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Accident in Implant Dentistry: Involuntary Screwdriver Ingestion during Surgical Procedure. A Clinical Report

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Abstract

Although unusual, foreign body ingestion occurs in dentistry and may result in serious complications, such as intestinal perforation. The presence of the foreign body should be confirmed with the use of radiographs. The exam will allow the correct diagnosis and the treatment to be conducted according to the specific situation of the object in the gastrointestinal (GI) tract. The orientation of the patient as well as the awareness of the patient's medical history are key factors in preventing serious complications. Generally, instruments that enter the GI tract pass asymptomatically and atraumatically within 4 days to 2 weeks. Sometimes, a surgical approach is necessary to remove the instrument when there is bleeding, obstruction, or impaction in the GI tract. Thus, a correct diagnosis is vital to avoid unnecessary surgical interventions. The aim of this article is to report an accidental ingestion of a screwdriver by a patient who had previously undergone a hemi-mandibulectomy and its medical resolution.

The instruments used for oral implant treatment are usually small, and many implant components are even smaller. Saliva makes them slippery and occasionally one may slip out of the hands of the operator.[1] Of these accidents, 87% of the instruments have been ingested, and 13% have been aspirated.[2]

Most ingested foreign bodies pass through the gastrointestinal (GI) tract successfully after anywhere from several days to several weeks. There are, however, many potential sites of impaction, including the ileocecal valve. Seventy-five percent of all perforations occur at or near the ileocecal valve.[3,4]

The complications associated with swallowed foreign bodies are generally hemorrhage, infection, intestinal obstruction, and perforation. An early diagnosis plays a key role in treatment success. Clinical management involves careful waiting with serial radiographs, or an intervention either by means of endoscopy or by open abdominal surgery.[1]

Surgical interventions are necessary when there is bleeding, obstruction, or impaction in the GI tract. Only 1% of ingested instruments cause some type of damage in the GI tract. The most common treatment in this case is a colonoscopy, related to the surgical removal of the impacted instrument, which in 75% of cases is located near the ileocecal valve or the rectosigmoid junction.[5,6]

The aims of this article are to describe a clinical report in which a screwdriver used for clinical procedures in implant dentistry was accidentally ingested, to draw attention to the potentially serious consequences, and to offer guidance on management. This treatment was conducted in the Implant Dentistry Department of the Federal University of Santa Catarina (Florianopolis, Brazil).

Clinical report

A 40-year-old female patient presented to the Federal University of Santa Catarina Implant Dentistry Department (CEPID) clinic and was being treated with dental implants. During the second-stage surgery, the professional was attempting to access the implant platform when the screwdriver slipped from his hands. Consequently, the instrument was involuntary swallowed by the patient. When asked whether she had realized something had gone wrong, the patient was not aware of any problems. Her medical history reported that she had previously undergone a hemi-mandibulectomy for a malignant lesion a couple years ago. Consequently, all innervation was also removed during the tumor resection. Immediately after the episode, the patient was referred to the Emergency

Figure 1 The instrument 2 hours after being swallowed.

Department at the Federal University of Santa Catarina University Hospital (Figs 1 and 2).

At the first clinical exam the patient reported feeling normal with no discomfort or any symptoms. Frontal chest and abdominal radiographs confirmed that the instrument was located in the GI tract; however, its location was undefined. Later, the medical team decided to make two daily radiographs to evaluate whether the instrument was moving into the GI tract.

The patient was placed on a fiber-rich diet in an attempt to eliminate the instrument physiologically without the use of laxatives. Stool analysis was also recommended to confirm the instrument was expectorated. The patient did not present with any signs of hemorrhage or pain.

After 5 days of follow-up care, and although the patient had not presented with any symptoms, the medical team opted to perform a surgical intervention to remove the instrument. The screwdriver was obstructing the ileocecal valve without the possibility of being expectorated.

Figure 2 The instrument 2.5 hours after being swallowed.

The foreign body removal surgical procedure was made under general anesthesia. It was performed as an exploratory laparatomy, followed by a 1 mm colostomy. Immediately after the tissues were released, the impacted instrument was removed from the transverse colon. Subsequent to the sutures' completion, the patient was maintained on a semi-intensive therapy unit for 7 days for a suitable recovery. The patient was allowed to leave the hospital after she reported no pain or discomfort.

Discussion

When foreign bodies are accidentally ingested or aspirated and not treated correctly, they may cause severe complications. Due to the instrument's sharpness, there is an increased risk of perforation of anatomical structures.[7,8] Therefore, immediately after the instrument leaves the oropharynx, it is important to determine whether the foreign body is located in the GI tract or in the respiratory system.[9]

Although rare, ingestion or inhalation of instruments during treatment can result in clinical complications and subsequent legal proceedings. It has been reported that these iatrogenic errors occur more frequently when treating posterior mandibular teeth.[10]

Patients who have undergone the removal of some type of malignant lesion in the oral cavity must be carefully assessed. Very often, these patients suffer from some kind of damage to their innervation, which may facilitate accidental ingestions.

Previous surgeries in the GI tract increase the risk of perforation/obstruction.[11] Patients who swallow foreign bodies most often are prisoners, psychotics, alcoholics, the senile, and dental patients.[1,12]

Radiographic examination is mandatory for differential diagnosis of the location, nature, and size of the foreign body. This can begin with the acquisition of CT scans or multiple films to include antero-posterior and lateral chest, lateral neck, and supine abdominal radiographs to complete the evaluation from the nasopharynx to the rectum. This preliminary information can determine the definitive methods for treatment.[13]

Most ingested foreign bodies pass through the GI tract successfully, taking anywhere from several days to several weeks.[14,15] Radiographic evaluation and a fiber-rich diet is the initial protocol for the management of these cases.[14]

Abdominal pain and/or the presence of blood in the patient's feces are signs of intestinal perforation, instrument retention, or obstruction. In the case of a patient presenting with these signs, surgical removal is indicated.[9]

When indicated, surgical removal should be performed as soon as possible. An early removal by bronchoscopy or gastroscopy is the ideal outcome to reduce morbidity.[9]

The most common surgical procedure in these cases is colonoscopy, which is regarded as a gastroscopy and is indicated when the patient has no predictability in passing the object naturally. Generally, foreign bodies impact at the ileocecal valve or at the rectosigmoid junction. For object removal, the abdominal access is used to facilitate the visualization and the instrument removal.[5,6]

Prevention is of the highest importance when discussing accidental ingestion. Preventive steps include the placement of a gauze screen across the oropharynx and the use of a length of dental floss or suture material attached to small instruments in case they are dropped. Some screwdrivers are manufactured with small holes in the handle for this purpose. Not taking these steps places the clinician at great risk from a medico-legal aspect.

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