Dental Hygiene and Gut Health: A Surgical Case of a Misplaced Dental Drill Bur

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Background

- In adults, foreign body ingestions (FBI) are uncommon[1]
  - The elderly and those with neurological deficits (such as drug intoxication or psychiatric conditions) are at increased risk of FBI[1-4]
- In dentistry, FBI and aspiration are acknowledged risks[5]
  - Dental items, such as implants and tools are the second most commonly aspirated and ingested foreign body in adults[6,7]
- The majority of ingested foreign bodies will pass through the gastrointestinal tract without issue[2-4]
  - Only 10-20% will need non-surgical intervention[2-4]
  - Less than 1% will require surgical intervention[2-4]
- If a foreign body does become lodged, symptoms vary depending on the location, severity of blockage, and damage to surrounding structures[2,7]
  - Wider or longer objects are more likely to lodge[6,8]
  - Sharper objects more commonly lead to impaction or perforation, which can be fatal[7]

References

1. Centers for Disease Control and Prevention IPaC. WISQARS™ - Web-based Injury Statistics Query and Reporting System Dec 2021 [Available at: https://www.cdc.gov/injury/wisqars/index.html].
2. Wang X, Zhao J, Jiao Y, Wang X, Jiang D. Upper gastrointestinal foreign bodies in adults: A systematic review. The American Journal of Emergency Medicine. 2021;50:136-41.
3. Libânio D, Garrido M, Jácome F, Dinis-Ribeiro M, Pedroto I, Marcos-Pinto R. Foreign body ingestion and food impaction in adults: better to scope than to wait. United European Gastroenterology Journal. 2018;6(7):974-80.
4. Mizuno K-i, Takahashi K, Tominaga K, et al. Endoscopic Removal of Ingested Dentures and Dental Instruments: A Retrospective Analysis. Gastroenterology Research and Practice. 2016;2016:3537147.
5. Huh J-Y. Foreign body aspirations in dental clinics: a narrative review. J Dent Anesth Pain Med. 2022;22(3):161-74.
6. Hewlett JC, Rickman OB, Lentz RJ, Prakash UB, Maldonado F. Foreign body aspiration in adult airways: therapeutic approach. J Thorac Dis. 2017;9(9):3398-409.
7. Yadav RK, Yadav HK, Chandra A, et al. Accidental aspiration/ingestion of foreign bodies in dentistry: A clinical and legal perspective. Natl J Maxillofac Surg. 2015;6(2):144-51.
8. Thabet MH, Basha WM, Askar S. Button Battery Foreign Bodies in Children: Hazards, Management, and Recommendations. BioMed Research International. 2013;2013:846091.
9. Malamed SF, Orr DL. Chapter 11 - Foreign Body Airway Obstruction. In: Malamed SF, Orr DL, editors. Medical Emergencies in the Dental Office (Seventh Edition). St. Louis (MO): Mosby; 2015. p. 186-207.

Case Description

Patient presents to ED after swallowing part of a dental tool during a procedure. Told to attend by the dentist.

On examination, there was mild generalised abdominal tenderness, and no other relevant findings or history. A large, metallic object was seen on X-ray (**Figure 1**).

***Figure 1**: An abdominal X-ray demonstrating a foreign body.*

After 48 hours, the foreign body had failed to pass the caecum. The patient was taken to theatre for a colonoscopy and extraction of the object.

Under sedation, a colonoscope visualised the foreign body between the appendiceal orifice and a caecal mucosal fold (**Figure 2a**).

After dislodging, the foreign body was retrieved using a cold snare and navigated out of the colon (**Figure 2b**). Upon inspection, the foreign body was confirmed to be a dental drill bur (**Figure 2c**).

The patient was stable throughout their admission and was discharged 24 hours post-procedure. At discharge they had no ongoing pain and had opened their bowels.

***Figure 2a**: An endoscopic view of the foreign body lodged at the appendiceal orifice*

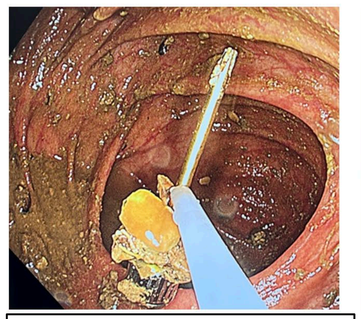


***Figure 2b**: The foreign body being carefully removed from the colon using a cold snare*

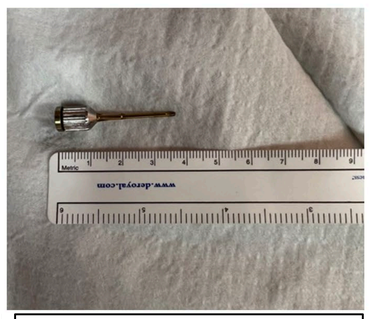
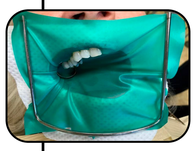


***Figure 2c**: The foreign body, a dental drill bur, next to a ruler, approximately 4cm*

Possible Interventions

- **Rubber dams** are one of the most effective forms of FBI and aspiration prevention and should be used whenever feasible[9].



- **Gauze screens** can be used in some circumstances when rubber dams cannot. These are best used for sedated patients, as they are irritating[9].

- **Chair position** can reduce the risk of FBI or aspiration. Additionally, if objects are "dropped", rolling into a left lateral position can ensure these do not travel beyond the oral cavity[9].

- **Ligature** use (usually dental floss) can aid in the prevention of FBI or aspiration, as clamps and instruments may be secured with such ligatures[9].

- **Regular checking of instruments** to prevent tools becoming loose, as well as dental assistants and suction ability can help to prevent FBI and aspiration[9].

Conclusion

- While cases like this are uncommon, they are not unheard of.
- This case highlights the importance of dental strategies to prevent FBI and aspiration, including double-checking instrument assembly and using interventions during procedures where feasible.
- Considering multiple differential diagnoses and reacting to patient condition can be crucial in a hospital setting.

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