TECHNIQUE

Cholecystoduodenoplasty for high-output duodenal fistula

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External duodenal fistulae from sutured duodenal ulcer perforation sites are difficult to manage and most patients succumb to septicemia and undernutrition. This is due to failure of closure of the perforation site in the duodenum. Most techniques described in the past to facilitate closure have failed to give satisfactory results. We have devised a new procedure where the duodenal ulcer perforation is closed by mobilizing the gall bladder. A hole is made in the fundus of the gall bladder and it is anastomosed to the freshened edges of the duodenal opening. We have treated six patients by this technique. In five patients the leak was satisfactorily sealed. Three patients died – one due to persistent leak and two due to jejunostomy leak. [Indian J Gastroenterol 2001;20:107-108]

Key words: Duodenal ulcer perforation

Leak from sutured duodenal ulcer perforation is difficult to manage because of failure of the perforation to close. Such patients succumb to undernutrition and septicemic complications. Methods described in the past for the management of such patients have not given satisfactory results.1,2 We have devised a new method of closing the perforation by using the gall bladder (cholecystoduodenoplasty).

Technique

All 27 patients with duodenal ulcer perforation suturing done over the period January 1996 to October 2000, who developed leak from the sutured site, were included in this retrospective analysis. The last six patients had undergone the new procedure. The duodenal fistula output in these patients was 700-1200 mL/day. Since the patients were in morbid state, they were given naso-jejunocolic feeds or hyperalimentation and parenteral nutrition for up to 2 weeks prior to surgery.

Through a right subcostal incision the perforation was identified after separating adhesions around the duodenum, and its edges freshened. The gall bladder was mobilized without damaging the cystic artery and duct. A hole was made in the fundus of the gall bladder of the same size and apposing the duodenal ulcer perforation. A side-to-side full-thickness anastomosis was done (Fig) between the hole in the gall bladder and the perforation by using 2/0 nonabsorbable silk or number 80

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Table: Comparison of results of new technique (n=6) and other methods used (n=21)

<table>
<thead>
<tr>
<th>Operation</th>
<th>No. of cases</th>
<th>Effective closure of perforation</th>
<th>No. of deaths</th>
<th>Cause of death</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resuturing with jejunostomy</td>
<td>16</td>
<td>0</td>
<td>16</td>
<td>Re-leak from perforation leading to sepsisemia</td>
</tr>
<tr>
<td>3 tubes method</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>Re-leak from perforation leading to sepsisemia</td>
</tr>
<tr>
<td>Jejunal patch</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>Re-leak from perforation</td>
</tr>
<tr>
<td>'T' tube duodenostomy</td>
<td>6</td>
<td>5</td>
<td>3</td>
<td>Jejunostomy leak (2), perforation leak (1)</td>
</tr>
</tbody>
</table>

Since the jejunal wall is already inflamed, there are high chances of cut-through and leak. The bowel is totally adherent, so it is difficult to mobilize the loop of jejunum.

The advantages of cholecystoduodenoplasty include the following:

- After mobilization of the gall bladder from the liver fossa it falls on the duodenum perforation site and there is no tension over the suture line; this avoids cut-through of the stitches and hence the chances of leak from the site are less.
- It involves full-thickness suturing of the edges of the perforation and the opening in the gall bladder, and hence the stitch grip is firm.
- There is minimal dissection around the duodenum.
- The chances of healing are better since the vascular supply is intact.
- Cholangitis is unlikely to occur as the cystic duct gets blocked due to inflammation.

Our technique can naturally not to be used if the gall bladder is contracted or if the patient had earlier undergone cholecystectomy.

Discussion
Techniques described in the past for the management of leak from sutured duodenal ulcer perforation have not given satisfactory results. Rose recommended parenteral nutrition and draining of the leak site whilst waiting for spontaneous closure of the fistula. This requires prolonged hospitalization and is only helpful in small perforations without much peritoneal contamination. Another method used is primary closure with jejunostomy but this has high chances of re-leak because the tissues are already inflamed and sutures are under tension; there is also the risk of leak from the jejunostomy site.

For bigger perforations, Stamm’s gastroectomy or Billroth II gastroectomy have been done; these are major operations and leave behind the perforation, which has to be managed with tube duodenostomy. These procedures also have high chances of leak and prolonged hospitalization.

Jejunal patch has been used to close these leaks.2 4

References

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