Measuring lung motion for better lung cancer treatment

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Video Byte

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Abstract

Lung phantoms are dynamic systems that simulate lung motion to predict tumor position for lung radiotherapy. These predictions make cancer radiotherapy more precise, as lung tumors move during breathing. Unfortunately, current lung motion phantoms don't account for complex motion and deformation of surrounding organs. Now, researchers at the University of Maryland, Baltimore, have developed a lung phantom that can produce complex and irregular motions by using a motion platform with two independently programmable linear actuators. The phantom provides reliable measurements of the tumor as well as surrounding organs at risk and can simulate variation in abdominal and thoracic engagement. While the new lung phantom can't fully reproduce human breathing, it comes pretty close. It is a valuable tool for evaluating motion management strategies in lung radiotherapy. Ranjbar et al. "A novel deformable lung phantom with programmably variable external and internal correlation." Medical Physics (2019)