

Accidental finding of toothbrush in peritoneal cavity on exploratory laparotomy for perforation peritonitis: a case report

Dr Md Nazar Imam¹, Dr Sana Sharfuddin², Dr Vijay Shankar Prasad Singh^{3*},
Dr Babita Chettri⁴

¹Senior Resident, Department of O, Sikkim Manipal Institute of Medical Sciences, Gangtok, Sikkim, 737102.

²Senior Resident, Department of obstetrics and gynecology, Sikkim Manipal Institute of Medical Sciences, Gangtok, Sikkim, 737102.

^{3*}Assistant Professor, Department of General Surgery, Sikkim Manipal Institute of Medical Sciences, Gangtok, Sikkim, 737102.

⁴Assistant Professor, Department of General Surgery, Sikkim Manipal Institute of Medical Sciences, Gangtok, Sikkim, 737102.

Corresponding Author: Dr Vijay Shankar Prasad Singh

Assistant Professor Department of General Surgery Sikkim Manipal Institute of Medical Sciences
Gangtok, Sikkim – 737102

Abstract

Peritonitis due to perforation of the gastrointestinal tract is the most common surgical emergency all over the world. Although, perforation of the gastrointestinal tract by ingested foreign bodies is few, accounting for <1% of cases. Here, we report a case of accidental finding of toothbrush found in the peritoneal cavity with perforation of sigmoid colon found on exploratory laparotomy which was taken up as a case of perforation peritonitis.

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I. Case Presentation

60 years old male patients with hearing and speech impairment since childhood brought by patient's attendant to the emergency department with complains narrated by patient's attendant with 2 days history of abdominal pain associated with abdominal distension and multiple episodes of vomiting. His bowel habits were, however, normal. His past medical, surgical and family histories were unremarkable. Upon presentation, his pulse was 80/min, blood pressure was 100/60mmHg, temperature 99 degree and was in moderate pain. His abdomen was distended, tender all over with marked guarding. Laboratory tests indicated an elevated white cell count of 10610 with 73% neutrophils. Abdominal X-ray showed free gas under both dome of diaphragm. Our presumptive diagnosis was perforation peritonitis, based on the patient's symptoms.

Empirical antibiotics were administered immediately, and an emergency exploratory laparotomy was performed on the same day with upper midline incision. Exploratory laparotomy revealed minimal fluid in all quadrants, dilated stomach, large bowel and large bowel. A hard lump was palpated in right iliac fossa for which incision was extended below umbilicus. Examination revealed clumped omentum around a hard mass. Omentum was separated which revealed toothbrush clumped around omentum. Both ends of toothbrush was followed to any continuity with bowel which revealed no continuity with bowel loops. A thorough examination of bowel was done again which revealed a collapsed distal colon with perforation approx. 2cm X2cm. Margins of perforation were refreshed and repaired with vicry 2-0 in single layer. The peritoneal cavity was thoroughly washed and drains(32F) were left in pelvic cavity along with nasogastric tube for drainage of the stomach. The abdomen was closed in layers. Postoperatively, the patient was kept nil per mouth, and drain output was monitored. Strict input and output charting were done. A week later, he was started on oral fluids which were tolerated well. Nasogastric tube and a day later drain was removed, and the patient was gradually started on full diet that was followed. The patient was counseled well and safely discharged from the hospital about 10 days after surgery in good health.



Figure 1. Preoperative radiological findings. Abdominal X-ray showed free gas under both domes of diaphragm.



Figure 2 :Toothbrush seen clumped in omentum

II. Discussion

Accidental ingestion of a foreign body rarely occurs, and perforation occurs in <1% of patients with ingested foreign bodies; in children, perforation it is even less common¹. More than 90% of foreign bodies pass through the intestine if they reach the stomach. Objects longer than 10 cm like a toothbrush cannot negotiate the duodenal C-loop due to its fixed position in the retroperitoneum and can cause pressure necrosis and bowel perforation^{2,3,4,5}. The common sites of bowel perforation by a foreign body are the ileocecal region and rectosigmoid junction because of the immobile and rigid nature of the duodenum as well as its deep transverse rugae and sharp angulations, which make it a common site for the entrapment of long and sharp objects^{6,7}. An ingested toothbrush may get impacted in the stomach. Saxena et al reported a case of a 45 year old male where a toothbrush was lying horizontally in the stomach with the bristle end in the duodenum, which could not be removed by endoscopy and was removed by gastrotomy⁸. Toothbrush after its passage from stomach is likely to be impacted in the duodenum. The normal duodenum contains relatively fixed angulations at the junction of the second and third portions and at the ligament of Treitz. Long thin objects are prone to impact at these sites⁹. In infants objects of only 2-3 cm may impact in the second part of the duodenum, while older children and adults may allow objects up to 5-6 cm to pass¹⁰. Sachdeva et al reported a case of impacted toothbrush in the duodenum which required duodenotomy for its removal¹¹. Toothbrush migration is mentioned in literature but the spontaneous passage from upper gastrointestinal tract to colon is reported only by Kim et al. in which a schizophrenic patient presented with abdominal sepsis¹². In a report, a MEDLINE search of the years 1988 to 2000 found 11 articles with approximately 40 cases of toothbrush ingestion¹³. Almost all of the patients were female, ranging from 15 to 23 years of age^{14,15}. Objects more than 6 cm long or >2.5 cm wide will have difficulty in passing through the C-loop of duodenum because of its fixed retroperitoneal position¹⁶. Impaction can lead to perforation or obstruction of the bowel resulting in considerable sepsis and mortality¹⁷. In our case toothbrush clumped around omentum was found in right iliac fossa. An examination of bowel revealed a distal colon perforation approx. 2cmX2cm which was repaired with vicryl 2-0 in single layer. Abdominal X-ray and Computed Tomography can detect most of the ingested foreign bodies including toothbrush, although the plastic portion is radiolucent¹⁸.

III. Conclusion

To our knowledge, this is the first documented case of toothbrush reaching till sigmoid colon and causing perforation of sigmoid colon in patients with hearing and speech and speech impairment since childhood. Early surgical intervention is considered, since the morbidity and mortality associated with a case of perforation peritonitis with high. Based on detailed history obtained from patient's attendant, clinical examination and investigation, patient was taken up for exploratory laparotomy and proceed for perforation peritonitis. On exploration, one end of toothbrush was found in clumped in omentum in right iliac fossa, another end was traced which was found coming out of sigmoid colon. Toothbrush was removed and perforation was primarily repaired.

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