

Stereotactic body radiotherapy is not replacing surgery in the treatment of early stage lung cancer yet

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Recently, an article entitled “Video-assisted thoracoscopic lobectomy versus stereotactic radiotherapy for stage I lung cancer” was published on the *Annals of Thoracic Surgery*. This is a retrospective comparison of video-assisted thoracoscopic surgery (VATS) lobectomy *vs.* stereotactic body radiotherapy (SBRT) in biopsy-proven clinical stage I non-small cell lung cancer (NSCLC) (1). The authors’ study showed that surgery was superior to SBRT in various aspects including overall survival (OS), cause-specific survival (CSS), recurrence-free survival (RFS), local control and distant control. SBRT as a treatment for early stage lung cancer has been a hot topic recently. Prior to this article, there had been several published studies claiming that SBRT was not inferior to or even better than surgery. The contention thus ensued between thoracic surgeons and radiation therapists could not be easily settled.

The controversial results of these studies were mainly caused by patient selection biases. The first selection bias was diagnosis. Some studies included patients that hadn’t been pathologically diagnosed in the SBRT arm. Therefore, comparison of survival or recurrence became futile. The second bias was extents of surgery. Some studies included different types of surgeries, ranging from wedge resection, segmentectomy, lobectomy, to pneumonectomy. Different patterns of surgery had different levels of risk of recurrence, morbidity and mortality. Including all sorts of surgeries in a study could only make the comparison less convincing. The

third bias was patient’s basic condition and comorbidities. In this study, for instance, before propensity score matching, patients in the SBRT group had a significantly older age than those in the surgery group. This reflected the fact that doctors tended to refer senile patients for radiotherapy rather than surgery. Similarly, patients with severe comorbidities were declined surgeries due to unacceptable postoperative mortality and morbidity. To include these patients in the surgery group for comparison, which was against normal practice, will inevitably increase mortality in the surgery arm. The fourth bias was quality control. As we know, stage I lung cancer had a favorable outcome. If a study revealed high mortality after surgery, it could only be bad practice or indiscreet patient selection.

Retrospective studies have their intrinsic limitations. The authors had done a good job in their study by meticulous propensity score matching. Various parameters such as age, gender, comorbidities, pretreatment pulmonary function and tumor characteristics had been matched to make the comparison credible. Nonetheless, no matter how elaborately designed, a retrospective study could not be as accurately reflecting the fact as a prospective study. There are always hidden biases to some degree. We still need a well designed prospective multi-center study to tell the patient as well as the doctors which treatment modality is optimal for early stage lung cancers, beware of the fact that different modalities suit patients with different characteristics.

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Footnote

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declare.

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