Table 1—Errors of Predicted FVC and FEV₁ by LPT and Educated Guess

<table>
<thead>
<tr>
<th>Patient No.**</th>
<th>FVC (ml)</th>
<th>FEV₁ (ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LPT</td>
<td>EG</td>
</tr>
<tr>
<td>1</td>
<td>56</td>
<td>181</td>
</tr>
<tr>
<td>2</td>
<td>359</td>
<td>417</td>
</tr>
<tr>
<td>3</td>
<td>961</td>
<td>425</td>
</tr>
<tr>
<td>4</td>
<td>464</td>
<td>251</td>
</tr>
<tr>
<td>5</td>
<td>455</td>
<td>511</td>
</tr>
<tr>
<td>6</td>
<td>210</td>
<td>229</td>
</tr>
<tr>
<td>7</td>
<td>337</td>
<td>180</td>
</tr>
<tr>
<td>8</td>
<td>129</td>
<td>135</td>
</tr>
<tr>
<td>9</td>
<td>546</td>
<td>491</td>
</tr>
<tr>
<td>10</td>
<td>424</td>
<td>634</td>
</tr>
<tr>
<td>Mean</td>
<td>394</td>
<td>345</td>
</tr>
</tbody>
</table>

(Range) (56-961) (135-634) (1-953) (14-552)

*Error Absolute value of (predicted-postop)
**From Table 1 of Walkup’s article

cent, we can arrive at predictions for postoperative values. Table 1 shows the error of predictions for postoperative FVC and FEV₁ by the LPT and by the 40 percent rule of thumb method. The mean error and range for both FVC and FEV₁ by the educated guess (EG) method are superior to those obtained by the LPT.

I recognize that this educated guess could be called a lucky guess in applying it to a particular set of data. However, I have used the 40 percent rule for years and it has proved reasonably reliable.

The analysis of the LPT in Walkup’s article shows that from a statistical point of view, the LPT is fairly accurate when applied to a group of patients with mildly abnormal preoperative PFTs. However, good statistical results do not necessarily mean that the test is clinically useful.

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REFERENCES


To the Editor:

The letter of Dr. Cooper raises several important points. His first is concerned with our patient population. The purpose of our study was, as stated, to determine the accuracy of the lateral position test (LPT) in a prospective manner. Therefore, the test was performed on all patients scheduled for pulmonary resection regardless of their overall level of pulmonary function. Repeat testing postpneumonectomy established the accuracy of the predictive technique in these patients.

Dr. Cooper’s statement that the “accuracy” of the LPT decreases as matching of ventilation and perfusion become more abnormal is based on a previous study to which we referred in our abstract. We showed that the LPT only with the results of ventilation-perfusion scanning and was not a prospective study comparing predicted LPT values with actual postpneumonectomy values. Since the same group of patients undergoing LPT and ventilation-perfusion testing did not subsequently undergo pneumonectomy, one cannot state which technique more accurately reflected distribution of ventilation in that group of patients.

While the graphs accompanying this paper show the values to be roughly in the same range, the actual correlation between FEV₁ predicted and observed was 0.3 indicating only 9 percent of the variability was explainable by the lateral position test.

In contrast, the correlation between postoperative FEV₁ and preoperative FEV₁ is 0.7, explaining 49 percent of the variation. One would expect that since the lateral position test uses the preoperative values to obtain the postoperative estimates the correlation would be higher than with the preoperative values alone. This article, then, does not support the use of the lateral position test as a method of improving the prediction of postoperative values following pneumonectomy. The regression equation for postoperative FEV₁ is as follows: postoperative FEV₁ = \( \frac{1}{2} \times \text{preoperative FEV₁} \) + \( \frac{1}{2} \times \text{preoperative FEV₁} \). In simpler terms, this means that the postoperative FEV₁ is about half the preoperative value plus an amount associated with the mediastinal shift toward the operative side. Similar results are found with respect to the FVC. While the lateral position test has been shown to correlate rather well with radionuclide studies, the data by Walkup et al do not show enhanced predictability of postoperative values using the lateral position test over an estimate based on the preoperative values, and actually suggest that the opposite is true. The percentage of contralateral ventilation ranged from 47 to 65 percent in Walkup’s study. It is possible that in patients with more asymmetric lung function the LPT could be shown to give a better estimate than simple regression with preoperative values. However, in these instances surgery is often clearly impossible or felt quite safe based on auscultation, chest x-ray film findings and bronchoscopy.

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REFERENCE


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COMMUNICATIONS TO THE EDITOR
As to the variability of the tests in normal subjects reported by Jay et al. (see above) there are several differences between his healthy, nonsmoking normal volunteers (age 21-37) and our smoking lung carcinoma patients (aged 42-62). Their subjects were kept NPO for at least six hours and kept recumbent for 30 minutes prior to testing—neither of which we required. Further, their subjects were allowed to assume comfortable upper and lower extremity positions while we insisted our positions be more rigid with the dependent arm not allowed to support any portion of the chest wall and taking care that the entire lateral chest wall remained in contact with the stretcher as closely as possible in a 90° alignment with the horizontal during the lateral position portion of the test. The contributions of the above differences remain problematical, but may explain some of the discrepancy between the two series. Further studies along these lines would be of interest.

We appreciate Dr. Cooper's concern regarding the value of laboratory testing as opposed to the educated guess. Many other bedside techniques have been advocated in the past in order to assess operability. These include the patient's ability to climb a certain number of stairs and ability to blow out a match at a given distance. These tests do not reflect differential lung function which is the whole point of the LPT. Dr. Cooper's 40 percent rule, when applied to our particular group of patients who had an average value of 42 percent ventilation by LPT to the affected lung, resulted in good predictions of postoperative function. Application of the 40 percent rule to patients with nonuniform distribution of ventilatory function would obviously result in inaccurate predictions. We feel that to use a standard rule of thumb as the basis on which to deny a potentially life-saving procedure would be an erroneous approach.

Further studies on the reproducibility and accuracy of the LPT will help to clarify some of these issues. The final verdict, however, must rest on the ability of the test to predict postoperative function in patients undergoing resectional surgery rather than in comparisons of various tests and relating them to each other.

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Myocardial Revascularization Surgery in a Hemophiliac

To the Editor:

This is the first report of direct myocardial revascularization in a hemophiliac.

Case Report

A 51-year-old hemophiliac A had an abnormal exercise treadmill for ischemia and chest pain. His factor VIII level was 20 percent of normal. Coronary cinearteriography demonstrated severe double vessel coronary disease. Factor VIII cryoprecipitate (4,000 units) was administered two hours pre-catheterization, and every 12 hours for four doses. Factor VIII levels were maintained near 60 percent of normal. No hemostasis problems occurred. Despite medical management, his angina worsened. Angina decubitus occurred. Coronary cinearteriography demonstrated no disease progression. Factor VIII (2,000 units) was administered prior to and after the procedure. Myocardial revascularization was accomplished using four vein grafts. Factor VIII (2,000 units) was given three hours preoperatively. Factor VIII level rose from 29 to 51 percent of normal. Postoperatively, cryoprecipitate was given in 2,000 unit increments, at 1, 8, and 12 hours postoperatively; and every 12 hours for the next seven days. Factor VIII levels were maintained between 42 and 62 percent of normal. No hemostasis problems occurred. Results of an exercise treadmill test, six weeks postoperation were normal.

Discussion

The surgical management of a hemophiliac patient has been modified by factor VIII assays, and use of blood components. If factor VIII levels are maintained near 50 percent of normal in the postoperative patient, hemostasis complications are not encountered. In this patient, the factor VIII level was maintained between 40 and 60 percent of normal. The amount of factor VIII given was determined by the differential in desired and actual factor VIII levels multiplied by the patient’s plasma volume. This amount was transfused preoperatively, and every 12 hours postoperatively (the half-life of factor VIII is 12 hours). The cryoprecipitate was administered for one week to permit adequate healing of the chest incision, with awareness of the risk of hepatitis transmission. This approach was successful.

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