

SHORT REPORT

Ingested pins causing perforation

T Stricker, C J Kellenberger, T J Neuhaus, M Schwoebel, C P Braegger

Abstract

We report two children who underwent endoscopic removal of ingested foreign bodies which had perforated the stomach, one of which had migrated into the thorax.

(Arch Dis Child 2001;84:165–166)

Keywords: ingested foreign body; gastric perforation

Most foreign bodies that have passed through the oesophagus and entered the stomach can be managed conservatively. Perforation is estimated to occur in less than 1% of all ingestions.¹ We report two children who ingested foreign bodies which were removed endoscopically, after having caused perforation.

Case 1

A 9 year old girl swallowed a straight pin. Abdominal x ray showed it apparently in the body of the stomach. Subdiaphragmatic gas was noted in the area of the fundus, suggesting perforation (fig 1). At endoscopy a 3.0 cm long pin which had pierced the fundus of the stomach and was embedded in its wall was removed. The patient was treated with metronidazole (30 mg/kg/day) and cotrimoxazole (6 mg/kg/day of trimethoprim component) orally for seven days.



Figure 1 Abdominal plain film of a 9 year old girl who ingested a pin (case 1). The pin is projected on to the body of the stomach. Subdiaphragmatic gas (arrow) suggests perforation.

Case 2

A 20 month old girl was seen in the emergency room because of fever for four days. Physical examination was normal except for a rectal temperature of 38.7°C. Investigations showed a haemoglobin of 128 g/l, leucocyte count of $17.5 \times 10^9/l$ with 43% neutrophils, 13% monocytes, and 42% lymphocytes, and $411 \times 10^9/l$ platelets. C reactive protein was 263 mg/l. Urine examination showed 60 leucocytes/ μl and 10^6 colony forming units of *Klebsiella pneumoniae*. The admission diagnosis was acute pyelonephritis and she was treated with intravenous ceftriaxone (100 mg/kg/day). Abdominal ultrasound showed normal kidneys and urinary tract, but revealed intraperitoneal fluid, a small left pleural effusion, and pulmonary consolidation of the left lower lung. Chest x rays showed two long radioopaque foreign bodies, one in the stomach and one in the left hemithorax (fig 2). At emergency endoscopy a 6.2 cm long foreign body was removed from the prepyloric area of the stomach. The second had penetrated the fundus of the stomach into the lung and was retrieved by its small intragastric portion. The foreign bodies proved to be two parts of a broken straight hair pin. The child was treated with nasogastric suction for two days and intravenous meropenem (60 mg/kg/day), vancomycin (40 mg/kg/day), and metronidazole (30 mg/kg/day) for 10 days. She recovered quickly; chest x ray, abdominal plain films, and ultrasound were normal after two weeks. A repeated history did not disclose the time of ingestion of the hair pin which belonged to the patient's mother.

Discussion

The peak incidence of foreign body ingestion is between the ages of 6 months and 3 years.^{1,2} Most ingested foreign bodies pass through the gastrointestinal tract without difficulty, especially once they have reached the stomach.^{1,2} Perforation occurs in less than 1% of all ingestions and is usually in areas of physiological sphincters (pylorus and ileocaecal valve), acute angulation (for example, duodenum), and areas of congenital malformations or previous surgery on the gut.¹ Other complications include: obstruction, abscess formation, haemorrhage, fistula, and mucosal ulceration.²

The management of ingested foreign bodies depends on their size, shape, and location. In general no foreign body should be allowed to remain lodged in the oesophagus for longer than 24 hours.² In cases of obstruction or when

University Children's
Hospital,
Steinwiesstrasse 75,
CH-8032 Zurich,
Switzerland
T Stricker
C J Kellenberger
T J Neuhaus
M Schwoebel
C P Braegger

Correspondence to:
Dr Braegger
ChristianBraegger@
kisp.unizh.ch

Accepted 8 September 2000



Figure 2 Antero-posterior (A) and lateral (B) chest x rays of a 20 month old girl with fever (case 2) showing the two parts of a broken hair pin: one in the stomach and the other in the left lung. Consolidation is noted in the left lower lobe.

the oesophageal foreign body is sharp or a lodged battery, the removal is urgent. Open safety pins should be removed, which can be a technical challenge.^{2,3} How to deal with other long pointed or sharp objects is controversial. Some recommend conservative management, others removal, and some suggest that removal should depend on the length of the object and the age of the patient.¹⁻⁵

Silent perforations of the stomach caused by foreign bodies have been reported.⁶ We recommend removal of all long and pointed foreign bodies which are 3 cm or longer as perforations

may be silent, as in our first patient. We are not aware of asymptomatic complications in children ingesting sharp foreign bodies shorter than 3 cm and therefore suggest 3 cm as the minimal length requiring removal in asymptomatic patients.

Our second patient had fever and pyelonephritis was misdiagnosed. The radiological finding of a foreign body, later recognised as a hair pin, was unexpected. We do not know when the pin was ingested and whether it was ingested as a whole and then broke from corrosion, or whether there were two swallowing episodes. In cases of multiple ingestions, involuntary swallowing must be considered. In the present case there were no factors suggesting child abuse. Pleural abscess has been described in animals after ingestion of sharp foreign bodies such as a piece of wire.⁷ However, we are not aware of such reports in humans.

- 1 Wyllie R. Foreign bodies and bezoars. In: Behrman RE, Kliegman RM, Arvin AM, eds. *Nelson textbook of pediatrics*. Philadelphia: WB Saunders, 1996:106-7.
- 2 Karjoo M. Caustic ingestion and foreign bodies in the gastrointestinal system. *Curr Opin Pediatr* 1998;10:516-22.
- 3 Webb WA. Management of foreign bodies of the upper gastrointestinal tract. *Gastroenterology* 1988;94:204-16.
- 4 Vizacorrondo FJ, Brady PG, Nord HF. Foreign bodies of the upper gastrointestinal tract. *Gastrointest Endosc* 1983; 29:208-10.
- 5 Spitz L. Management of ingested foreign bodies in childhood. *BMJ* 1971;4:469-72.
- 6 Hahmonai M, Kaufman T, Schramek A. Silent perforations of the stomach and duodenum by needles. *Arch Surg* 1978; 113:1406-9.
- 7 Tremaine WH, Dixon PM, McGorum BC, Watt NJ. Pleuropulmonary abscessation in a horse caused by a gastric foreign body. *Vet Rec* 1995;136:637-8.