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Title: Diaphragm motion and lung function prediction in patients operated for lung cancer – A pilot study on 27 patients

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Body: Objectives: the influence of the diaphragm motion to the postoperative lung function prediction is unclear. Methods: Prospective study on 27 patients operated for lung cancer. Diaphragm movements were assessed radiographically and ultrasonography before the operation and on discharge. The relation between diaphragm movements and differences between ppo FEV1 and postoperative FEV1, was analysed by expressing diaphragm movements as preoperative diaphragm amplituides, preop.-postoperative amplitude differences or in relation to fixed intrathoracic distances. Results: The mean difference between preopeative and postop. diaphragm amplitudes of the diseased side was 2.42±1.25 cm and 2.11±2.04 cm when measured radiographically and by ultra sound respectively ($p > 0.05$). A positive correlation was found for the entire group only between the patients' height and the differences ppo FEV1 - actual FEV1: the prediction was more unprecise in taller patients. With the cut-off value of 550 ml for differences between ppo FEV1 and actual FEV1, a significant inverse correlation was found only if the preoperative ipsilateral diaphragm amplitude was presented as a percentage of the preoperative apex-base distance in inspiration. For right-sided tumours, the greater the difference between preoperative and postoperative ipsilateral diaphragm amplitudes, the greater discrepancy between predicted and actual postop. FEV1. For left-sided tumours, inverse correlation existed if the preoperative diaphragm amplitude was presented as a percentage of the preoperative distance apex-base. Conclusions: diaphragm movements influence the accuracy of the postoperative lung function prediction.