ACCIDENTAL INGESTION Of AN ENDODONTIC FILE DURING ROOT CANAL TREATMENT: A CASE REPORT AND PREVENTIVE CONSIDERATIONS

Abstract

Background: Occasionally, dental tools can accidentally get swallowed or breathed into the airway during root canal treatment. This is not very common but can lead to serious problems. The chance of this happening increases when it's hard to use a rubber dam to isolate the tooth, especially if the tooth has a lot of damage at the top part.

Case Presentation: A 37-year-old woman came in because she had a painful, long-lasting inflammation in the pulp of her tooth #36.

The tooth had lost so much of its upper structure that it wasn't possible to use a rubber dam, so they used another way to isolate the tooth. During the process of cleaning the root canals, a #20 K-file slipped into her throat after she suddenly moved. She had a brief cough and trouble swallowing. X-rays showed the file was in her stomach. She was sent to see a doctor and was treated with simple care. Follow-up images showed the instrument moved through her digestive system and passed naturally within 72 hours.

Discussion: This case shows how to handle situations where standard methods like using a rubber dam might not work because there's not enough tooth structure to hold it in place.

It reviews ways to isolate teeth that are badly damaged and outlines steps to take if a tool is accidentally swallowed. Preventive steps like building up the tooth before treatment, tying the tools with floss, and talking to the patient about the risks are also discussed.

Conclusion: If using a rubber dam isn't possible, the dentist should focus on preventive methods to reduce the risk of swallowing or inhaling tools. Early detection and proper care are important for good results.

Keywords: swallowing, endodontic file, rubber dam, root canal treatment, dental accident, foreign object.

Introduction

The endodontic procedure needs controlled working conditions and strict following of isolation rules to lower the risk of problems during treatment. Using a rubber dam is one of the safest and best ways to stop contamination and prevent instruments from accidentally getting into the mouth and throat. It is also supported from a legal and medical perspective, as not using it could lead to criticism if something goes wrong.

But there are some situations where it's hard to place the rubber dam securely, like when there's a lot of tooth decay, broken cusps, or defects below the gum line. When the rubber dam can't be used, other methods only offer some protection. Although rare, swallowing an endodontic file can cause injury to the stomach, and aspiration can block the airway, requiring immediate help.

This report describes a case where an endodontic file was swallowed by a patient with severe damage to the top part of the tooth, making it impossible to use a rubber dam. The case includes detailed clinical information and suggestions for preventing such incidents.

Case Report

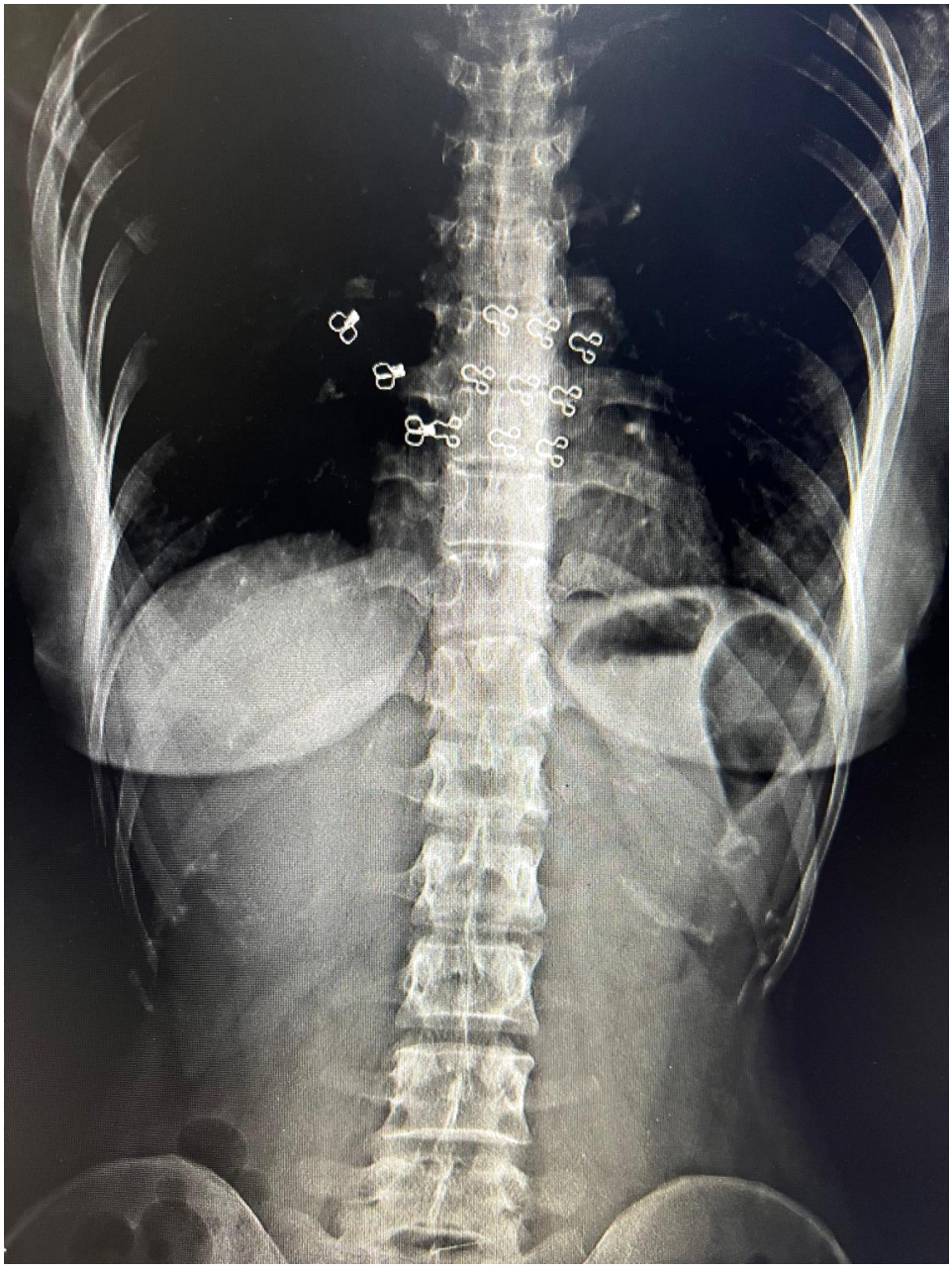
Patient Information: A 37-year-old female came in complaining of sudden pain and long-lasting sensitivity in the lower left jaw area. Upon checking her mouth and looking at X-rays, it was found that tooth number 36 had severe decay that had reached the inside of the tooth. Her medical history didn't show any major issues. Nonsurgical root canal treatment was planned. After she gave informed consent, local anesthesia was used, which was 2% lidocaine mixed with 1:100,000 epinephrine.

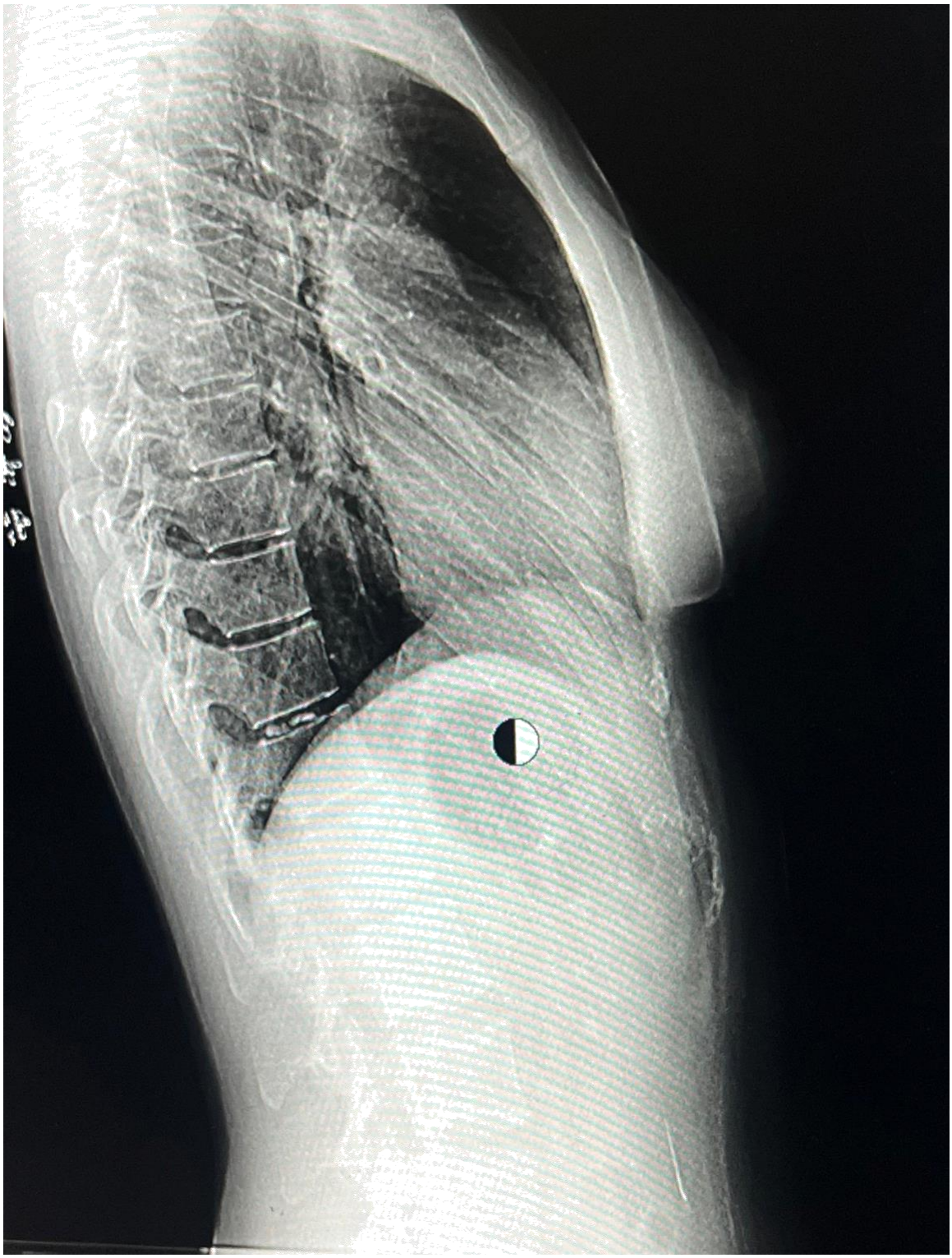
Procedural Details: When preparing the access cavity, it was clear that there was a lot of damage to the back and inside walls of the tooth, and the structure was weakened below where the enamel and cement meet. Because there wasn't enough healthy tooth remaining, it wasn't possible to use a clamp, so a rubber dam couldn't be placed. Instead, the area was kept clean with cotton rolls and a strong suction device.

Three main canal openings were found in the pulp chamber: the one on the front and outside, the one on the front and inside, and the one on the back. A DG-16 explorer was used to better see the shape of the canals. The length of each canal was estimated by using hand files with stops (19 mm for the front and outside and front and inside canals, 20 mm for the back canal), and this was checked again using X-rays. To clean the canals, 2.5% sodium hypochlorite was used, with 1 mL in each canal each time the tool was changed. This was followed by saline solution and 17% EDTA to remove a layer of debris, using a 30-gauge needle that was placed just short of the full canal length.

Ingestion Event: While using a #20 K-file during the manual shaping of the canals, the patient suddenly tried to spit. The instrument slipped from the dentist's hand and went into the throat area. Right away, the patient started coughing, had trouble swallowing, and had a brief feeling of shortness of breath along with saliva that had a bit of blood in it. The procedure was stopped and abdominal thrusts were performed. The patient quickly recovered and didn't show any signs of a blocked airway like a loud breathing sound or wheezing.

Radiographic Evaluation: The patient was taken to the emergency department, and X-rays of the chest and abdomen were taken.





X-ray upper abdomen (frontal and lateral projections)

Findings included:

•A thin radiopaque linear object projected over the L5/S1 vertebral level, consistent with a metallic foreign body in the stomach.

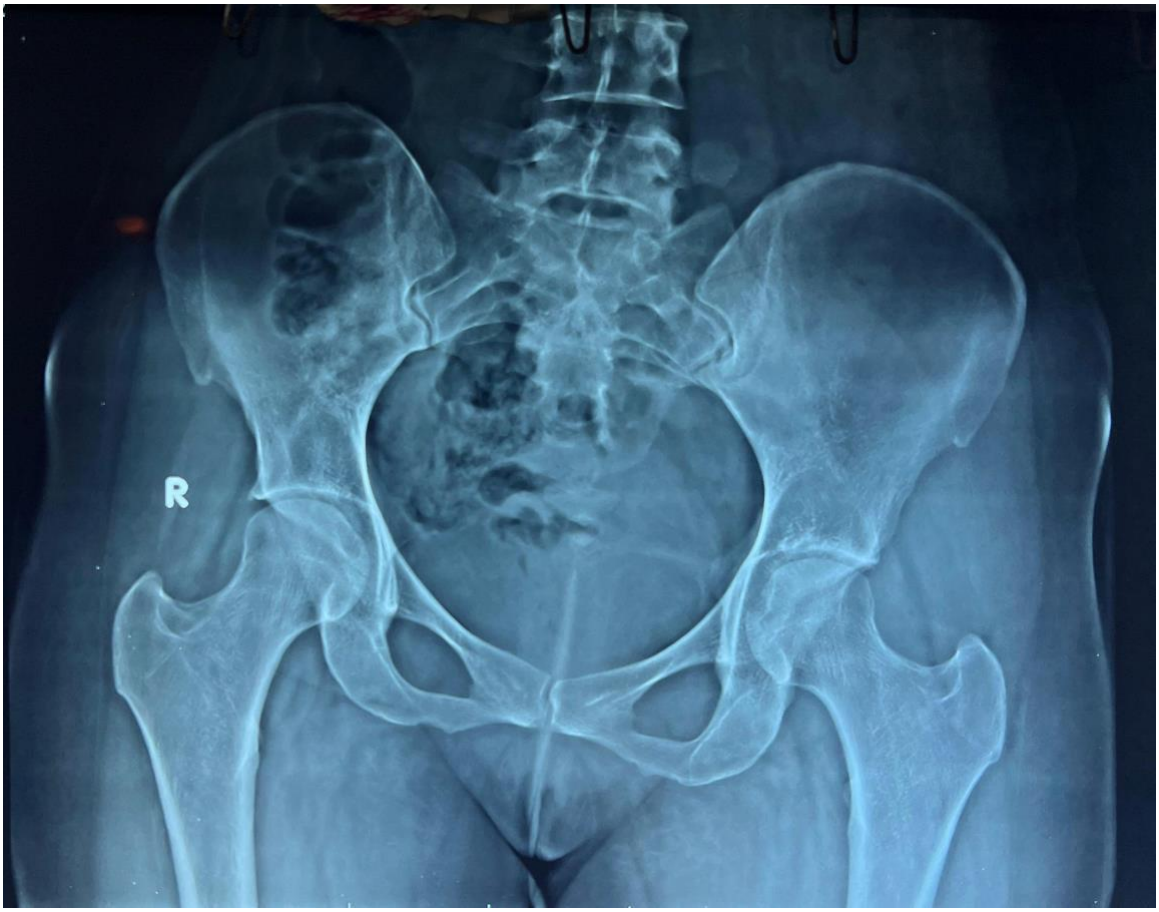
•Pulmonary fields, cardiac silhouette, and mediastinum were unremarkable.

• No evidence of bowel obstruction, free air, or abnormal soft-tissue shadows.

•A pelvic radiograph obtained 72 hours later revealed normal bowel gas patterns and absence of the foreign body, indicating successful passage.

Management and Outcome

The patient was evaluated by the surgical team. As the file was small and smooth, conservative management was recommended. She was instructed to increase dietary fiber intake and return for serial imaging. The instrument passed spontaneously within three days. No complications were observed.



Xray Pelvis (AP View)

•No metal objects are seen in the area shown.

•The intestines appear normal, with no signs of being stretched out or thickened.

•There are no signs of liquid and air buildup.

•The soft tissues look typical.

•The bones in the area are normal.

Discussion

Swallowing dental tools by accident is not very common, but it has happened in cases where proper protection is not in place. Using a rubber dam is the safest way to stop this from happening, as it acts as a physical shield to keep objects out of the throat, creating a more controlled environment for treatment. Its use is considered a standard part of endodontic care. In this case, there was a lot of damage to the upper part of the tooth, which made it hard to use a rubber dam properly.

As a result, other methods like cotton rolls and strong suction were used instead. While these techniques can help with keeping things dry and improving visibility, they don't offer the same level of safety as a rubber dam when it comes to preventing tools from moving into the throat. This incident highlights the risks of using methods that replace a rubber dam and shows how quickly things can go wrong if a patient moves unexpectedly during treatment.

Challenges in severely compromised teeth:

Extensive damage to the crown can make it hard to keep a clamp in place, which makes it difficult to use a rubber dam. In these situations, there are several ways to improve isolation:

Pre-endodontic build-up: Missing parts of the tooth can be filled with composite resin or glass ionomer to create a better shape that helps the clamp stay in place.

Specialized clamps: Cervical clamps and clamps with extended jaws, like the 13A and 14A types, can help hold onto molars that are structurally weak.

Floss ligation: Putting dental floss around the clamp can help prevent it from being accidentally swallowed if it moves out of place.

Stabilization aids: Using floss, wedges, or special cords to secure the dam can help seal the edges when the tooth structure isn't strong enough to support it.

Modified placement techniques: Putting the clamp on a neighboring tooth or placing the dam and clamp together at the same time can improve how well the clamp stays in place.

Flexible frames and dam materials: More elastic rubber dam sheets can fit better on uneven tooth surfaces.

Soft-tissue retraction: Rubber dams can pull back soft tissue, giving better visibility and control during treatment.

These methods can help manage the risks even when the tooth structure is not strong enough to support proper isolation.

Management of Ingested Instruments:

It's important to clearly tell the difference between swallowing something and inhaling it into the lungs. If something is inhaled, it can block the airway or cause issues in the lungs, which needs quick medical help. In this situation, there was no sign of breathing trouble, and X-rays showed the object was in the stomach, so a careful watch and less active treatment were chosen.

Small and smooth objects usually pass through the digestive system on their own within a few days. It's recommended to take X-rays over time and keep an eye on symptoms to check for any problems like a tear or blockage.

Preventive Strategies:

Key recommendations include:

- Preoperative buildup when walls are missing
- Use of floss ties on files and clamps
- Patient communication to prevent sudden movement
- Throat screens when isolation is uncertain
- Referral to specialists when safe isolation cannot be assured
- Preventing mishaps remains central to safe endodontic care.

Conclusion

This case shows that when it's not possible to use a rubber dam because there's a lot of damage to the tooth crown, the chance of swallowing a dental instrument is very high. It's important to do a detailed check before starting the procedure, fix the remaining parts of the tooth, and take extra steps to stay safe. Problems can be avoided if we find any swallowing early on and handle it properly. Keeping the area well isolated is the best way to protect the patient.

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