SURGERY FOR TYPHOID PERFORATION OF ILEUM

Irshad Waheed and Khalid Ahmed

Abstract

Typhoid fever and salmonella infections continue to be a major problem in developing countries like Pakistan. The usual method of spread is infected water and food. Lack of proper sanitation plays a big role in the propagation of this disease.

Typhoid fever can lead to the dreaded complication of perforation of the ileum at the sites of the involved Peyer’s patches. This dangerous development has a very high morbidity and mortality unless properly treated with early surgery. The mortality rate approaches 40% in some publications worldwide.

In this article, the various surgical methods available for early management of perforation are reviewed. It is concluded that early intervention is the key to reducing the mortality and morbidity of this complication.

Key Words

Typhoid Perforation, Ileum

Introduction

Typhoid perforation continues to be a threat especially in children and young adults in developing countries with an estimated annual incidence of 540/100,000, and in addition to prevention, measures such as improved sanitation and the provision of safe water supplies, public enlightenment is necessary to ensure early presentation and improved survival. Probably one of the most lethal complications of typhoid is ileal perforation which affects especially young men and is a cause of high morbidity and mortality in endemic areas.

With early diagnosis, effective resuscitation and timely intervention, this life threatening condition may not be necessarily fatal. The overall frequency of intestinal perforation in typhoid fever is 3% with an overall mortality rate of 39.6% during information obtained on a total no of 1990 cases of typhoid perforation in 66,157 patient of typhoid fever published in 52 reports all over the world.

Indication of Surgery

The diagnosis of typhoid perforation should be made on physical examination and surgery is preferable to medical treatment. The duration of symptom ranges from 4-28 days with a mean of 11.3 days and mortality increases with longer duration of symptoms.

The fever, headache and generalized abdominal pain are the major complaints of typhoid fever. The preoperative investigation including Hb, widal test and x-ray abdomen (erect and supine) should be done in all patients and it should be remembered that negative widal test or absence of gas under the diaphragm does not rule out the presence of perforation.

General and physical examination showed that majority of patients are toxic, pale, and dehydrated with coated tongue. Abdominal examination revealed various degree of distention, tenderness, rigidity and ileus. Late presentation and delay in operation are associated with high mortality and high risk of faecal fistulas while early presentation is associated with the development of other complications.
Need for adequate resuscitation result in delay before operation which affects the outcome adversely.

**SYMPTOMS N=76**

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>No. of Patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever</td>
<td>76</td>
<td>100</td>
</tr>
<tr>
<td>Pain</td>
<td>58</td>
<td>76.31</td>
</tr>
<tr>
<td>Vomiting</td>
<td>47</td>
<td>61.84</td>
</tr>
<tr>
<td>Diarrhoea</td>
<td>26</td>
<td>34.21</td>
</tr>
<tr>
<td>Bleeding per rectum</td>
<td>8</td>
<td>10.52</td>
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</table>

**SIGNS ON ABDOMINAL EXAMINATION N=76**

<table>
<thead>
<tr>
<th>Sign</th>
<th>No. of Patients</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Abdominal distention</td>
<td>39</td>
<td>51.3</td>
</tr>
<tr>
<td>Rigidity</td>
<td>56</td>
<td>73.68</td>
</tr>
<tr>
<td>Tenderness</td>
<td>58</td>
<td>76.31</td>
</tr>
<tr>
<td>Ileus</td>
<td>22</td>
<td>29</td>
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</table>

**INVESTIGATION RESULTS N=76**

<table>
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<th>Investigation</th>
<th>No. of Patients</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Hb&lt;9 gm/dl</td>
<td>29</td>
<td>38.15</td>
</tr>
<tr>
<td>Leukopenia</td>
<td>19</td>
<td>25</td>
</tr>
<tr>
<td>Widal positive</td>
<td>71</td>
<td>93.42</td>
</tr>
<tr>
<td>Widal negative</td>
<td>5</td>
<td>6.27</td>
</tr>
<tr>
<td>Urea&gt;60 mg/dl</td>
<td>4</td>
<td>5.26</td>
</tr>
<tr>
<td>Gas under diaphragm</td>
<td>45</td>
<td>59.21</td>
</tr>
<tr>
<td>No gas under diaphragm</td>
<td>22</td>
<td>28.4</td>
</tr>
</tbody>
</table>

**Types of Surgery**

Various centres described their own experience of surgery in typhoid ileal perforation. The three most common operation for this condition are:

- Simple closure of the perforation
- Wedge excision and anastomosis
- Segmental resection and end to end anastomosis

**Some other surgical methods includes**

- Primary exteriorization of perforation as temporary ileostomy.
- Ileotransverse anastomosis with closure of perforation.

The determining factors for choosing appropriate operative procedure are general condition of patient, type of perforation, site of perforation and number of perforations. Many surgical options have been used ranging from simple peritoneal drainage under local anaesthesia in moribund patients. Excision of the edge of the ileal perforation and simple transverse closure either in a single layer or in two layer have been wide practiced. Two-layer closure of perforation with or without an omental patch has been most successful.

A swift effective procedure aimed to halt contamination and remove the collection is achieved by laprotomy, excision, simple closure of perforation, peritoneal irrigation and closure of abdominal wall. Closure of perforation was the method of treatment in a study along with closure of perforation with side to side ileotransverse anastomosis and most severe post operative complication following simple closure was faecal fistula causing death in all patients and 25% mortality in those treated by this...
technique. On the other hand no fistula found following closure of the perforation with side to side ileotransverse anastomosis leading to much lower mortality i.e. 6.22%. In this series closure of perforation with side to side ileotransverse anastomosis was the better technique between the two.

In another series a total of 64 patients with typhoid perforation were treated by one of the three operation (simple closure, wedge excision and anastomosis or segmental resection and anastomosis or segmental resection and anastomosis). The management protocol remains the same for three groups. The risk of reperforation and mortality rate were highest i.e. 2 & 13 of 21 respectively in patients who had wedge excision and lowest i.e. 0 & 9 of 25 patients respectively in those who had segmental resection. The risk of reperforation and mortality rate were zero and nine of 18 respectively in the simple closure group. Therefore segmental resection seems to be the best treatment for typhoid perforation and is recommended for surgeons. But in another series of TPI early surgical intervention with simple closure of the perforation in two layers found to have good result with negligible mortality and they recommend this procedure as it is easy to perform and can be carried out, even by trainee surgeon.

**Postoperative Care**

Post-operative care of such patients includes nil by mouth, Ryles tube and suction for 3-5 days, intravenous fluids and antibiotics. Patient may be put on partial or total parenteral nutrition depending upon condition of patient and operative findings.

**Complications**

The most common complication of surgery for TPI is reperforation and wound infection while the most serious complication is faecal fistula while other intermediate complications are mechanical intestinal obstruction secondary to adhesions, abdominal wound dehiscence, and residual intra abdominal abscesses. Faecal fistula is the most severe complication following simple closure of the perforation causing death in all such patients. Analysis shows that the duration of symptoms has very strong influence on the incidence of faecal fistula and mortality rate.

Multiple perforations strongly favour the development of faecalfistula while wound dehiscence and residual intrabdominal abscess are associated with wound infection and commonly seen in patients having single perforation with moderate peritoneal contamination. These postoperative complications adversely affects the morbidity and mortality rates of these severely ill and debilitated patients as well as seriously affects each other. Wound infection adversely affects the presence of residual intrabdominal abscess and faecal fistula, the incidence of residual intrabdominal abscess is enhanced by presence of faecal fistula. Presence of wound infection contributes to wound dehiscence and faecal fistula has significant effect on mortality.

Multiple perforation and severe peritoneal contamination associated with very poor prognosis with high incidence of mortality. It is now universally accepted that the treatment of typhoid perforation must be surgical. Adequate resuscitation, correction of electrolyte disturbances, appropriate antibiotic therapy and surgery have proven essential for a successful outcome.

**Mortality Rates**

Late presentation at more than seven days is associated with high mortality. Postoperative complication adversely affects the morbidity and mortality rates of these patients with a surgery for TPI. Morbidity and mortality is also directly proportional to the operative findings, peritoneal contamination and choice of surgical procedure as presence of multiple perforation and severe peritoneal contamination was associated with a mortality rate of 28%. The mortality rates were highest i.e. 13 out of 21 in patients who had wedge excision and lowest 9 out of 25 in those who had segmental resection. Faecal fistula is most common after simple closure causing death in all patients leading to 25% mortality as compared to 6.22% mortality rates following closure of perforation with side to side ileotransverse anastomosis. In a study closure of the perforation found to have negligible mortality.

Surgical intervention not only sharply reduced mortality rates from 70-100% to about 30% but also surgical intervention has further improved the prognosis as documented in previous studies. In conclusion, typhoid ileal perforation still has a poor prognosis with high morbidity and mortality. Late presentation, delayed operation, multiple perforations, severe peritoneal contamination, and post-operative faecal fistula are factors that have an adverse effect on mortality. Most deaths were
during the early post-operative period, with survivors having a prolonged hospital stay.

Conclusion

From the review of material it is evident that the incidence of this potentially serious complication of typhoid fever has been decreased because of the early presentation of patient with early diagnosis, better resuscitation and excellent antibiotic availability. The choice of surgery for the typhoid perforation of ileum is segmental resection and end to end anastomosis with irrigation of peritoneal cavity as this has the lowest morbidity and mortality as compared to other surgical option available i.e. simple closure of perforation and wedge excision and anastomosis. The most common postoperative complication is reperforation, wound infection and wound dehiscence while the most serious complication is development of faecal fistula.

These post operative complications depends upon the duration of symptoms, No and site of perforation and degree of peritoneal contamination as well as on the surgical option adopted to deal with the perforation. The faecal fistula is more common in patients who presents late, have multiple perforations with severe peritoneal contamination leading to higher mortality rates, on the other hand regarding the surgical option the incidence of faecal fistula is high in patients treated with simple closure of perforation. Patients who present early have single perforation and moderate peritoneal contamination shows less severe complications such as wound infection, wound dehiscence and residual intra-abdominal abscesses which in long term may lead to intestinal obstruction secondary to adhesions. Therefore the best approach for typhoid ileal perforation is early diagnosis, effective resuscitation and early surgical intervention with segmental resection of ileum and end to end anastomosis.

Bibliography


