

The Future Is Bright Green

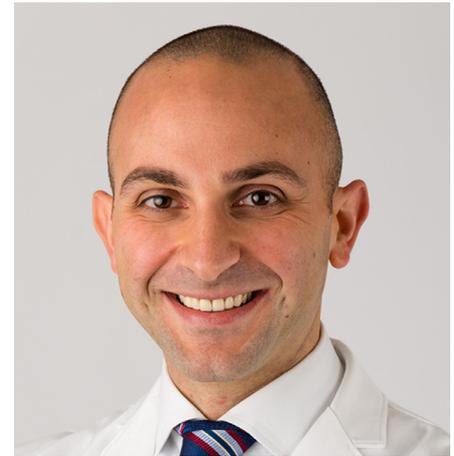


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In the era of low-dose computed tomography screening for lung cancer, complex segmental resections will soon become the norm rather than the exception. For small lung lesions, parenchymal sparing operations provide patients with the best respiratory outcomes, and allow them the opportunity to undergo a second- or third-lung resection in the future, when a metachronous lung cancer is diagnosed. However, complex segmental resections present some serious challenges: they are hard to teach, they are challenging when done minimally invasively, and the exact segmental location of the tumor is uncertain in most cases. If only there were adjuncts to video-assisted thoracoscopic surgery that can reveal the location of the tumor and provide an anatomical GPS map to it?

Turns out there might be. Sekine et al¹ present a very interesting prospective case series demonstrating the safety and feasibility of precise anatomical segmental resection using a 3D medical image analyzer and transbronchial instillation of ICG for NIF mapping. The authors demonstrate how preoperative mapping and navigational bronchoscopy can help localize the lesion preoperatively, and how intraoperative guidance with NIF can confirm its location and delineate intersegmental planes. Although the combination of 3D anatomical reconstruction and NIF-mapping has been previously published,² this is the only prospective series on the topic to date. Therefore, the authors have accomplished an uncommon feat in modern general thoracic surgery—a prospective Phase II trial. That alone is worthy of excitement.

There still is some work that needs to be done before this is ready for prime time. For example, the authors have chosen to exclude from analysis any patients where ICG was injected in the wrong bronchus. This is not an uncommon phenomenon, which causes spillage of ICG in neighboring nontarget segments, rendering mapping unreliable, and mandating a lobectomy. This leads to the next question about this work—Is this the work of one talented surgeon with a unique set of skills, or is this transferrable to a wide range of settings? Although proven safe, it is



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Central Message

In the very near future, targeted segmental resections will become the norm rather than the exception, and thoracic surgeons should be at the leading edge of this innovation.

still unknown whether this technique is feasible (success rates are not reported) or practically reproducible.

The future is bright green. Technological adjuncts to guided surgery need to be embraced and explored by surgeons. In the era of artificial intelligence and augmented reality, we are best suited to bring our craft to the next level.

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Conflicts of Interest: The author declares no conflicts of interest relating to this work.

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DOI of original article: <http://dx.doi.org/10.1053/j.semtcvs.2019.01.004>.