

Is in situ ablation of NSCLC in high-risk patients ready for prime time?

by David Ota, MD, FACS; and Heidi Nelson, MD, FACS

An important goal of the American College of Surgeons Oncology Group (ACOSOG) is to improve the care of the cancer patient by reducing treatment morbidity. To this end, ACOSOG is conducting a radiofrequency ablation (RFA) trial for nonsmall cell lung carcinoma (NSCLC) in patients who are poor candidates for surgical resection. This procedure has become feasible because the technology of ablation devices has improved significantly in the last decade. For example, monitoring the ablation temperature is now possible during the procedure.

Furthermore, screening computed tomography (CT) scans are more commonly done to detect early disease and smaller tumors are being identified. The imaging also allows assessment of the intrathoracic ablation zone and placement of the ablation instrument. Positron emission tomography (PET) imaging is available to assess residual and early recurrent disease after intrathoracic ablation has been performed. Lastly, RFA offers an opportunity to treat NSCLC in patients who are at high risk for postoperative complications following local resection. In many ways, RFA parallels

in situ ablation of malignant liver tumors, preserving liver function and avoiding major hepatic resections.

A major limitation and concern with in situ ablation of malignant tumors is the inability to pathologically assess the margin of the ablation zone. Although relatively smaller tumors are selected for ablation, methods to monitor the ablation zone and the heat-sink effect of adjacent large blood vessels can limit the ability to achieve a complete ablation. This result leads to residual disease and local recurrence.

For these reasons, patient selection is important, weighing the risks of operative resection versus residual disease after ablation. As ablation procedures develop for malignant solid tumors, there is a need for well-designed prospective clinical trials. Patient eligibility criteria, credentialing, and imaging methods to detect residual or recurrent disease are essential components of an ablation trial.

ACOSOG protocol Z4033, a pilot study of RFA in high-risk patients with stage IA NSCLC, addresses many of the issues regarding new ablation procedures for solid tumors. Patients who present with low

cardiopulmonary function are at high risk for complications after right lobectomy or sublobar resection. Such patients may not be eligible for radiation therapy, which can compromise already inadequate pulmonary function. This is a phase II, single-arm study. The primary endpoint is overall survival at two years. Local recurrence is defined as recurrence within the same lobe of hilum (N1 node) or progression at the ablated site after treatment effects have subsided.

Secondary objectives include the following: (a) assess regional or distant recurrence, (b) assess local recurrence in the ablated lobe, (c) determine the number of procedures deemed to be a technical success, (d) assess for procedure-specific morbidity and mortality, (e) assess the utility of immediate post-RFA PET scan in assessing local recurrence and overall survival, and (f) determine the effect of RFA on pulmonary function.

The trial will enroll 55 patients. Specific eligibility criteria are suspicious lung nodule for clinical stage I NSCLC, tumor size 3 cm or smaller by CT scan measurements, and one major criteria or two minor criteria from the following lists:

Major criteria:

- Forced expiratory volume in 1 second (FEV1) \leq 50%
- Diffusion capacity for carbon monoxide (DLCO) \leq 50%

Minor criteria:

- Age \geq 75 years
- FEV1 51 percent to 60 percent predicted
- DLCO 51 percent to 60 percent predicted
- Pulmonary hypertension
- Poor ventricular function (ejection fraction \leq 40%)
- Resting arterial pO₂ \leq 55 mmHg
- pCO₂ $>$ 45 mmHg
- Modified Medical Research Council dyspnea scale \geq 3

Final registration for Z4033 requires the following:

- Tumor must be biopsied before the final registration

- Tumor must be noncontiguous with vital structures such as trachea, esophagus, aorta, aortic arch branches, and heart and accessible via percutaneous transthoracic route

- Suspicious mediastinal nodes must be assessed with fine needle aspiration

There is a credentialing process defined in the protocol. All treating physicians must have performed at least 25 image-guided lung procedure biopsies and 10 RFA ablation procedures. Reimbursement for patient enrollment is \$2,500.

The trial is open to interventional radiologists and surgeons who meet these qualifications. Because of the limited enrollment as well as highly technical skills required for the procedure, the trial is open to 20 sites.

Z4033 is an excellent example of a prospective approach to study novel procedures. Multiple sites are necessary in order to assess the new procedure and reduce single institution bias. ACOSOG is committed to careful prospective studies of new procedures to determine if patient safety and cancer control are at risk. Our future trials will emphasize new procedures that reduce treatment morbidity.

Thoracic surgeons or interventional radiologists who are interested in participating in this trial should contact Isa Lamerton, Z4033 research coordinator, at isa.lamerton@duke.edu.

Dr. Ota and Dr. Nelson are ACOSOG Group Co-Chairs.

RAS to host quality initiatives symposium at Clinical Congress

Every year, during the College's annual Clinical Congress, the Resident and Associate Society (RAS) sponsors a symposium focusing on a timely topic targeted at surgical residents, young surgeons, and Fellows. This year's symposium, entitled Pay for Performance and Surgical Quality Initiatives: Will the Generalist and Surgical Training Survive in the New Paradigm?, will convene in New Orleans, LA, on Sunday, October 7, from 1:00 to 4:00 pm. The aim of the session is to examine surgical quality

initiatives and their potential impact on both resident training and the practice of surgery in the future.

ACS Secretary Courtney M. Townsend, Jr., MD, FACS, chairman of the department of surgery at the University of Texas Medical Branch in Galveston, will discuss pay for performance and its potential pitfalls from the "con" perspective. ACS Regent Barbara L. Bass, MD, FACS, chair of the department of surgery at Methodist Hospital in Houston, TX, will discuss pay for performance and its poten-

tial advantages for the patient and the surgeon from the "pro" perspective. Hari Nathan, MD, Chair of the Issues Committee of the RAS, will provide a resident's perspective on this topic. A representative from the Centers for Medicare & Medicaid Services will also participate on the panel.

Attendance is open to all RAS members, as well as students and Fellows. An open-microphone discussion will promote audience participation in the symposium.