Approach to the Patient Who Accidentally Swallowed Needle

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ABSTRACT

People are capable of ingesting, inserting, or injecting themselves or others with all manner of foreign objects. Ingested or inserted foreign bodies may cause bowel obstruction or perforation; which lead to severe hemorrhage, abscess formation, or septicemia; or distant embolization. Fortunately, once a foreign body has reached the stomach, it has an 80-90% chance of passage.

All sharp foreign bodies should be removed before they pass from the stomach because 15-35% of these will cause intestinal perforation, usually in the area of the ileocecal valve. The abdominal radiograph should be made and repeated to confirm the location of foreign bodies. If a sharp foreign body does not progress for three consecutive days, surgical intervention should be considered and, if the patient becomes symptomatic, surgical intervention will be necessary.

In this case, the patient had accidentally swallowed needle 2 days prior to admission, with no complaint any symptoms of abdominal discomfort, and no bloody stools. Observation is the treatment of choice for this case, since needle had passed stomach and reached colon, and it is hoped that the needle pass through without any complication.

***Keywords**: sharp foreign bodies, needle, swallowing*

INTRODUCTION

Foreign bodies are relatively uncommon, which may be ingested, inserted into a body cavity, or deposited into the body by a traumatic or iatrogenic injury.[1,2] Most foreign bodies inserted into a body cavity cause only minor mucosal injury. Fortunately, 80% of foreign bodies pass spontaneously through the gastrointestinal tract.[3,4] Nevertheless, if the object seems unlikely to pass, or fails to pass, or would be dangerous to allow to pass, it should be extracted.[3]

The esophagus is a tubular structure approximately 20 - 25 cm in length, which has 3 areas of narrowing: the Upper Esophageal Sphincter (UES), the crossover aorta, and the Lower Esophageal Sphincter (LES). These areas are where most esophageal foreign bodies become entrapped.[4] Sharp objects, such as needles, eating utensils, bobby pins, or razor blades, are more likely to lodge at areas of narrowing. The duodenal loop, duodenojejunal junction, appendix, and ileocecal valve region seem to be more predisposed to impaction from these types of objects.[2] Large spherical or cylindrical objects may pass through esophagus only but it may halt at pylorus.[2] Less than 1% of ingested foreign bodies cause perforation of gastrointestinal tract. Sharp, elongated objects most likely penetrate the bowel or esophageal mucosal lining and cause significant injury to intestinal wall.[3]

It is estimated that 1,000-2,000 people in the USA die each year from complications related to ingestion of foreign bodies.[1,4] Potential complications of oropharyngeal foreign bodies include abrasions, punctures, together with associated abscesses, perforations, and soft-tissue infections.[4,5] Once foreign body has reached the stomach, it has an 80-90% chance of passage. Objects longer than 6 cm may become entrapped by either pylorus or duodenal sweep, and objects larger than 2 cm in diameter also may fail to pass pylorus. When a foreign body has reached small

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bowel, the only structural impediment to passage is ileocaecal valve. Rarely, a foreign body may become entrapped on Meckel diverticulum.[4]

A thorough physical examination should be performed with emphasis on oral examination and abdominal palpation. Abdominal palpation may reveal "bunched-up" small intestine due to the palpation. When this finding is made, the clinician should be very gentle with further abdominal manipulations as it may encourage bowel perforation.[5]

The abdominal radiograph should be made and repeated and to confirm the location of foreign bodies. Some foreign bodies enter the gastrointestinal tract and pass through spontaneously, which need only to be followed up by plain abdominal radiographs. Observation is the treatment of choice for foreign bodies of the stomach and intestine because most of these object, unless extremely large or sharp, will pass through without any complication. Patients should be followed by daily abdominal plain radiograph. In addition, stool guaiac testing should be performed to rule out bleeding. Foreign bodies of the stomach and small intestine may cause complications such as obstruction, perforation, bleeding and associated infection, including peritonitis. Obstruction usually occurs at the ileocecal junction.[1,4]

The management also depends on type of object, organ affected, type of symptoms and condition of the patient in deciding when and how to intervene.[5] Decisions about management depend on the type of foreign body, and its location in the body.[1-5] Plain radiographs often provide such information. If a sharp or pointed item has passed through stomach into small bowel, the patient should be admitted to the hospital for observation and had daily repeated radiographs.[1,2] Some may need endoscopic removal.[3,4] Sharp objects (e.g. sewing needles) may become stuck in the wall or even penetrate through it.[1] Laparotomy exploration is necessary if the foreign body does not progress over a few days, or if signs of acute abdominal appear.[2-5]

CASE

A 16 year old girl was referred to Cipto Mangunkusumo hospital with chief complaint of accidentally swallowing a needle on two days before admission. She had no abdominal discomfort, there was nausea but no vomiting. After needle ingestion, the patient went to hospital and had some further examination such as plain thoracoabdominal radiograph (X-ray), which revealed the needle on gastric cavity. At that time, the patient had no special treatment for foreign body. On the next day, the patient came again to the hospital and had some examination as well as repeated X-ray, which showed no sign of needle on gastric cavity any more. Then the patient was referred to Cipto Mangunkusumo hospital for having some further examination and management, because that hospital had no any facility endoscopy facility.

Since two days prior to admission, the patient had no abdominal discomfort and there was no a black stool or bloody stools. Her vital signs were normal and her physical examination of heart and lung were between the normal limit. Abdominal examination revealed negative findings except for mild discomfort in all quadrant of abdominal by deep palpation. The blood laboratory includes complete blood count; i.e. hemoglobin 11.2 g/dL, hematocrit 34.8%, leukocytes 8,200/uL, platelets 178,000/uL. Before being referred to the Cipto Mangunkusumo hospital, she had been monitored by plain abdominal radiographs, which showed the needle and its position (figure 1). The position of the needle had changed over the two preceding days and it remained at the right lower quadrant, as shown by the abdominal radiograph made at our hospital (figure 2). The esophagoduodenoscopic examination indicated that there was no sign of needle in the esophagus, gaster and even in the descendent part of duodenum. The patient's problems were (1) foreign body in gastrointestinal tract, (2) dyspepsia syndrome. We planned to repeat X-ray, complete blood count (CBC), and complete stools analysis including benzidine test, and colonoscopic examination. We planned to observe the signs and symptoms of hemorrhage from gastrointestinal tract, and administered sucralfate solution 3 x CI, omeprazole 1 x 20 mg, high-fiber diet, and total bed rest. Consultation to Division of Gastroenterology had been made and colonoscopic examination was not necessary yet. We had to wait and hope that the needle would pass with stools without difficulty while observing the sign of acute abdominal, which may need immediate surgical intervention.

On the second day of hospitalization, there was no symptoms of abdominal pain, nausea were diminished and no bloody stools. The vital sign were between the normal limit and there was no signs of abdominal perforation. Results of repeated laboratory: were hemoglobin 11.6 g/dL, hematocrit 35.1%, leukocytes 7,400/uL, and platelets 201,000/uL.

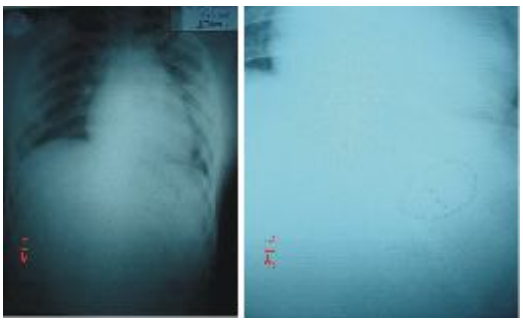

Figure 1. Needle showed on the left upper quadrant

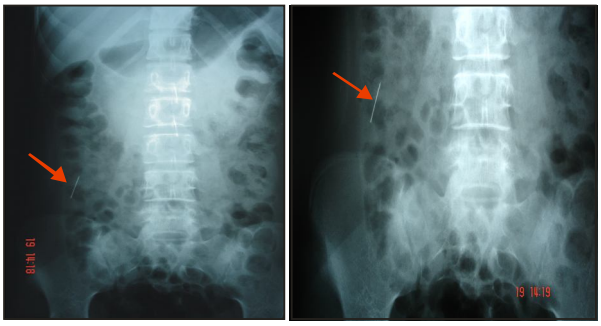

Figure 2. Needle showed on the right lower quadrant

Figure 3. No sign of radioopaque image on abdominal cavity

On the 3rd day of hospitalization, there was no other complaints, general condition and vital signs were normal. Abdominal X-ray examination revealed no sign of radioopaque image resembling to a needle in abdominal cavity (figure 3). The patient was encouraged to have further visit at the outpatient clinic. One week after being sent home, by her visit on April 26th 2006, she had no further problems, there was no complaint and the physical examination was normal.

DISCUSSION

People are capable of ingesting, inserting, or injecting themselves or others with all manner of foreign objects. Fortunately, most all swallowed objects will pass through the gastrointestinal tract without a problem. Foreign body ingestions or insertions may occur in four broad categories of patients: (1) children, (2) mentally- handicapped or mentally-retarded persons, (3) adults with unusual sexual behavior, and (4) "normal" adults or children with predisposing factors or injurious situational problems.[2] However, ingested or inserted foreign bodies may cause bowel obstruction or perforation; lead to severe hemorrhage, abscess formation, or septicemia; or distant embolization. Once a foreign body has reached the stomach, it has an 80-90% chance of passage.[4] If patients were aware of having swallowed a foreign body, suggested diagnostic and therapeutic strategies could be started immediately. All patients should be thoroughly screened for foreign bodies with ultrasonography, X-ray, computed tomography (CT) or Magnetic Resonance Imaging (MRI) as necessary. The diagnostic and therapeutic approaches will depend on the form and risk of foreign body. The patient who aware of having ingested sharp foreign body such as needle, should be suggested to have daily plain abdominal radiograph and it should be repeated to confirm the location foreign bodies. Moreover we usually perform observation on the vital sign and any signs and symptoms of abdominal perforation, such as signs of acute abdominal and decreased of hemoglobin. When such condition occurs, surgical intervention should be considered and should be done immediately. Sharp objects (e.g. sewing needles) may become stuck in the wall or even penetrate through it. It is probable that sharp objects such as needle, pins and toothpicks are more likely than small rounded objects to induce appendiceal inflammation or perforation. A needle ingestion have a high risk for perforation, especially in the duodenum, terminal ileum and appendix.[6,7] Observation is the treatment of choice for foreign bodies of the stomach and intestine because most of these objects, unless extremely large or sharp, will pass through without any complication. Patients should be followed by daily abdominal plain radiograph. In addition, stool guaiac testing should be performed to rule out bleeding. Foreign bodies of the stomach and small intestine may cause complications such as obstruction, perforation, and bleeding. Obstruction usually occurs at the ileocecal junction.[2]

Generally, small rounded objects are probably harmless as far as the appendix is concerned. All sharp foreign bodies should be removed before they pass from the stomach because 15-35% of these will cause intestinal perforation, usually in the area of the ileocecal valve.[1] If a sharp foreign body does not progress for three consecutive days, surgical intervention should be considered and, if the patient becomes symptomatic, surgical intervention will be necessary.[1,2,5] When considering sharp foreign bodies in the gastrointestinal tract as a separate group, morbidity and mortality figures are higher.[1]

In this case, the patient who had accidentally swallowing needle on two days before the admission prior to the referral to Cipto Mangunkusumo hospital had no complaint of any symptoms including abdominal discomfort, and no bloody stools. This condition was compared to the laboratory results, which demonstrated no decrease of hemoglobin results on repeated CBC. If there was any decrease of hemoglobin results, it indicated that there was hemorrhage in gastrointestinal tract throughout to abdominal cavity or passed with stools. On the first day, the plain abdominal radiograph showed the needle in the gastric cavity. On the third day at the outpatient

clinic Division of Gastroenterology, endoscopic procedure was performed and no blood was found in the stomach and duodenum. Plain abdominal radiographs were repeated on admission to the hospital, which showed the natural foreign body as needle, and its position at right lower quadrant of abdominal probably in the colon pars ascenden cavity. The position of the needle was change in 2 preceeding days; previous plain abdominal radiograph showed needle on gastric cavity. We decided to make observation with repeated daily radiograph and hoped that the needle would pass with stools without difficulty as the consultation result to the Gastro-enterology Division Consultant. Passage usually occurs within three days. If a needle does not progress for three consecutive days, surgical intervention should be considered and if the patient becomes symptomatic, surgical intervention will be necessary.

The repeated abdominal radiograph (X-ray), showed that there was no sign of radioopaque image on abdominal cavity, which may suggested that needle had been removed from gastrointestinal tract.

In this case, a needle size is not longer than 6 cm and the needle has blunt side. The needle probably passed throughout the gastrointestinal tract without any complications and not being stuck. Then we decided that the patient may be discharge and we asked her to visit the outpatient clinic and had further observation for several days for make sure that there were no further signs and symptoms which may need immediate surgical intervention.

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