The number of accidents in the dental office capable of placing the patient’s health at risk is relatively low. Nevertheless, when accidents do occur, they are generally associated with swallowing or the aspiration of foreign bodies, allergic reactions to medications or dental products, or surgical procedures. Implant placement and restoration involve the handling of small components such as wrenches, connectors, extensions, and rotary instruments that risk being accidentally aspirated or swallowed. Furthermore, the contact of these instruments with saliva makes them slippery and difficult to handle.

Swallowed foreign bodies may migrate through the esophagus, go directly into the stomach, or pass through the gastrointestinal tract. However, if the swallowed object is lodged within the esophagus, it must be immediately removed because the esophagus is close to the large thoracic vessels such as the pericardium and the pleura. If the object has passed beyond the esophagus into the stomach, there is a 80% or more probability of successful progression through the gastrointestinal tract. The physiological peristaltic waves of the digestive system will cause the foreign body to be expelled in 4 to 6 days. However, this period may extend to 14 days, and even 40 days. The symptoms suggestive of swallowing foreign bodies are dysphagia, discomfort, and retrosternal or abdominal pain, and the complications are hemorrhage, infection, intestinal obstruction, and perforation.

If the object is aspirated, it passes through the larynx and trachea. This is a situation with a high risk of suffocation. Aspirated foreign bodies tend to lodge in the right side of the main bronchus, possibly because of the nature of the tracheobronchial tree anatomy. Common symptoms of an aspiration are coughing, choking and gasping for breath, acute dyspnea, and diminished respiratory sounds.

This report describes the endoscopic procedure used after the accidental swallowing of a foreign body.

CLINICAL REPORT

A 65-year-old man was receiving an implant-supported dental prosthesis for the replacement of a mandibular first molar tooth. During the open tray impression, a hexagonal 1.7 wrench for a torque meter (Conexão Sistemas de Prótese) became detached from the transfer screw after the patient vomited and was swallowed. The
The patient was reassured and immediately taken to an emergency room. Radiographs of the cervical spine, thorax, and abdomen were requested.

The profile cervical radiograph showed accentuated degenerative bone alterations but no signs of compromise of the soft tissues or anything suggestive of the foreign body (Fig. 1). The thorax radiograph showed normal transparency of the pulmonary fields. No image suggestive of a radiopaque foreign body was observed (Fig. 2). The simple radiograph of the abdomen, made with the patient lying face up, showed a radiopaque image with an elongated morphology situated in the gastric topography and suggestive of the hexagonal wrench (Fig. 3).

The first choice of treatment to remove the wrench was an endoscopic procedure. Another treatment option was clinical follow-up to wait for passage through the gastrointestinal tract. The patient was positioned lying on his left side, with a nasal catheter providing 100% oxygen (White Martins Praxair) in the ratio of 2 L/min and peripheral venous access in the right upper limb infusing a 5% glucose solution. He was sedated with 0.05 mg/kg of midazolam (Dormonid; Roche Laboratories), 0.5 μg/kg of fentanyl hydrochloride (Fentani; Cristalia Laboratories), and 0.5 mg/kg of propofol (Diprivan 1%; AstraZeneca Laboratories). An occlusal device was placed in the patient’s oral cavity (Fig. 4), and a video gastroscope 590 WR (Fujinon Co) was introduced with free passage through the oropharynx, esophagus, and stomach. The gastric mucosa presented the usual shape, except for evidence in the antrum region of an erythematous segmental area associated with the hexagonal wrench.
A biopsy was performed to detect *Helicobacter pylori* with the urease test. The foreign body was then successfully removed by means of basket-type forceps for capturing foreign bodies (US Endoscopy), passing freely through the stomach, esophagus, and oropharynx until it was taken out through the oral cavity. The hexagonal wrench was removed without difficulty by means of the endoscopic procedure (Fig. 7), and the patient was discharged from hospital 2 hours later.

The urease test for the diagnosis of gastritis caused by *H pylori* was positive. The patient was given a prescription for the oral administration of a daily triple scheme of 30 mg of lansoprazole (Lansoprazol; Medley Laboratories), 500 mg of clarithromycin (Clarithromicina; Medley Laboratories), and 1 g of amoxicillin (Amoxil; GlaxoSmithKline Laboratories) for 28 days. After the 28 days, the patient returned for a new endoscopic procedure and a urease test, which was negative.

**DISCUSSION**

The patient inadvertently swallowed a short hexagonal wrench during the placement of dental implants. The diagnosis depended on radiographs of the thorax, abdomen, and cervical profile to determine the location of the foreign body. These types of radiographs are frequently sufficient to locate an object. Other reports have described patients who swallowed larger objects, such as the tip of a triple syringe, an orthodontic activation key, and even a toothbrush. These findings show that not only small objects may be swallowed, but larger objects too.

Even though 1% of the ingested instruments may cause some type of damage to the intestinal tract, the perforation rate of gastric mucosa by foreign bodies considered to be sharply pointed is about 15% to 35%. In this regard, the hexagonal 1.7 wrench for the torque meter may be considered a sharp-pointed instrument. Previous studies have reported that 87% of instruments enter the digestive tract and 13% the respiratory tract. The majority (80% to 90%) of objects swallowed pass through the gastrointestinal tract and are expelled through the rectum, without any need for intervention either in adults or children. Surgical interventions are necessary when there is bleeding, obstruction, or impaction in the gastrointestinal tract; this was not observed in this patient.

Performing an immediate endoscopic intervention for this patient was indicated because the gastrointestinal trajectory is unpredictable and there is a risk of perforation when the foreign body passes through the duodenal curve. The success of foreign body removal from the superior portion of the digestive tract is approximately 95%. If an endoscopic procedure is necessary to remove a foreign body, performing a biopsy for a *H pylori* diagnosis is advisable, even without any clinical signs or symptoms of gastric erosion. These bacteria are associated with the etiology of stomach cancer.

A considerable number of reports have described the management of patients who accidentally swallowed some type of foreign body. However, few have discussed...
the prevention of these complications. Some have suggested using of a rubber dam or the use of a gauze screen to protect the oropharynx as a barrier, providing instructions to the patient before the procedure, ensuring proper positioning of the patient, using powerful suction equipment, keeping a firm grip on instruments during the dental procedure, and attaching dental floss to small objects. For this patient, the use of dental floss attached to the hexagonal wrench for a torque meter could have prevented this accident.

REFERENCES


Corresponding author:
Dr Francisley Ávila Souza
Department of Surgery and Integrated Clinic
São Paulo State University “Júlio de Mesquita Filho” (UNESP)
Araçatuba, São Paulo
BRAZIL
Email: f.avilasouza@foa.unesp.br