A 79-year-old man underwent a colonoscopy with rectal adenomatous polyp removal. As the colonoscope traversed the sigmoid colon, the operator felt a small ‘pop’. An abdominal computed tomography scan revealed extraluminal air in the retroperitoneum.

Surgical consultation suggested repair of the perforation by using a combined endoscopic and laparoscopic approach. A 5-mm transmural perforation was found in the sigmoid colon (Fig. 1). Endoclips (Resolution clips; Boston Scientific, Boston, Massachusetts, USA) were applied to the mucosal side of the perforation with a colonoscope as well as laparoscopic assistance. The laparoscope was used to manipulate the colon externally from the serosal side, bringing the perforation to face the colonoscope directly, and avoiding tangential placement of the endoclips (Fig. 2).

Three endoclips were deployed without complication (Fig. 3). A water irrigation test was performed: the proximal bowel was clamped and then the area of repaired perforation was placed under water from the serosal side, bringing the perforation to face the colonoscope directly, and avoiding tangential placement of the endoclips. Three endoclips were deployed without complication (Fig. 3).

A water irrigation test was performed: the proximal bowel was clamped and then the area of repaired perforation was placed under water from the serosal side laparoscopically.

The colonoscope was then used to insufflate the bowel with air to distend it. Considerable precautions were taken to avoid air escaping from the site of the perforation. Subsequently, small numbers of air bubbles were noted. Two sutures were placed laparoscopically from the serosal side to seal the air leak. A second water irrigation test confirmed the closure of the perforation.

To our knowledge, this is the first case of colonic perforation where colonoscopy and laparoscopy were used to complete a repair effectively, without colonic resection or colostomy placement. The repair was accomplished with three steps: mucosal sealing of the perforation; an air leak test with the aid of local water irrigation (i.e. a water irrigation test); and direct observation for air bubbles during colonic air insufflation. Total serosal closure was completed with laparoscopic sutures.

Our approach with endoclips and laparoscopy provided a prompt repair of the colonic perforation and improved the outcome for the patient, who had an earlier discharge on the fourth postoperative day.

### Table 1

<table>
<thead>
<tr>
<th>Reference</th>
<th>Site of perforation</th>
<th>Time to recognition</th>
<th>Time to endoscopic surgery</th>
<th>Procedure</th>
<th>Discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yoshikane et al. 1997</td>
<td>Descending colon</td>
<td>Immediate</td>
<td>Promptly</td>
<td>Endoclipping</td>
<td>14 days</td>
</tr>
<tr>
<td>Mana et al. 2001</td>
<td>Sigmoid colon</td>
<td>Immediate</td>
<td>Promptly</td>
<td>Endoclipping</td>
<td>&gt; 1 week</td>
</tr>
<tr>
<td>Dhalla 2004</td>
<td>Cecum</td>
<td>Immediate</td>
<td>Promptly</td>
<td>Endoclipping</td>
<td>Not described</td>
</tr>
<tr>
<td>Barbagallo et al. 2007</td>
<td>Right flexure</td>
<td>Immediate</td>
<td>Promptly</td>
<td>Endoclipping and laparoscopic repair</td>
<td>8 days</td>
</tr>
<tr>
<td>Senadhi et al. (December 2007; current report)</td>
<td>Sigmoid colon</td>
<td>Immediate</td>
<td>&lt; 12 h for endoscopic and laparoscopic repair</td>
<td>Endoclipping and laparoscopic repair</td>
<td>4 days</td>
</tr>
</tbody>
</table>

Competing interests: None

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