Ingested bread clip as an unexpected diagnostic tool
Sharon Jay, Michael Russell, Yee Lau, Joel Dunn, Ross Roberts

ABSTRACT
We describe a case where a bread clip has in fact become lodged adjacent to a portion of small bowel affected by a deposit of previously undiagnosed metastatic serous carcinoma of likely ovarian origin.

This 76-year-old woman initially presented to a peripheral hospital three months prior with generalised abdominal pain associated with nausea. There was no vomiting, and her bowels functioned normally. An incidentally raised CA-125 of 209kIU/L was noted by her general practitioner two weeks prior to presentation. Radiological investigation with ultrasound showed a linear echogenic structure associated with a loop of small bowel in the left adnexa and was thought to represent a tubal ligation clip (Figure 1). Computed tomography (CT) scan was reported as having no acute abnormalities. The pain resolved spontaneously and she was discharged.

Figure 1: Ultrasound scan showing linear echogenic structure (white arrow) associated with a loop of small bowel in the left adnexa, initially thought to represent a tubal ligation clip.
The patient then re-presented, three months after initial presentation, with a 10-day history of abdominal pain, which again, resolved spontaneously. Repeat CT in the community showed a foreign body consistent with a bread clip in the small bowel in the left side of the abdomen (Figure 2). There were no acute associated findings. In retrospect this foreign body was evident on the previous scan. The patient was then transferred to our institution for further management. The patient was unaware of ingesting the bread clip.

On examination her abdomen was soft, with tenderness in the left lower quadrant. There was no peritonism and bowel sounds were normal. Laboratory investigations showed a normal white cell count and a C-reactive protein of 10mg/L. Repeat CT scanning showed inflammatory changes around the likely bread clip with no evidence of overt obstruction (Figures 3–5). Given the inflammatory changes on CT scanning, the patient was brought forward for laparotomy and small bowel resection.

Operative findings were of a normal appearance of the bowel, however, in the mid small bowel there was an area of inflammation and fibrosis. The bread clip was felt within the lumen. The area in question was resected, and the bowel anastomosed. The ovaries were not specifically examined but no gross abnormality was seen.

The patient had a post-operative ileus, which resolved, and she was discharged on the seventh post-operative day.

The operative histology revealed bread tag impacted on the mesenteric side of the bowel mucosa with fibro-inflammatory change (Figure 6). Unexpectedly, the area adjacent to the impacted bread clip showed malignant tumour in the serosal and subserosal tissue. The tumour included high-grade malignant epithelial cells with characteristics favouring metastatic high-grade serous carcinoma of gynaecological origin. It was suggested that this metastatic tumour resulted in a stricture causing the bread clip to become impacted at this part of the small bowel.

Figure 2: Coronal CT showing bread clip (white arrow) within the lumen of small bowel.
Figure 3: Axial CT demonstrating the bread clip (white arrow) within lumen of small bowel.

Figure 4: Sagittal CT image showing bread clip (white arrow) within lumen of small bowel.
**Figure 5:** Reconstructed coronal CT image showing bread clip (white arrow) within lumen of small bowel.

**Figure 6:** Photograph of the resected small bowel showing small bowel mucosa invaginated within plastic bread clip.
Discussion

The origin of the bread clip can be traced back to the 1950s, when it is reported that Floyd Paxton first used a piece of plastic to carve the first bread clip to close plastic bags containing apples.1,2 Despite their extensive use, alternatives have been suggested and used, as many publications have called for discontinuation due to complications after accidental ingestion.2–5 Many bread companies in the UK are using plastic tape as a safer alternative.6

More than 20 ingested bread clip case reports or small case series have been published. They describe and document various aspects of the complications associated with this phenomenon such as intestinal ulceration, obstruction, perforation and even death. These complications are summarised below (Table 1). Bread clips have two characteristic inward facing curved hooks, which when ingested can cause bowel mucosa to become invaginated in the clip mechanism causing the aforementioned complications. While endoscopic removal of a foreign body is seen as first line treatment there are only a few documented such cases with bread clip ingestion.7,8 Given the initial indolence and the unknown ingestion of the clip, complications are usually too distal to be retrieved in this way. Subsequently, surgery with bowel resection is the most common management of this condition.

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year published</th>
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<tr>
<td>Medline A, Shin D⁹</td>
<td>1975</td>
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<td>Rivron RP, Jones DRB¹⁰</td>
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<td>Jamieson MH, et al¹¹</td>
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<td>2</td>
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<td>Sutton G¹³</td>
<td>1984</td>
<td>3</td>
<td>Ileocolic intussusception, abscess and two fatalities</td>
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<td>McKaigney J, et al¹⁴</td>
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<td>1987</td>
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<td>Ellul JPM, Hodgkinson PD¹⁶</td>
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<td>2001</td>
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<td>Morrissey S, et al³</td>
<td>2008</td>
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<td>McKinley J, Brady P⁷</td>
<td>2008</td>
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<td>Allsopp T, Fraser-Kirk G³</td>
<td>2009</td>
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<td>Lehmer L, et al¹⁹</td>
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<td>Koh M, Wright RG²⁰</td>
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In this case, we describe a case of bread clip ingestion, which initially seemed to be an uncomplicated case. However, after failure to pass the ingested clip, surgical excision of the affected small bowel and subsequent histological analysis of the specimen showed the bread clip had in fact became lodged adjacent to a portion of small bowel affected by a deposit of previously undiagnosed metastatic serous carcinoma of likely ovarian origin.

Literature on this topic identifies the danger associated with ingestion of bread clips. Our case supports the assertion that bread clips present a potential public health issue. Bread clips are readily identifiable on CT due to plastic's high attenuation value, but this is the first reported case where a bread clip is demonstrated on an ultrasound, albeit with the benefit of retrospect.

The combination of the ingested bread clip and the subsequently identified pathological findings in this case is certainly unique. This reinforces the importance of sending all operative specimens for histological analysis, as rare and unexpected findings can have significant implications.

**COMPETING INTERESTS:**
Nil.

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