronchial tree when chest radiography was evaluated.

Researchers have described several strategies to avoid aspiration of objects during routine dental treatment. The most common procedure for routine restorative and endodontic treatment is the use of a rubber dam.[11] Using a gauze throat screen to catch objects before they fall into the patient's posterior pharynx is another method of preventing aspiration in cases in which a rubber dam is not warranted. Tethering small instruments or clasps with floss is yet another way to prevent aspiration of foreign objects.[12] Placing the patient in a more upright position during risky dental procedures would reduce the chance of an object falling into the posterior pharynx.[8] While the rubber dam reduces the risk of aspiration during endodontic procedures, it is possible for the dam clamp itself or a broken portion of it to be aspirated.[11] To prevent this, it has been recommended that a technique of tying floss through both holes of the clamp will allow the recovery of either a broken or dislodged clamp.[5] In this case, the rubber dam was applied without floss ligature, and when the clamp was placed on the maxillary molar, the position of the patient was a semi-supine. To prevent aspiration or swallowing of a dental clamp or a broken piece, we suggest that a piece of dental floss should be tied through both holes of the clamp and the patient should be placed in a more upright position during a dental clamp procedure.

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