

Esophageal Injury During Ablation of Atrial Fibrillation

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R. Christopher Jones, MD

The proponents of changing the name from the North American Society of Pacing and Electrophysiology (NASPE) to the Heart Rhythm Society (HRS) are being vindicated by the still growing and strong international presence at the Heart Rhythm 2005 Annual Scientific Sessions. This year's meeting was packed with great research and educational tutorials, presented by experts from around the world. Although the impact of the material in the late-breaking clinical trials is obvious, I will highlight one of the "sleeper" sessions that one might have missed in a casual review.

Avoiding Esophageal Injury

The increasing reports of left atrial-esophageal fistula as a rare complication of catheter ablation of atrial fibrillation (AF) have prompted a strong research effort by the electrophysiology community. In fact, a session at the HRS meeting, entitled "Catheter Ablation II: Prevention and Management of Complications," was composed entirely of abstracts that focused on the avoidance of esophageal injury.

The most compelling, and sobering, data were presented by Ms. Liane Teplitsky and colleagues^[1] at Duke University (Durham, North Carolina). Their study included 14 patients undergoing wide circumferential pulmonary vein isolation (PVI). A 8-mm catheter with a temperature control of 50°C to 52°C and peak energy of 30-65 W was used to create 1209 lesions. Radiofrequency (RF) was stopped if the luminal esophageal temperature (LET), as measured by an esophageal probe, increased by 2°C.

All of the patients experienced some increase in LET, and the rise was considered significant ($> .5^{\circ}\text{C}$) in 98 (8.1%) lesions. On average, the temperature recorded by the esophageal probe continued to increase for 17 seconds after the RF was stopped and 41 seconds were required for normalization of the temperature. Even more troubling was the poor correlation between LET and RF power and between LET and RF duration.

Andre D'Avila and colleagues^[2] (Hospital Pró-Cardíaco, Rio de Janeiro, Brazil) studied 22 patients undergoing PVI. Twenty-one of 22 patients had an increase in LET greater than 2°C. No correlation was seen between catheter temperature and LET, and only a weak correlation was seen between RF power and LET.

Yet a third group, this time led by Jennifer E. Cummings and colleagues^[3] (The Cleveland Clinic, Cleveland, Ohio), corroborated the poor association between RF power and LET in 81 patients undergoing PVI. Dr. Cummings also pointed out the variable position of the esophagus in their study, with the position being nearly equally distributed

between near the left pulmonary veins, near the right pulmonary veins, and near the midposterior wall.

In another study, Eric Good and colleagues^[4] (University of Michigan, Ann Arbor, Michigan) found that the esophagus migrated by more than 1 cm in 96% of the 15 patients who underwent left atrial catheter ablation for AF. These results may have sounded the death knell for preprocedure esophagus localization as a reasonable means for esophageal avoidance.

The overriding messages from this session were:

- RF energy applied in the left atrium heats the esophagus
- RF power, temperature, and duration are not well correlated with LET
- The esophagus moves and can be near any of the pulmonary veins

Oussama M. Wazni, MD (The Cleveland Clinic), co-chaired the session and was quick to point out that left atrial-esophageal fistula as a complication of AF ablation is a rare event. He added that none of the abstracts presented during the session reported a complication.

References

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