therefore, applied a student’s t test modified for unequal variances.

With respect to the site at which gastric pH was measured, you will appreciate that it was measured in the stomach wall, which was approached from the serosal surface. Neither gastric luminal pH or sensor drift were implicated. You commented on the slightly higher pH in the gastric tissue when compared with arterial blood pH. At present, we postulate that this is likely to be related to the relatively greater gastric bicarbonate concentration.

The methods for calibration of the pH and PCO2 sensors have been described in detail in earlier publications from our group.1,2 We share your interest in the PCO2 gradients between the arterial blood and the stomach wall and that is the subject of ongoing study in our laboratory. In an earlier study, we compared pH calculated from arterial bicarbonate to that calculated from gastric wall bicarbonate.3 The data does not support your hypothesis that the two are the same.

The potential clinical value of the tonometric technique is clearly not disputed. On the other hand, we have investigated and continue to investigate the extent to which tonometry, blood lactate, and other parameters are optional for the clinical settings for which they are to be used.

**REFERENCES**


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**Sputum Specimen Quality**

*To the Editor:*

It is often assumed that induced sputa are of higher quality, ie, less contamination by oropharyngeal flora, than noninduced expectorated specimens for microbiologic culture. Another assumption is that endotracheal aspirates are always of higher quality than expectorated specimens because aspiration bypasses the oropharynx.1 To test the validity of these assumptions, the quality of sputa was compared among specimens submitted from June 1992 to December 1993 (Table 1).

At our hospital, sputum for culture is submitted to the microbiology laboratory as expectorated, induced by updraft saline nebulization, catheter tickle, or endotracheal aspirate.2,3 Updraft induced specimens are collected by respiratory therapists and catheter induced specimens are collected by nurses. Good specimens had 10 or less squamous epithelial cells (SEC)/average 100 X microscopic field; fair specimens 11 to 19 SEC/field; poor specimens 20 or more SEC and 10 or more polymorphonuclear cells (PMNs)/field; and inadequate specimens 20 or more SEC and less than 10 PMNs/field.

The quality of endotracheal aspirates was significantly better than each of the other categories (p<0.00000, chi-square, df=1, alpha 0.05); however, there was no difference in quality among the other specimen types. In addition, a small proportion of endotracheal aspirates were poor-inadequate specimens. Although sputum induction may be an important method of yielding a specimen in a nonproductive patient or even of dislodging certain organisms from the smaller airways,2 induced specimens are not inherently of higher quality and are therefore as prone to oropharyngeal contamination as noninduced expectorated sputa.

**REFERENCES**

3 Flourney DJ, Davidson IJ. Sputum quality: can you tell by looking? Am J Infect Control 1993; 21:64-9

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**Lung Cancer Surgery Postoperative Complications**

*To the Editor:*

The attempts by Kearney and colleagues and Busch and colleagues in the March 1994 issue of *Chest*1,2 to further define preoperative pulmonary risk for thoracotomy and lung resection are appreciated. These reports, however, contain the same major shortcoming that is rampant in this preoperative literature, inconsistent definition of significant postoperative complications. Certainly, all of us would consider perioperative death, whether from pulmonary or other causes, a significant complication, and we would wish to exclude those patients at high risk from undergoing surgery. Unfortunately, no reported series is large enough to predict this complication with great sensitivity or specificity. As a result, we study other easily quantifiable complications such as pneumonia, atelectasis, bronchospasm, need for tracheostomy, mechanical ventilation greater than 2 days, etc. How many of these complications are really significant? For instance, if I knew my patient would develop a postoperative pneumonia and remain on a ventilator for 2 weeks, would I exclude the individual from surgery when after this 2-week period the patient could conceivably return to a fair quality of life? If a patient required three postoperative bronchoscopies for atelectasis, but then did well, would predicting atelectasis preoperatively really be important?

To truly make progress in ascertaining preoperative predictors for pulmonary patients, we first need to come to a consensus as to what are the significant outcomes. Besides mortality, other

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**Table 1—Comparison of Specimens**

<table>
<thead>
<tr>
<th>Specimen Type</th>
<th>Good-Fair (%)</th>
<th>Poor Inadequate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expectorated</td>
<td>1,837 (73)</td>
<td>678</td>
</tr>
<tr>
<td>Induced, updraft</td>
<td>281 (75)</td>
<td>94</td>
</tr>
<tr>
<td>Induced, catheter</td>
<td>215 (76)</td>
<td>69</td>
</tr>
<tr>
<td>Endotracheal aspirate</td>
<td>425 (95)</td>
<td>21</td>
</tr>
<tr>
<td>Total</td>
<td>2,758 (76)</td>
<td>862</td>
</tr>
</tbody>
</table>

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**References**

3 Flourney DJ, Davidson IJ. Sputum quality: can you tell by looking? Am J Infect Control 1993; 21:64-9

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