Proper precautionary measures can prevent thermal injury to esophagus during ablation of coronary sinus in patients with atrial fibrillation

Sanghamitra Mohanty
Chintan Trivedi
Domenico G Della Rocca
Carola Gianni
Ugur Canpolat
Bryan MacDonald
john D Burkhardt
javier sanchez
Patrick Hranitzky
G Gallinghouse
Amin Al-Ahmad
Rodney Horton
Mohammed Bassiouny
Luigi Di Biase
Andrea Natale

**Introduction**: Earlier studies have reported not just anatomic proximity but also direct contact with no intervening adipose tissue between the esophagus and the mid coronary sinus (CS) in a sizable proportion of AF patients. This close topographic relationship raises the risk of potential thermal injury to esophagus during application of radiofrequency energy in the CS. We evaluated the esophageal complications secondary to CS ablation in AF patients undergoing catheter ablation at our center.

**Methods**: Consecutive AF patients receiving CS ablation were included in the analysis. The endocardial ablation was performed using up to 40W power; duration of lesion at each ablation site was 5-10 sec and a contact force of <10g was used. Ablation was always started distally and the ablation catheter was continuously dragged back to the CS Os, making sure that the catheter tip was freely moving, to avoid steam pops. An esophageal probe was used to continuously monitor the luminal temperature; it was advanced while ablating the CS and if the temperature was seen to be rising fast and above 38–39°C, RF delivery was discontinued. Patients were followed up closely for all potential complications including any symptoms pertaining to esophageal injury.

**Result**: A total of 5337 patients (age 66.7±10.2, paroxysmal AF 28%, male 68.7%) receiving focal ablation/isolation of CS were included in the analysis. Cardioesophageal fistula was reported in 1 (1/5337, 0.02%) patient. In this particular case, inadvertently the esophageal probe was not advanced during the CS ablation and thus the temperature was not monitored accurately. Twelve days after the procedure, the patient presented with symptoms of fistula that was confirmed by CT scan. He received stent for closure of the fistula and recovered completely after 3 weeks of antibiotics and other supportive therapy. No other complications secondary to CS ablation (i.e. injury to the AV node evidenced by intra-procedural PR prolongation) were reported in the study population.

**Conclusion**: Thermal esophageal injury following CS ablation is rare even with high power ablation as long as the lesion duration is kept at 5-10 sec and continuous monitoring of the esophageal temperature is
diligently performed.