



## Emergency Laparotomy and Enterotomy for Small Bowel Obstruction Following the Ingestion of a Removable Partial Denture (RPD)

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### Abstract

Swallowing foreign bodies are surprisingly common. They rarely cause harm. Those that do because harm can result in serious consequences. We report a rare case where a denture was ingested and resulted in small bowel obstruction, requiring urgent surgical intervention.

A patient swallowed his denture whilst eating his food. He attended hospital with mild bloating and had an X-ray which failed to identify any foreign body but identified areas of dilated bowel. A CT scan identified the foreign body and recognized it was impacted, causing small bowel obstruction. The patient required urgent surgery.

Small bowel obstruction following the ingestion of a foreign body is extremely rare. The reason it occurred in this patient is because the material of the foreign body which embedded into the mucosa of the small bowel. This should have been detected on the initial X-ray; however, it wasn't until the patient had a CT scan of his abdomen when the extent of his condition was established. With an ageing population and an increase of dentures and partial dentures, it may be that the presentation becomes more common in the future. This report highlights the importance of early identification and managing these patients.

**Keywords:** Denture; Foreign body; Otruction; Laparotomy; Enterotomy; Emergency surgery

### Introduction

Swallowing foreign bodies are surprisingly common. In adults, the most common foreign bodies that are swallowed are bones (fish or chicken) and dentures. Most often, ingested foreign bodies do not result in any harm to the patient and they typically pass spontaneously. Rarely do they need an intervention. When an intervention is required for removal, it is usually endoscopic and associated with very high success rates. We report a rare case where a denture was ingested and resulted in small bowel obstruction which required urgent surgical intervention. This case highlights the importance of understanding the risks associated with ingesting foreign bodies and the interventions that are required.

### Case Presentation

A 73-year-old man, with no significant past medical history, was admitted to a local district hospital after swallowing his Removable Partial Denture (RPD). He explained that he swallowed his denture whilst eating a meal five days prior to presentation. He came to hospital as he was concerned that it had not passed, and he started to develop some vomiting. On admission, he denied any abdominal pain, however, did describe some abdominal discomfort and bloating. He had opened his bowels and had passed flatus. On examination his abdomen was soft with mild umbilical tenderness and mild distension. Abdominal X-ray demonstrated some dilated small bowel loops but no evidence of a foreign body (Figure 1). A CT scan was then performed which identified the denture in the distal ileal loop of the small bowel associated with minimal surrounding inflammation. The CT also identified mildly dilated proximal small bowel loops with collapsed distal ileal loops but no definite transition zone. He was initially managed conservatively, however, his symptoms did not resolve. A repeat CT was performed which showed the denture remaining within the distal ileo-loop associated with dilated small bowel loops due to sub-acute obstruction (Figure 2). He was taken to theatre and underwent an urgent laparotomy. The denture was identified on exploration of the small bowel and a limited enterotomy was performed and the denture was removed. It appeared that the

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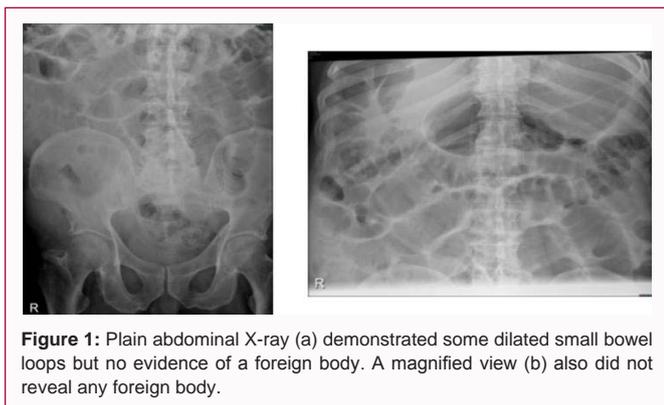
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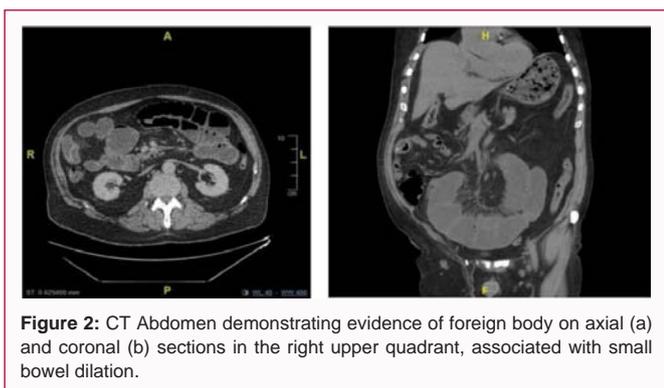
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**Figure 1:** Plain abdominal X-ray (a) demonstrated some dilated small bowel loops but no evidence of a foreign body. A magnified view (b) also did not reveal any foreign body.



**Figure 2:** CT Abdomen demonstrating evidence of foreign body on axial (a) and coronal (b) sections in the right upper quadrant, associated with small bowel dilation.

denture was impacted as a result of a sharp edge penetrating to the inner mucosa of the small bowel which resulted in the small bowel obstruction. The patient made a good recovery post-operatively and was discharged home.

**Discussion**

Ingestion of a Foreign Body (FB) is common. It can occur at any age; however, it is most common in children between the ages of six months and five years [1]. Approximately 15% of ingested foreign bodies occur in adults over the age of 20, and these are most often ingested with food [2]. Adults with psychiatric disorders or cognitive impairment are at increased risk [3]. The most common ingested foreign body seen in adults are fish bones (9% to 45%), chicken bones (8% to 40%) and dentures (4% to 18%) [2]. The vast majority of foreign bodies (80% to 90%) pass through the gastrointestinal tract spontaneously without causing any significant symptoms or complications and these patients can be managed conservatively [4]. Ingested foreign bodies that do not pass spontaneously are associated with significant morbidity and mortality and must be managed appropriately. Endoscopic intervention is indicated in 20% of cases. Surgery is required in less than 1% of cases. The anatomy of the gastrointestinal tract has several narrowings which predispose to foreign body impaction and obstruction. These include the oesophagus, pylorus, and ileocecal valve and rectosigmoid colon [5]. The oesophagus has four narrowings: the upper oesophageal sphincter, level of the aortic arch, the crossing of the main stem bronchus and the lower oesophageal sphincter/gastroesophageal junction [6]. Pathological conditions such as strictures, malignancies and diseases causing motility dysfunction may also increase the risk of obstructions. The majority of cases are obstructed at the upper oesophagus [7]. FB that is obstructed are at risk of causing significant complications. Complications may include ulcers, lacerations,

erosions/migrations and perforations [6]. A number of studies have identified factors that may increase the risk of complications from swallowing FB which include a delay in presentation of >2 days, a delay in diagnosis, the location of the obstructed FB in the upper oesophagus, sharp edges on the FB, batteries, increased width of the FB, advanced age and radio opacity on imaging [6,8,9]. As previously mentioned, most cases of ingested foreign bodies can be managed conservatively. These patients may be admitted to hospital for observations until the FB passes spontaneously. The remaining 10% to 20% of patients requires an intervention, either laryngoscopically, endoscopically or surgically. If a patient with a history of swallowing a FB is admitted and has associated dysphagia, it is recommended that the patient initially has a laryngoscopy. If this procedure identifies the FB then it can be safely removed during this procedure [10]. If FB can't be identified, oesophageal impaction must be considered and further intervention required [10]. Endoscopic removal of foreign bodies is regularly used to remove obstructed foreign bodies from the gastro intestinal tract. This procedure has been associated with up to 96% success rate and associated with few complications [11]. As a result, surgery is rarely indicated. Perforation is the main reason why a patient will undergo surgery following the ingestion of a FB. Patients who have failed endoscopic attempts to remove the FB may also go on to have surgery as many patients whose ingested FB have remained dormant in the distal duodenum for longer than 1 week [2,4,10]. In the case we present, surgery was indicated because the denture had resulted in an obstruction to the small bowel after a sharp edge of the denture had pierced the mucosal wall. Unfortunately, due to the nature and materials of the denture, this was not identified from the initial X-ray as there was no increased radio opacification seen on the film. It wasn't until the patient had a CT scan that the denture could be identified. As a result, we encourage health care professionals to consider alternative methods of investigations, such as a CT scans, if a patient with suspected small bowel obstruction following the ingesting a foreign body has a normal abdominal X ray. Additionally, from this case report we also want to highlight the consequences an ingested foreign body may cause. Whilst most ingested FB pass spontaneously without causing harm, some can result in serious life-threatening complications. With an increase in dentate adults and an increase in patients with dementia and conditions causing impaired cognition, we may see an increase in FB ingestion and thus an increase in cases similar to this.

**Conclusion**

Swallowing foreign bodies may cause significant morbidity and mortality. In adults, the most common ingested foreign bodies are small bones and dentures. This case report explains how a swallowed denture become impacted in the small bowel and caused acute obstruction. With the increasing proportion of partially dentate adults increasing, this may become a more prevalent presentation in both hospitals and community General practice surgeries.

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