The Results of Surgery for Bronchiectasis

Geoffrey L. Brinkman
Hannes Pauli

Follow this and additional works at: https://scholarlycommons.henryford.com/hfhmedjournal

Part of the Life Sciences Commons, Medical Specialties Commons, and the Public Health Commons

Recommended Citation
Available at: https://scholarlycommons.henryford.com/hfhmedjournal/vol6/iss4/4

This Part I is brought to you for free and open access by Henry Ford Health System Scholarly Commons. It has been accepted for inclusion in Henry Ford Hospital Medical Journal by an authorized editor of Henry Ford Health System Scholarly Commons.
THE RESULTS OF SURGERY FOR BRONCHIECTASIS

GEOFFREY L. BRINKMAN, M.D.* AND HANNES PAULI, M.D.*

The past 20 years have seen a great change in bronchiectasis, both in its clinical picture and in its treatment. The more frequent use of bronchoscopy and bronchograms has resulted in diagnosis at a much earlier stage, while the introduction of antibiotics has greatly improved the medical management. It is timely therefore to review the results of resection in order to better define those cases which are most suitable for radical therapy.

All cases of proven bronchiectasis seen at this hospital between 1946 through 1955 were reviewed. There were 110 such cases of which 53 underwent resection. The remaining 57 patients were unsuitable for surgery, either because of their age or because of the extent of their disease. Most of these non-operated patients have been lost to follow-up, but of the surgically treated patients, 100% follow-up has been obtained 1 to 11 years postoperatively. There were 13 males and 40 females whose ages range from 18 to 55, with the exception of one 10 year old girl.

RESULTS

Nineteen of the patients had bilateral disease but in only 2 patients was bilateral resection undertaken. Neither was benefited. One continues with as much cough and sputum as preoperatively, while the other is a respiratory cripple and is in congestive heart failure.

Although there were no immediate postoperative deaths, 2 patients have died. One death was due to infectious hepatitis 4 years postoperatively and the other occurred 2 years after lobectomy in a patient with bilateral disease who had recurrent infections and died in congestive failure.

Lobectomy or multiple segmental resection was the usual procedure, but pneumonectomy was carried out on 3 occasions. Two of these patients have done well but the third died of hepatitis as noted above.

<table>
<thead>
<tr>
<th>Degree of Improvement</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>21</td>
<td>40</td>
</tr>
<tr>
<td>Moderate</td>
<td>14</td>
<td>26</td>
</tr>
<tr>
<td>Unchanged or dead</td>
<td>18</td>
<td>34</td>
</tr>
</tbody>
</table>

53

100

The present condition of those bronchiectatic patients treated by lung resection at Henry Ford Hospital from 1946 through 1955.

*Pulmonary Division.
Surgery for Bronchiectasis

Those individuals who were completely relieved of their symptoms were regarded as having an excellent result, while those who were significantly benefited but continued to have some daily cough and sputum were regarded as moderately improved. Using these criteria, follow-up examination, as reported in Table I, shows that 35 (66%) of the patients were improved. Nineteen patients with bilateral disease had unilateral resection, and only 8 (42%) of these patients were benefited (Table II).

<table>
<thead>
<tr>
<th>Degree of Improvement</th>
<th>No. of Patients</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Moderate</td>
<td>7</td>
<td>37</td>
</tr>
<tr>
<td>Unchanged</td>
<td>11</td>
<td>58</td>
</tr>
</tbody>
</table>

The results of unilateral resection in patients with bilateral bronchiectasis.

DISCUSSION

Failure to improve after resection is usually due to one or more of the following factors:

1) Inadequate preoperative selection of patients.
   a) Pulmonary insufficiency.
      Thirteen of our patients complained of increased shortness of breath following operation; none showed improved exercise tolerance. In view of this, it is unwise to undertake resection if the patient already has significant pulmonary disability. The only exception to this generalization is when the circulation is maintained through a non-ventilating bronchiectatic lobe, resulting in a physiological venous-arterial shunt. Resection in this case will remove the shunt, and the arterial oxygen saturation will improve with consequent benefit to the patient.

   b) Severe non-pulmonary disease.
      The patient's general health may mitigate against operation. Two specific conditions which may present with the clinical picture of bronchiectasis are agammaglobulinemia and fibrocystic disease of the pancreas. Both are common in childhood but occasionally present in young adults, and so should always be considered in the differential diagnosis. Either condition would be an absolute contraindication to surgery.

   c) Age.
      Postoperative cooperation is difficult to obtain in children, so that retention of secretions with resulting atelectasis is more common. Such postoperative complications have a deleterious effect. At the other end of the lifespan, cooperation may be equally unsatisfactory, and combined with the degenerative processes of aging, this will adversely affect the results, as was demonstrated by Gudbjerg.

   d) Bronchitis.
      Clinically, the diagnosis of bronchitis depends on hearing wheezes or crepitant rales in non-bronchiectatic areas of the lung. A more accurate method of making
the diagnosis is by bronchoscopic examination of the mucosa. Unfortunately, many of our patients did not have bronchoscopy at the time of their preoperative bronchograms, but in those that did, bronchitis was recognized in 8 out of 19 patients. Three of these 8 patients were not improved by surgery, even though their bronchiectasis was totally removed.

Helm and Thompson also found bronchitis had an adverse effect. Of 32 patients diagnosed as having bronchitis preoperatively, none was improved by resection. Postoperative bronchograms in these same patients showed that 48% had developed further bronchiectasis.

e) Bilateral disease.

Incomplete removal of bronchiectasis cannot be expected to result in cure. It often fails even to achieve moderate symptomatic relief. In our own series, 56% of the patients were not benefited following partial removal of their bronchiectasis. Gudbjerg had a much higher mortality in this group with 13 of 32 such patients dying during a 5 year observation period. Seventeen of the 19 survivors developed further bronchiectasis.

2) Postoperative complications.

Ginsberg showed that in those patients with an unsatisfactory end result, postoperative complications occurred twice as frequently, and in these patients, retained secretion was the commonest and most serious single factor. In the Henry Ford Hospital series, of the 7 patients with unilateral disease who did not improve, 4 had a postoperative bronchopleural fistula, and in 3 of these empyema developed necessitating rib resection and drainage. Gudbjerg's experience also confirms that a poor result often follows postoperative atelectasis or empyema.

3) Recurrence of bronchiectasis.

Only 3 of our patients have had postoperative bronchograms and these were normal. Chesterman reviewed 273 patients who underwent lobectomy for bronchiectasis and found a recurrence rate of 9%, which he attributed mainly to postoperative atelectasis or infection. Twenty-four of 221 cases reported by Ginsberg had new bronchiectasis demonstrated postoperatively and in 62.5% of these postoperative complications had occurred.

In Helm and Thompson's series, 100 patients had postoperative bronchograms. Thirteen showed new bronchiectasis on the operated side, while a further 13 showed an extension of the bronchiectasis on the contralateral side.

Although resection remains the only curative therapy available, it is apparent from this discussion that the results cannot be guaranteed beforehand. There are now numerous reports in the literature (see Table III) which substantiate the unpredictable results of surgery.

CONCLUSIONS

Twenty years ago Perry and King reported that almost half of their patients with bronchiectasis died within 5 years of the onset of symptoms. About the same time,
Surgery for Bronchiectasis

Table III

<table>
<thead>
<tr>
<th>Author</th>
<th>No. of Patients</th>
<th>% Improved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lindskog</td>
<td>129</td>
<td>69</td>
</tr>
<tr>
<td>Ochsner</td>
<td>82</td>
<td>67</td>
</tr>
<tr>
<td>Ginsberg</td>
<td>213</td>
<td>76</td>
</tr>
<tr>
<td>Paterson</td>
<td>118</td>
<td>50</td>
</tr>
<tr>
<td>Gudbjerg (children)</td>
<td>163</td>
<td>76</td>
</tr>
<tr>
<td>Helm &amp; Thompson</td>
<td>52</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>159</td>
<td>61</td>
</tr>
</tbody>
</table>

The results of resection for bronchiectasis in several recently reported series (see References 1-7).

Bradshaw, Putney and Clerf\(^9\) reported the average duration of life after diagnosis was less than 2 years. In the past, chest infection and its complications were the major cause of death in these patients, but now the skillful use of antibiotics, along with postural drainage, will maintain many of these patients in satisfactory health. Wynn-Williams\(^11\) experience with 166 bronchiectatic patients clearly illustrates this change in prognosis. Over 3 years of observation, only 6 of the patients died, and while 3 of these deaths may be attributed to bronchiectasis, none died of infection or its complications. Scannel\(^12\) had a similar experience with 19 patients at the Massachusetts General Hospital who refused surgery and were therefore treated medically. None died of sepsis, although 4 died of massive pulmonary hemorrhage.

There is no doubt that bronchiectasis is now frequently diagnosed at a much earlier stage than it was 20 years ago, and the poor prognosis reported previously is no longer applicable. Medical therapy alone may adequately control many of these patients, and there is not the same urgency to resort to surgery.

SUMMARY

Postoperative results of 53 patients with bronchiectasis are reported. Approximately one-third of these patients were not benefited by lung resection. The reasons for this are discussed.

BIBLIOGRAPHY

Brinkman and Pauli