Endoscopic Retrieval of Ingested Dental Bur in a geriatric patient: A Case Report

Keerthana K
Manipal College of Dental Sciences, Mangalore
Karthik Shetty
Manipal College of Dental Sciences, Mangalore
Vinod Jathanna
Manipal College of Dental Sciences, Mangalore
Kartik Nath
Melaka Manipal Medical College
Roma M (roma.m@manipal.edu)
Manipal College of Dental Sciences https://orcid.org/0000-0003-4159-1233

Case report

Keywords: Foreign body, Dental bur, Rubber Dam, Endoscopy

Posted Date: November 19th, 2020

DOI: https://doi.org/10.21203/rs.3.rs-106309/v1

Version of Record: A version of this preprint was published on January 5th, 2021. See the published version at https://doi.org/10.1186/s13037-020-00273-3.

Abstract

Background: Accidental ingestion of a dental bur during the dental procedure is not a routine incident, but can result in serious complication and consequences.

Case scenario: In this case report, a 76 - year old male patient, accidentally ingested a dental bur during the procedure. The presence and location of the dental bur was confirmed using chest and abdominal x-rays and it was subsequently retrieved by endoscopy procedure under general anaesthesia. The analysis of this case reaffirms the importance of the use of physical barriers such as rubber dams and gauze screens as precautionary measures to prevent such incidents from occurring.

Conclusion: Taking the patient into confidence and informing him regarding the possible complications of the accident and keeping him/her under observation until the object has been removed, would fulfil the professional responsibilities of a dentist, and will result in avoiding possible legal and ethical issues. Presented case represented the usage of physical barriers in dentistry and their usefulness in the treatment protocol.

Background

Accidental ingestion of dental instruments by the patients during the procedure, though not common has been documented in literature numerous times over the years[1–10]. All types and sizes of dental instruments such as orthodontic appliances, BiTine rings, endodontic files, dental burs, barbed broaches, implant instruments, rubber dam clamp etc. have been shown to be ingested in reports. Suitable precautions to avoid foreign body ingestion should be practiced as a matter of process. However, even under the most ideal circumstances, the possibility of accidental dropping of an instrument into the oral cavity is always a scenario which the clinician may have to face during his or her career. In this case report we aim to describe an ingestion of dental bur by an elderly patient during post endodontic restoration treatment procedure.

Case Presentation

A 76- year old male patient came to the dental clinic with a chief complaint of sensitivity in his upper right back tooth for last one year due to severe attrition. Intentional root canal therapy was planned for the maxillary right first molar tooth followed by a crown. Isolation with rubber dam was not possible as the tooth was tilted with considerable amount of tooth loss and due to the absence of the adjacent tooth. During the post endodontic restoration, following the Root canal treatment, the patient suddenly felt the presence of a foreign body in his throat and coughed momentarily attempting to spit it out. On examination the bur was found missing on the Airotor and was not detected in the oral cavity. The treatment was immediately stopped, patient was informed about the suspected bur drop. Following a chest and abdominal X-ray accidental ingestion of dental polishing bur [NMD high speed composite polishing and finishing kit (yellow band, diamond)] was confirmed. The abdominal X-ray showed the

presence of linear pointed radiopaque foreign body in the anterior aspect of mid abdomen (L4 level) [Fig. 1].

Since the patient had a history of bypass surgery and is hypertensive as well as diabetic, a complete blood picture and a cardiac echo were advised before proceeding with any procedure. After obtaining cardiac clearance and normal complete blood picture reports, endoscopy was planned under anaesthesia to remove the bur. The Gastro duodenoscopy report revealed that the oesophagus, fundus, body and antrum of the stomach were normal [Fig. 2]. Perforation was not present. The foreign body was present in the duodenal bulb [Fig. 3]. The endoscopy was performed under general anaesthesia and the foreign body was extracted using Rat tooth forceps [Fig. 4]. After the endoscopy procedure patient was kept under observation for a day and was discharged without complications and kept under follow up. Upon 3 months follow up period, the patient was asymptomatic.

Discussion And Conclusions

Accidental aspiration or ingestion of foreign bodies is a potential event encountered across all age groups. It can possibly affect Geriatric and paediatric patients, mentally challenged or physically disabled people whose coordination or control of deglutition is impaired [11–13]. Rui et al. in their review evaluated the different variables associated with the reported incidents of instrument aspiration and ingestion. According to them the age groups of 60–79 years and 10–19 years, showed high incidence of aspirations and ingestions[13]. In older patients, the risk is higher due to the reduced gag reflex and other age-related general diseases, such as dementia or Parkinson's disease[14]. One other possibility in this case is that the local anaesthesia used for the dental procedure might also have compromised the protective gag reflex [3] which may also have contributed to the ingestion of the instrument. It has been reported in majority of the cases that foreign objects of less than 2 mm thickness or 6inches in length can easily pass out through the alimentary canal [15]. If the foreign instrument gets lodged into deeper tissues, it can result in complications like intestinal perforations, stricture formation, abdominal pain, etc for which surgical intervention for removal may be required [16]. Some of the operative procedures have a greater risk of foreign body aspiration, it is important to inform the patient, and their relatives, about the possible risks pertaining to the procedure. Informed consent should be taken from the patient in both verbal and written format [17].

This case report further highlights the importance of additional caution and usage of some form of protective physical barrier such as a curtain of gauze, especially in geriatric patients, when a rubber dam placement may not be easily possible to use. It also signifies importance of endoscopy as an interceding diagnostic instrument and interventional modality for the diagnosis and the retrieval of ingested objects.

Declarations

Ethical clearance: The protocol of this case report was approved by the Institutional Ethics Committee Manipal College of Dental Sciences, Mangalore, INDIA (20002). The treatment protocol was considered to be standard care without any experimental treatment approach or medications.

Consent for publication: Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.

Availability of data and material: Data sharing is not applicable to this article as no datasets were generated or analysed during the current study.

Competing interests: “The authors declare that they have no competing interests" in this section.

Funding: No funding

Authors' contributions: “KK (Keerthana) helped the patient, KS (Karthik Shetty) and RM (Roma M) was a major contributor in writing the manuscript, VJ (Vinod Jathanna) and KN (Kartik Nath) did the proof reading of the manuscript All authors read and approved the final manuscript."

Statement by the authors: The manuscript has been read and approved by all the authors; the requirements for authorship in this document have been met, and each author believes that the manuscript represents honest work.

Acknowledgements: Not applicable

Financial support & Sponsorship: No source of funding for this case report

Conflicts of interest: All authors have no conflicts of interest.

Ethical clearance certificate: Taken from Ethics committee of Manipal College of Dental Sciences, Mangalore and the scanned copy is included.

References

1. Rohida, N. S. & Bhad, W. A. Accidental ingestion of a fractured Twin-block appliance. *Am. J. Orthod. Dentofacial Orthop.***139**, 123–5 (2011).
2. Baghele, O. & Mangala, O. B. Accidental ingestion of BiTine ring and a note on inefficient ring separation forceps. *Ther. Clin. Risk Manag.* 173 (2011). doi:10.2147/tcrm.s19725
3. Sankar, N. S. Accidental ingestion of a dental instrument. *J. R. Soc. Med.***91**, 538–539 (1998).
4. Kuo, S. C. & Chen, Y. L. Accidental swallowing of an endodontic file. *Int. Endod. J.***41**, 617–622 (2008).
5. Mejia, J. L., Donado, J. E. & Posada, A. Accidental swallowing of a dental clamp. *J. Endod.***22**, 619–20 (1996).
6. Govila, C. P. Accidental swallowing of an endodontic instrument. A report of two cases. *Oral Surgery, Oral Med. Oral Pathol.***48**, 269–271 (1979).

7. Oncel, M., Apiliogullari, B., Cobankara, F. K. & Apiliogullari, S. Accidental swallowing of the head of a dental mirror: Report of a rare case. *J. Dent. Sci.***7**, 199–202 (2012).
8. Saraf, H. P., Nikhade, P. P. & Chandak, M. G. Accidental Ingestion of Endodontic File: A Case Report. *Case Rep. Dent.***2012**, 1–3 (2012).
9. Mohan, R., Benjamin, M., Rao, S. & Bhagavan, R. Accidental ingestion of a barbed wire broach and its endoscopic retrieval: Prevention better than cure. *Indian J. Dent. Res.***22**, 839 (2011).
10. Accidental ingestion of an untethered instrument during implant surgery. - PubMed - NCBI. Available at: https://www.ncbi.nlm.nih.gov/pubmed/24905271. (Accessed: 30th January 2020)
11. Mahesh, R., Prasad, V. & Menon, P. A. A case of accidental aspiration of an endodontic instrument by a child treated under conscious sedation. *Eur. J. Dent.***7**, 225–228 (2013).
12. Deliberador, T. M. *et al.* Accidental aspiration in a patient with Parkinson's disease during implant-supported prosthesis construction: A case report. *Spec. Care Dent.***31**, 156–161 (2011).
13. Hou, R. *et al.* Thorough documentation of the accidental aspiration and ingestion of foreign objects during dental procedure is necessary: Review and analysis of 617 cases. *Head Face Med.***12**, (2016).
14. Fields, R. T. & Schow, S. R. Aspiration and ingestion of foreign bodies in oral and maxillofacial surgery: a review of the literature and report of five cases. *J. Oral Maxillofac. Surg.***56**, 1091–8 (1998).
15. Michael Birk, Peter Bauerfeind, Pierre H. Deprez, Michael Häfner, Dirk Hartmann, Cesare Hassan, Tomas Hucl, Gilles Lesur, Lars Aabakken, Alexander Meining . Removal of foreign bodies in the upper gastrointestinal tract in adults: European Society of Gastrointestinal Endoscopy (ESGE) Clinical Guideline. Endoscopy 2016;48:489-96.
16. S. T. Weiland and M. J. Schurr, "Conservative management of ingested foreign bodies," Journal of Gastrointestinal Surgery 2002, 6(3): 496–500.
17. Silva RF, Martins EC, Prado FB, Júnior JR, Júnior ED. Endoscopic removal of an endodontic file accidentally swallowed: clinical and legal approaches. Aust Endod J 2011; 37: 76-78

Figures

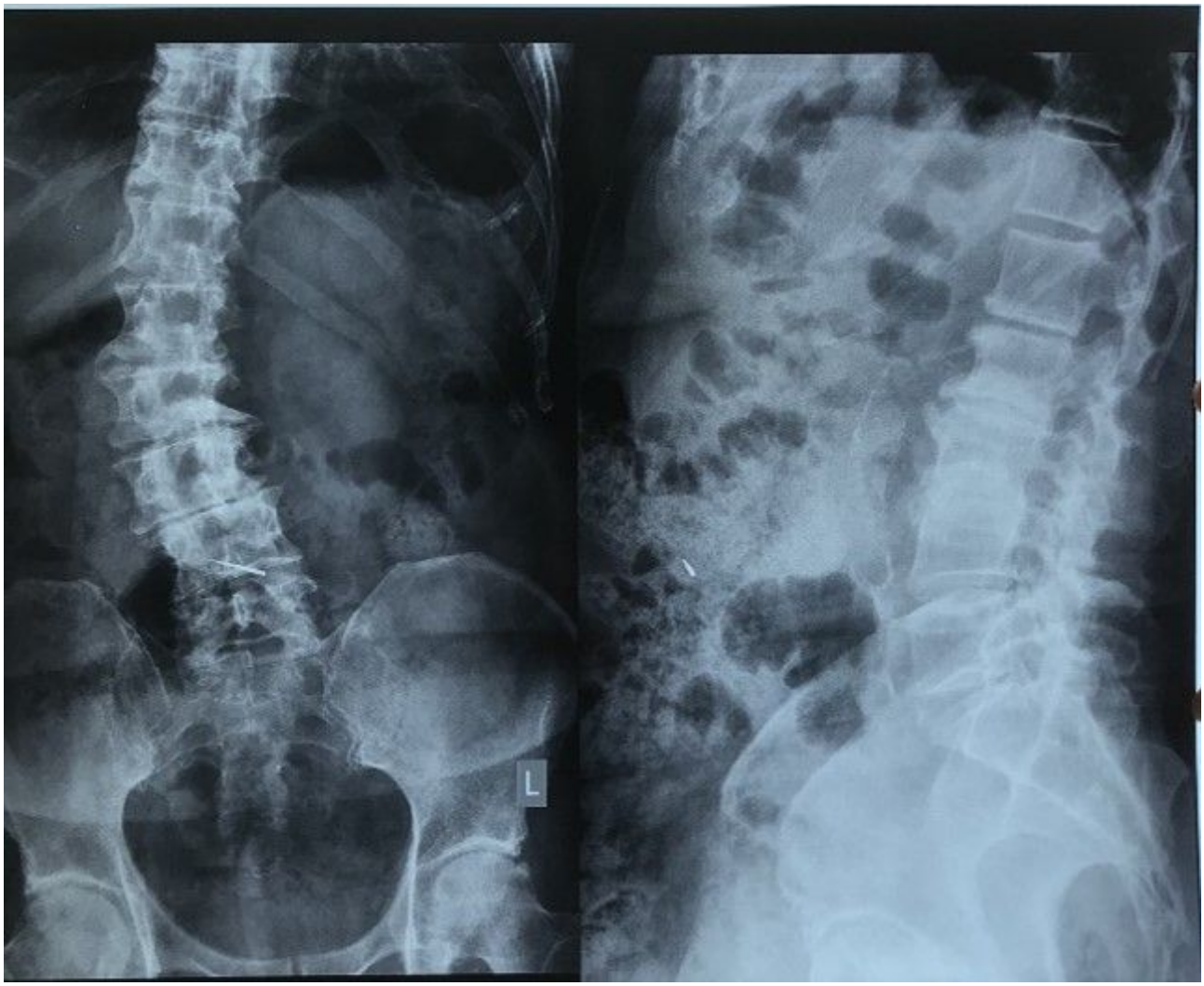

Figure 1

Abdominal X-ray image showing the presence of linear pointed radiopaque foreign body in the anterior aspect of mid abdomen (L4 level).

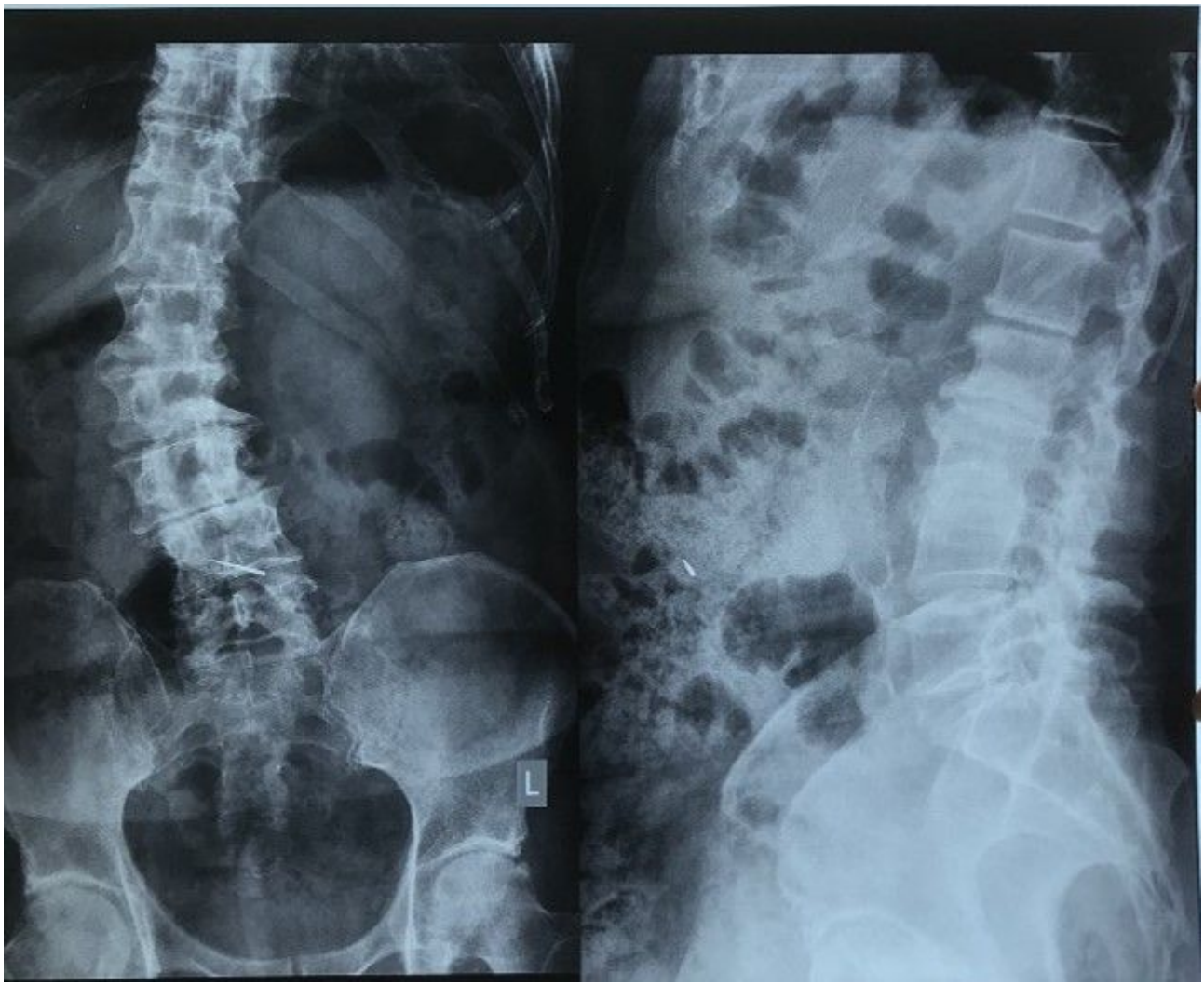

Figure 1

Abdominal X-ray image showing the presence of linear pointed radiopaque foreign body in the anterior aspect of mid abdomen (L4 level).

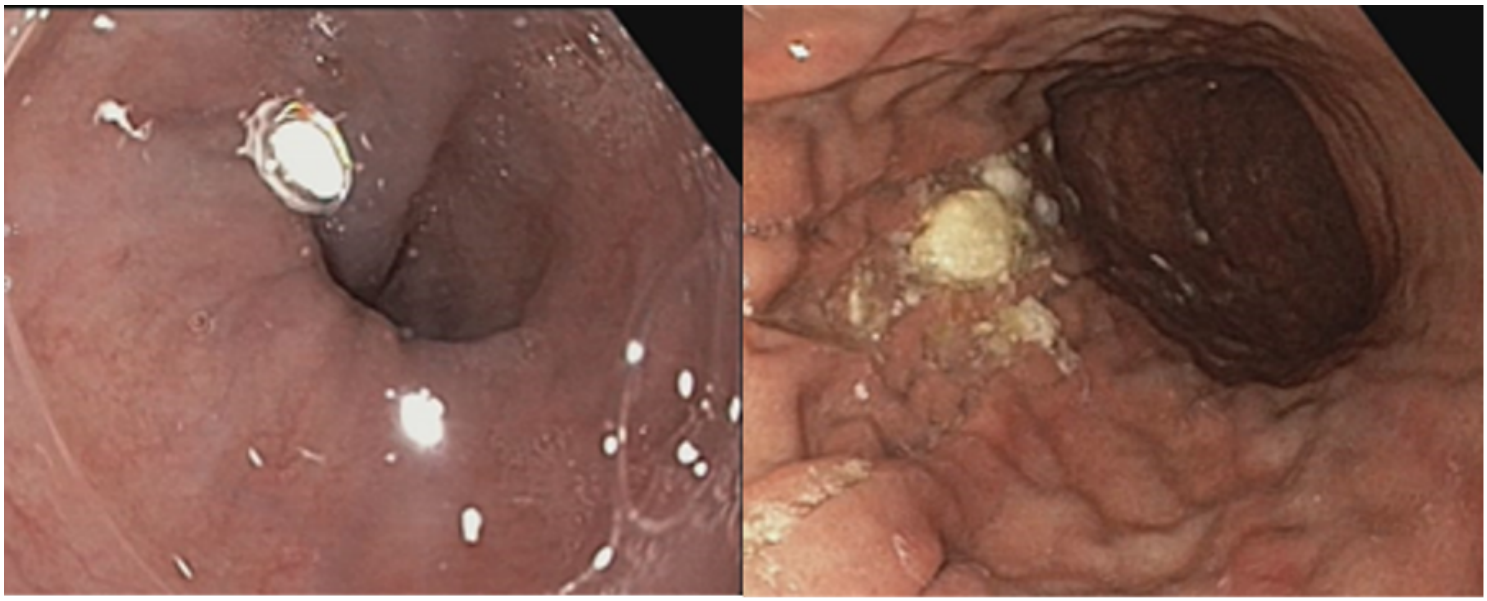

Figure 2

Gastro duodenoscopy image showing normal view of oesophagus, fundus, body and antrum of the stomach with no perforation.

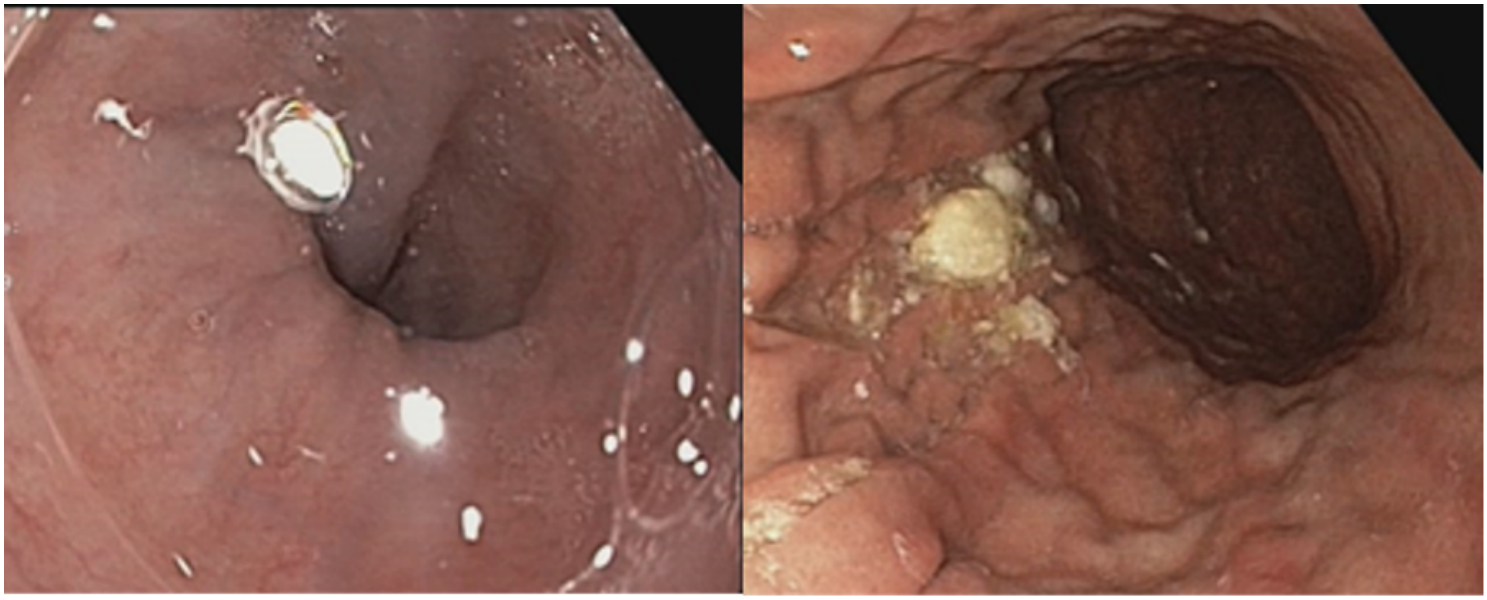

Figure 2

Gastro duodenoscopy image showing normal view of oesophagus, fundus, body and antrum of the stomach with no perforation.

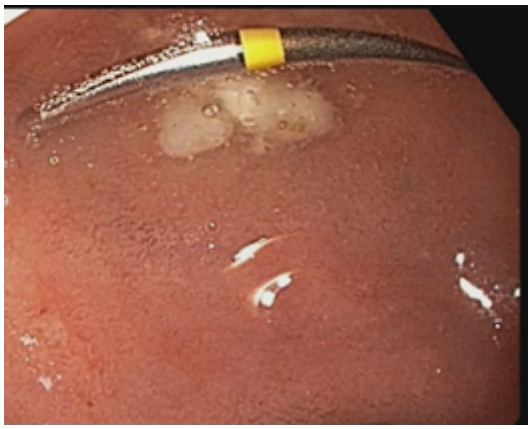

Figure 3

Gastro duodenoscopy image showing the presence of ingested dental bur in the duodenal bulb.

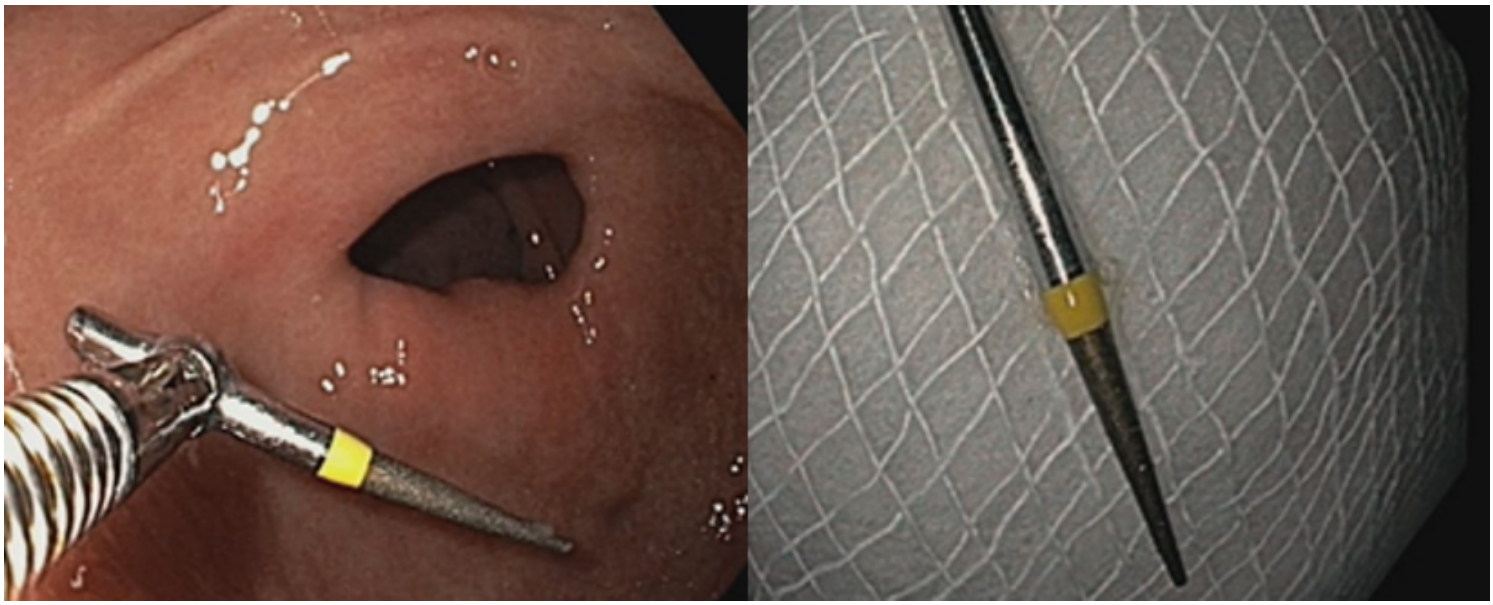

Figure 4

Gastro duodenoscopy image showing the presence of retrieved instrument using Rat tooth forceps

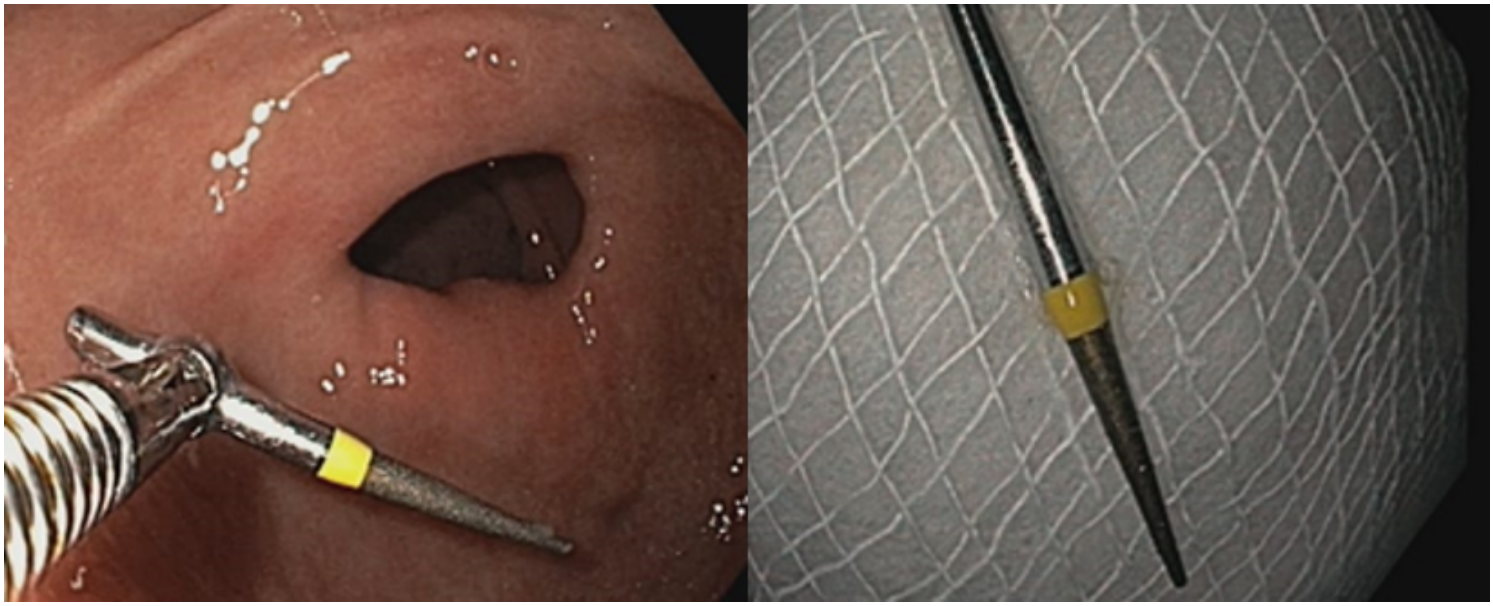

Figure 4

Gastro duodenoscopy image showing the presence of retrieved instrument using Rat tooth forceps