Limited Resection in the Treatment of Stage I Non-Small Cell Lung Cancer; An Overview

Robert J. Ginsberg, M.D., F.C.C.P.*

For over 50 years, pulmonary resection has been the accepted treatment for early stage lung cancer. Initially, pneumonectomy was advised as the treatment of choice, no matter the stage or location of the disease. With the advent of techniques of hilar dissection, lobectomy became a feasible alternative and for the past 30 years this procedure has been accepted as the treatment of choice in lung cancer when the site and stage of disease allows complete resection by this lung-preserving technique.¹

Lesser pulmonary resections (segmental resection, wedge resection) have been utilized as compromise operations in lung cancer patients with poor pulmonary reserve who could withstand a thoracotomy, but could not tolerate a lobectomy in the management of their disease. Both segmental and wedge resections have been used for this “compromise” operation.⁵ ⁷ Recent reports suggest a reasonable 5-year survival when utilizing lesser resection in a compromised individual, despite the fact that, in many cases, incomplete resections were performed and, in many instances, greater than T1N0 tumors were encountered (Table 1). The mortality and morbidity of these operations has been quite acceptable. Certainly, when no other operation is available, this type of compromise procedure can be recommended.

More recently, patients presenting with bilateral synchronous and metachronous primary tumors have been managed, on a selective basis, with standard pulmonary resections for one tumor and lesser resections for the contralateral one. This certainly has afforded a curative procedure in many individuals.⁸

Over the past 15 years, a few centers have adopted segmentectomy as the procedure of choice for the management of stage I bronchogenic carcinoma.⁴ ⁷ ⁸ ¹⁰ In the last 4 years, many of these centers have published their updated results (Table 2). In the 2 largest series⁹ ¹⁰ the survival rate has been comparable to that expected from standard lobectomy in the treatment of stage I carcinoma. Despite the fear that local recurrences would prove to be a major problem, neither of these series has demonstrated this to be the case. The postoperative mortality and morbidity from this lesser resection has certainly been acceptable.

In 1982, the North American Lung Cancer Study Group initiated a prospective trial of limited resection (segmentectomy or wedge resection) for the management of patients, staged at operation to have peripheral T1N0 lung cancers. Rigid criteria for acceptance into this protocol included: a peripheral tumor, without nodal involvement and not visible at bronchoscopy, measuring 3 cm or less on plain chest radiographs. In all cases, patients were able to tolerate lobectomy. Following intraoperative frozen section staging for T and N status, patients were then randomized to undergo standard lobectomy or lesser pulmonary resection (Fig 1).

Table 1—Results, Survival and Local Recurrence Rates in Recently Reported Series of Compromised Limited Resections

<table>
<thead>
<tr>
<th>Number of Pts</th>
<th>5 Yr Survival (%)</th>
<th>5 Yr Local Recurrence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jensik²</td>
<td>274</td>
<td>55%</td>
</tr>
<tr>
<td>Kulka³</td>
<td>107</td>
<td>60%</td>
</tr>
<tr>
<td>(18 mos)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kutschera¹</td>
<td>57</td>
<td>32%</td>
</tr>
<tr>
<td>Stair²</td>
<td>39</td>
<td>NS</td>
</tr>
</tbody>
</table>

Table 2—Results, Survival and Local Recurrence Rates in Recently Reported Series of Intentional Limited Resections

<table>
<thead>
<tr>
<th>Number of Pts</th>
<th>5 Yr Survival (%)</th>
<th>5 Yr Local Recurrence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bennett³</td>
<td>44</td>
<td>36</td>
</tr>
<tr>
<td>Jensik²</td>
<td>193</td>
<td>15 (est)</td>
</tr>
<tr>
<td>Kutschera¹</td>
<td>30</td>
<td>20</td>
</tr>
<tr>
<td>Wedge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Errett²</td>
<td>100</td>
<td>69</td>
</tr>
<tr>
<td>Hoffmann²</td>
<td>33</td>
<td>26</td>
</tr>
<tr>
<td>Miller²</td>
<td>22</td>
<td>84</td>
</tr>
<tr>
<td>(2 yr)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

At last reporting, of over 400 patients considered eligible for this limited resection trial, only about 50% were found at surgery to qualify for either wedge or segmental resection.¹¹ The reasons for patients requiring lobectomy without randomization included: location of tumor (50%), N1 or N2 disease (25%), greater than T1 tumor (13%) and other miscellaneous reasons (12%). An additional 9% of patients required completion lobectomy because of inadequate margins after the initial limited resection. Postoperative morbidity data show no significant difference in either 30-day mortality or morbidity between lesser resection and lobectomy. The incidence of local recurrence and ultimate survival rates in both arms awaits completion of the trial and maturation of the data.

Until the results of this prospective randomized trial are reported, no firm recommendation can be made as to the adequacy of limited pulmonary resection for peripheral T1N0 lung cancer when compared with standard lobectomy. Whether this type of resection can also be recommended for T2N0 tumors is unknown. Similarly, no comment can be made as to whether a large “adequate” wedge resection is

A RANDOMIZED COMPARATIVE TRIAL OF LOBECTOMY VERSUS LIMITED RESECTION FOR PATIENTS WITH CANCER OF THE LUNG

TINOMO Disease (Squamous, Adenocarcinoma and Large Cell)

SCHEMA

STRATIFICATION
1. Intended Resection (Wedge versus Segmental)
2. FEV1/FVC (≥75% versus <50%)

FIGURE 1. Schema of Lung Cancer Study Group Trial of lobectomy versus segmental resection in T1N0 lung cancer.
comparable to segmentectomy with regard to local recurrence rate and ultimate survival. Until the results of this Lung Cancer Study Group Trial are reported, surgeons should be cautious in recommending limited resection for patients suffering from lung cancer except in compromised individuals or those presenting with synchronous primary tumors.

REFERENCES
8 Jensik RJ, Faber LP, Kittle CF, Meng RL. Survival following resection for a second primary bronchogenic carcinoma. J Cardiovasc Surg 1981; 2:658-68
11 Ginsberg RJ for the Lung Cancer Study Group. Limited resection for peripheral T1N0 tumours. Lung Cancer 1988; 4: A80

Extended Operations for T3–T4 Primary Lung Cancers*

Indications and Results

P. Dartevelle, M.D.; J. Marselle, M.D.; A. Chapelier, M.D.; and F. Loché, M.D.

New surgical techniques allow resection of T3–T4 bronchogenic carcinomas involving adjacent structures, such as carina, superior vena cava (SVC), and thoracic inlet. Surgery remains the best treatment of such tumors, when compared to radiotherapy and chemotherapy; it provides relief of symptoms such as Pancoast syndrome, and may, in selected cases, lead to long-term disease free survival.

Tracheal Sleeve Pneumonecrotomy (Fig 1)

From 1966 to 1986, 55 patients underwent tracheal sleeve pneumonecotomy (53 right and 2 left) for bronchogenic carcinoma. Preoperative radiotherapy was given in only 5 patients. Tracheobronchial reconstruction was always performed through the same surgical approach. Tracheal sleeve pneumonecotomy alone was performed in 37 patients. In the other 18 it was extended to the vena cava (4), left atrium (4) and lateratracheal lymph nodes (12).

The overall operative death rate was 10.9% but no patient died since 1975 (32 patients); 7 patients had an empyema (12.7%), and 4 associated with bronchopleural fistula. In the postoperative course, 25 patients had radiotherapy, 5 of whom had additional chemotherapy.

The actuarial survival rate, after exclusion of the 6

*From the Department of Thoracic and Vascular Surgery, Heart Lung Transplantation, Marie Lannelongue Hospital, Plessis Robinion, France.

Reprint requests: Dr. Dartevelle, Association Marie-Lannelongue, 133 avenue de la Resistance, 93350 Le Plessis-Robinson, France.