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Unmasking a New Type of Gastrointestinal Foreign Body in the COVID-19 Era

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Abstract: The incidence of foreign body ingestion has increased during the coronavirus disease 2019 pandemic. As face masks became increasingly available, we report a case of accidental ingestion of the metal strip insert of a surgical mask. After initially progressing, its progress halted after 24 hours. This case highlights the challenges of timing the endoscopic removal of long objects, especially considering the reduced endoscopic availability during the pandemic. Despite only causing local trauma, the strip was impacted at the duodenojejunal flexure with the potential to cause obstruction. Limiting morbidity relies on urgent removal and prevention of similar ingestions by emphasizing the safe use and storage of masks.

Key Words: foreign body, face mask, Coronavirus

INTRODUCTION

The global coronavirus disease 2019 (COVID-19) pandemic led to a shift in schooling, family life, and social activities for children due to regional and national lockdowns in a bid to curb severe acute respiratory syndrome coronavirus 2 transmission and reduce the burden on healthcare services. Access to household items (1), the boredom and psychological distress (2) faced by children during this time, and variations in safety practices within the home have led to an increase in the foreign body (FB) ingestion globally. Subjective observations from our center would agree with the Italian published report highlighting increased pediatric ingestion of batteries and sharp objects during the pandemic (3,4). Otorhinolaryngology teams have also reported an increase in the complexity of FB ingestions presented to their services (5–7).

CASE REPORT

We report the case of an 8-year-old girl with global developmental delay and seizure disorder, who, while playing with a standard, store-bought adult-size surgical-style face mask, managed to remove the 10 cm nose wire and swallow it. Aside from an initial coughing episode, she experienced no further coughing, drooling, vomiting, or abdominal pain. The first x-ray in the local emergency department demonstrated a FB in the pylorus (Fig. 1A). After local discussions with a pediatric gastroenterologist as to the next most appropriate step, a referral was made to the tertiary pediatric gastroenterology service. On a repeat FB series (9 hours after initial ingestion), the FB progressed from the stomach to the second part of the duodenum (D2). As the FB was not sharp and moving, endoscopy was initially deferred, and the patient was admitted for observation. The FB had failed to progress through the gastrointestinal (GI) tract on subsequent imaging (18 hours after initial ingestion) and remained in the second portion of the duodenum (D2); (Fig. 1B, C). A decision was made to remove the object endoscopically. Repeat abdominal x-rays just before endoscopic retrieval showed the FB in the distal duodenum/duodenojejunal (DJ) flexure (Fig. 2). During upper push endoscopy, a thin long nose wire was found in the DJ-flexure, but not buried in the tissue (Fig. 3). The FB was safely retrieved using forceps, without the need for an overtube. Mild mucosal erythema was noticed on postremoval endoscopic examination. The patient was subsequently discharged home, with no further complaints at a virtual follow-up 1 week thereafter.

DISCUSSION

During the current pandemic, government regulations mandated the statutory wearing of face coverings in public spaces for all, including children. Mask choice varies widely from N95 respirators to medical-grade surgical masks, or 3-ply store-bought disposable face masks, with families encouraged to purchase or make their own cloth masks. To our knowledge, there has been no advice given nor regulations in place regarding the safety standards to which masks should be made. Often home materials are improvised including the material for the nasal strip insert. Daily access to masks that contain long strips of metal, often up to 10 cm in length, poses a new and emerging hazard to our children and young people. Accidental or intentional ingestion may lead to intestinal obstruction and the need for endoscopic intervention. It was previously shown by Velitchkov et al. (8) that long objects of more than 6 cm in length are unlikely to pass through the duodenal sweep and subsequently the ileocecal valve, as after a 24–48 hour observation, none of the impacted FBs migrated distally on abdominal x-ray. In their study, a perforation rate of over 8% was documented for thin, pointed FBs. In another study in adults by Palta et al., (9) 80% of objects longer than 6 cm were unable to pass the pylorus by 48 hours after presentation. Perforation occurred in 6% of the cases and was associated with long delays from ingestion to presentation (9). Some experts have previously suggested the removal of objects longer than 3 cm in infants (10). As it is challenging to predict which FB will cause perforation, these reports led to the NASPGHAN clinical report recommending that long objects should be removed from the GI tract by urgent (<24 h) endoscopy (11).

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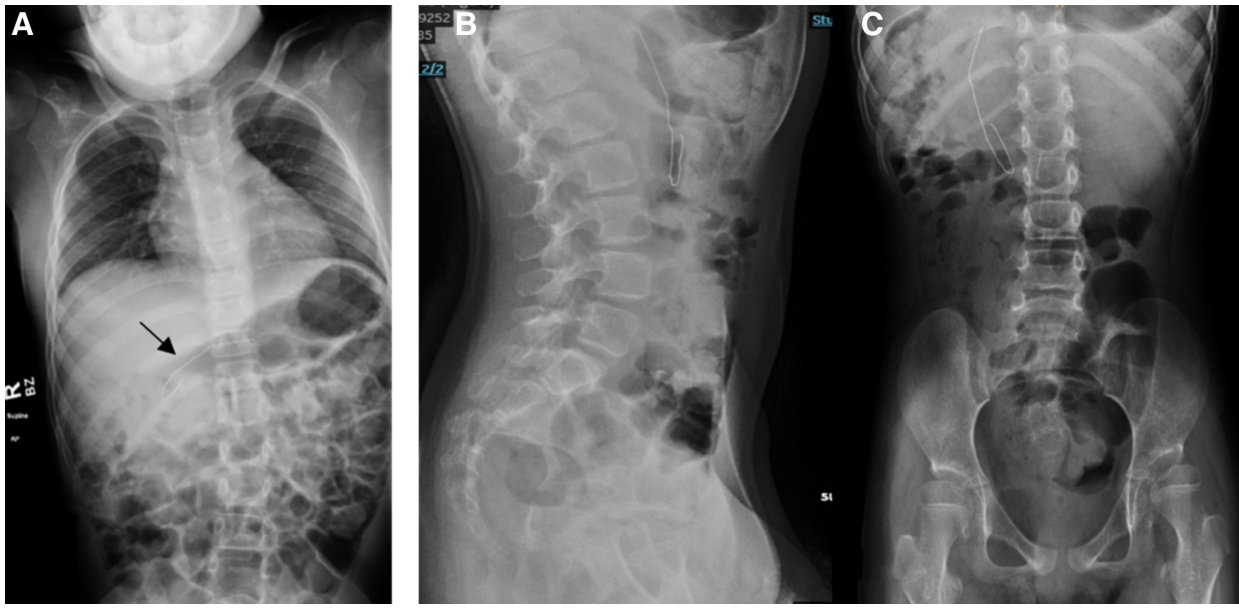

FIGURE 1. Initial film - metal strip of face mask (arrow) lodged at the pylorus 1 hour after ingestion on the frontal chest and abdominal x-ray (A). Metal strip remained in D2, 18 hours after ingestion on (B) anterioposterior (AP) and (C) lateral abdominal x-rays.

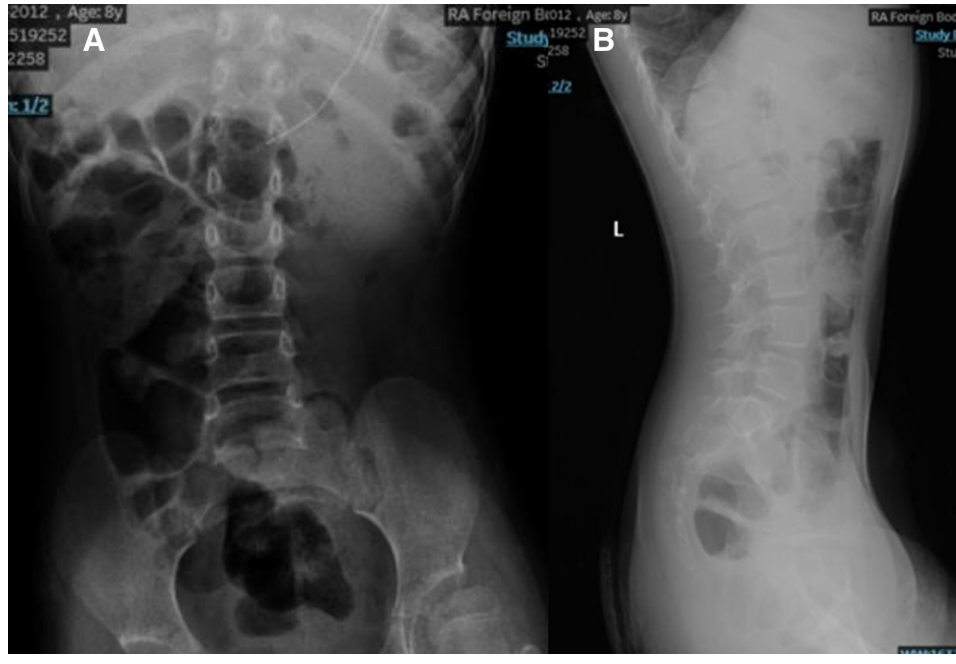

FIGURE 2. Metal strip had advanced to the distal duodenum/duodenojejunal flexure on preoperative imaging at 39 hours after ingestion, seen on (A) AP and (B) lateral abdominal x-rays.

Timely endoscopic removal may have been further impacted by delays in the presentation to the hospital during the pandemic due to fears of contracting COVID-19, and an increased rate of hospitalization has been documented (12). Our case raises the unique dilemma of decision-making regarding a nonsharp, but long, FB that could be impacted along narrow parts of the GI tract. Consideration for removal at the earliest opportunity should be given within the constraints of limited access to endoscopic facilities. The potential hazards of face-mask components should be discussed with parents and the safe use of masks should be emphasized by public health and health-care professionals.

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Informed patient consent was obtained for this report.

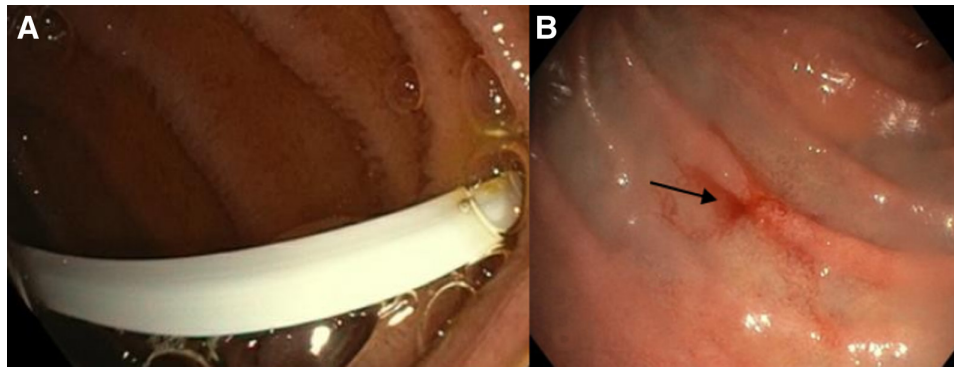

FIGURE 3. Endoscopic images show (A) a metal face mask strip impacted at the DJ flexure and (B) duodenal mucosal injury secondary to the metal strip (arrow).

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