Planning resection of nonpalpable lung nodules: The importance of multidisciplinary care

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Central Message

A well-functioning multidisciplinary team leads to safe and effective management of patients with nonpalpable lung nodules requiring preoperative localization.

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With the wide clinical acceptance and, perhaps even more important, the willingness of payers to reimburse for lung cancer screening protocols for high-risk individuals, small but suspicious lung nodules are being increasingly identified in this population. Small lung nodules pose a particular challenge because of the inability of positron emission tomography to reliably provide useful information (particularly in areas with endemic granulomatous disease) and the reluctance of many patients to undergo watchful waiting when they may be “harboring a cancer.” Although the decision to observe versus intervene in these patients not only depends on their physiologic status and the anatomic location of the lesion but also is likely influenced by local practice patterns because prospective, comparative studies are unavailable to inform this decision. Undoubtedly, the surgical team’s perception of degree of anticipated difficulty in localizing these nodules intraoperatively influences the decision. In this regard, the study by Starnes and colleagues¹ is particularly relevant because it describes a reliable, reproducible, and safe method to guide minimally invasive surgical resection of small lung nodules likely to be undetectable via thoracoscopic visualization or palpation.

The last decade has seen the development and wider clinical application of both preoperative and intraoperative lung nodule localization techniques. The most sophisticated intraoperative technique is computed tomography, and this has been shown to be equivalent in efficacy, safety, and radiation exposure to preoperative localization techniques.² Intraoperative computed tomography allows the surgical team to avoid scheduling conflicts, but this technique requires the availability of a hybrid operating room and introduces the learning curve for a new approach. Alternatively, preoperative localization techniques involve injection of a dye or radiotracer into or around the nodule or the placement of a hook wire in the vicinity of the lesion. With increasing experience, radiologists involved in preoperative localization have arrived at the “just right” amounts for injection of dye or radiotracer, with too little associated with

failure to localize and too much leading to pleural spillage or the lack of precision. Preoperative methylene blue injection and hook wire insertion have been shown to be statistically equivalent for preoperative pulmonary nodule localization, but a significant risk of wire dislodgement, and a trend toward more frequent and severe complications with the hook wire makes it a less desirable technique.³ Yi and colleagues⁴ have recently summarized the literature that anecdotally describes systemic air embolism after wire localization. This complication, although rare and largely manageable with conservative measures, has been known to result in death and must be discussed in any decisions about nodule localization.

The article by Starnes and colleagues¹ highlights several important factors that led to their success with radiotracer localization of lung nodules with minimal morbidity. First, a dedicated team of radiologists, nuclear medicine physicians, and thoracic surgeons were consistently involved in the care of their patients. Second, a clear protocol was developed, amended as needed on the basis of experience accumulated, and reliably followed for the planning and conduct of these multistep procedures. Finally, the close attention to detail apparent in their article suggests an ongoing quality improvement process in which technical and clinical successes were continually monitored and modifiable factors, largely technical, were addressed. With an increasingly complex patient population, this

team approach is vital in ensuring an effective, collegial practice unit for disease management that requires multiple skillsets.

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