Colorectal Anastomoses with the EEA Stapler

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From March, 1979 to November, 1980, a total of 100 consecutive patients underwent a left colectomy (45 patients) or an anterior sigmoidorectal resection (55 patients) for carcinoma (77 patients), diverticulitis (21 patients), or chronic sigmoid volvulus (2 patients). The colorectal anastomoses were fashioned by means of the EEA stapler. After rectal resections for cancer, the height of the sutures ranged from 11 to 2 cm from the anal margin. Seventeen of these anastomoses would have been difficult, and 7 quite impossible, without the stapling gun. There was no operative mortality and the morbidity was low. Eleven anastomotic leaks occurred, in many cases detected only by the x-ray controls; there were no significant early or late consequences, except for 1 patient. Clinical and radiological survey confirmed the reliability of the results in most patients. It is concluded from this retrospective analysis that the EEA enables safe sutures and very low colorectal anastomoses to be constructed.

Materials and Methods

From March, 1979 to November, 1980, a total of 100 consecutive patients underwent a sigmoidorectal resection (55 patients), or a left colectomy (45 patients) for cancer, diverticulitis or sigmoid volvulus (Table 1). The colorectal anastomoses lying at 14 cm or less from the anal margin were fashioned by means of the EEA stapler.

The mean age of the 50 male and 50 female patients was 62 years (range, 28–87 years). Nine patients were more than 80 years old; 20 suffered from cardiovascular and/or respiratory disease. The preoperative bowel preparation consisted of dietary restriction, a mechanical cleansing of the colon, and a 72-hour antibiotic regimen of kanamycin and metronidazole.

The patients were placed in the lithotomy position, with moderate abduction and flexion of the hips. A routine perioperative injection of clindamycin and tobramycin was administered.

The EEA, inserted through the anus, was loaded with the broad cartridge in 71 patients, with the intermediate in 28, and with the smallest in 1 patient. After resection for rectal cancer of the lower (7 patients), middle (19 patients), or upper third (21 patients), the height of the anastomoses varied from 11 to 2 cm from the anal verge (Fig. 1). The margins...
Table 1. Colorectal anastomoses with the EEA stapler: Pathologic features and surgical procedures.

<table>
<thead>
<tr>
<th>Indication</th>
<th>Left hemicolectomy resection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diverticulitis of the sigmoid</td>
<td>13</td>
</tr>
<tr>
<td>Carcinoma</td>
<td>30</td>
</tr>
<tr>
<td>Volvulus</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>45</td>
</tr>
</tbody>
</table>

Table 2. Operative morbidity.

<table>
<thead>
<tr>
<th>Indication</th>
<th>No. of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gastric stasis (more than 3 days)</td>
<td>4</td>
</tr>
<tr>
<td>Fever, high white blood cell count, diarrhea</td>
<td>9</td>
</tr>
<tr>
<td>Fecal fistula</td>
<td>1</td>
</tr>
<tr>
<td>Rectal bleeding</td>
<td>1</td>
</tr>
<tr>
<td>Wound disruption</td>
<td>1</td>
</tr>
<tr>
<td>Reversible cardiac failure</td>
<td>1</td>
</tr>
<tr>
<td>Wound abscess</td>
<td>1</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>1</td>
</tr>
<tr>
<td>Catheter-induced septicemia</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>21</td>
</tr>
</tbody>
</table>

Table 3. Anastomotic leaks detected by the early x-ray controls.

<table>
<thead>
<tr>
<th>Indication for radiographic study</th>
<th>No. of patients</th>
<th>No. of leaks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routine examination</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Signs of sepsis</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>Before colostomy closure</td>
<td>14</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 4. Clinical appraisal after low colorectal anastomosis (7 cm or less from the anal verge) (n = 29).

<table>
<thead>
<tr>
<th>Clinical appraisal</th>
<th>No. of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>No or slight complaints</td>
<td>23</td>
</tr>
<tr>
<td>Major problems</td>
<td>1</td>
</tr>
<tr>
<td>Not available for follow-up</td>
<td>3</td>
</tr>
<tr>
<td>Rectal amputation for recurrence</td>
<td>2</td>
</tr>
</tbody>
</table>

Results

No operative mortality was observed. Only 1 patient died, 5 weeks after colectomy, of acute leukemia. All the other patients did well when discharged from the hospital. The postoperative course was uneventful in most cases (Table 2). The overall infection rate, including both superficial and deep sepsis, was low. All the complications resolved spontaneously or responded satisfactorily to conservative therapy. In 1 instance of wound disruption, reoperation was necessary. Fifty-nine of 69 bacteriological samples from the abdominal wall at the time of the closure were sterile. Eleven patients had a proven anastomotic leak.

There was only 1 fecal fistula (dried up in 4 days); 10 dehiscences, most often minimal, were detected on the early radiographic studies (less than 6 weeks after the anastomosis) (Table 3). No reoperation...