Does the Predicted Postoperative FEV₁ Formula Reflect the Real Value?

To the Editor:

I have just read the article by Beckles et al1 titled “The Physiologic Evaluation of Patients With Lung Cancer Being Considered for Resectional Surgery.” There was described a formula for calculating the percentage of predicted postoperative (ppo) FEV₁ after lobectomy: ppoFEV₁ = preoperative FEV₁ × (No. of segments remaining/total No. of segments). For lobectomy, there is a strong correlation between the postoperative FEV₁ expressed as percentage of predicted and the actual values when the calculation is made depending upon the number of segments to be removed at lobectomy. The calculation needs to be modified if any segments are obstructed²:

\[
\text{epo FEV}_1 = \text{pre-FEV}_1 \times \left(\frac{19 - a}{b}\right) / 19 - a
\]

where epo = estimated postoperative, and where a = the number of obstructed segments to be resected and b = the number of unobstructed segments to be resected, which can easily be determined by bronchoscopy.

In the first formula, the calculated ppo FEV₁ values are always almost 150 to 250 mL less than the values calculated by the second formula upon the existence of obstructed segments. In both situations, the preoperative FEV₁ values are the same. This condition is very important for the patients with borderline preoperative FEV₁ values. The patients who are accepted inoperable according to the first formula may indeed be in the operable group. For example, a patient is being planned to undergo left upper lobectomy: a = 2 and b = 3. Preoperative FEV₁ value is 1.6 L. According to the first formula, ppo FEV₁ = 1.184 L; according to the second formula, epo FEV₁ = 1.315 L. The difference is 134 mL. The obstructed segments to be resected do not have any contribution to the preoperative FEV₁. So, only the unobstructed segments to be removed should be taken into account while calculating the epo FEV₁. As a result, the first formula does not reflect the real value. In conclusion, the second formula should be used to calculate the percentage of ppo FEV₁ in order to give the chance of operability to the patients with borderline respiratory functions.

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REFERENCES

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