

Intra-Esophageal Temperature Monitoring during Balloon Cryoablation of the PV-LA Junction

Stephan B. danik, MD, Margaret Laragy, BS, Petr Neuzil, MD, Stepan Kralovec, No Degree, Jeremy N. Ruskin, MD and Vivek Y.. Reddy, MD. Massachusetts General Hospital, Boston, MA, Homolka Hospital, Prague, Czech Republic, Massachusetts General Hospital, Boston, MA

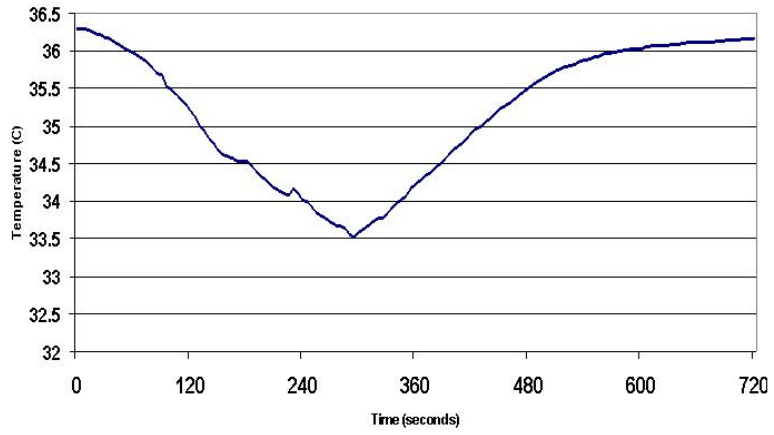
Background: Cryoablation for AF is thought to carry a decreased risk of PV stenosis and thromboembolism. However, it is unknown what the transmural effects are on the esophagus during delivery of cryoenergy to the PV ostia. The purpose of this study was to assess the changes in intraesophageal temperature during balloon cryoablation.

Methods: A 21 mm balloon was used in 8 patients, and a 28 mm balloon was used in 7 patients. An esophageal temperature probe was positioned at the level of the ablation catheter. The peak and nadir temperatures were recorded for each lesion (lesions < 60 secs were omitted). A temperature curve was documented in 50% of the ablations by recording the temperature drop in 5-sec intervals.

Results: The RIPV showed the greatest average and range of temperature drop (average: 2.17 °C; range: 37.35 - 21.36). Ablation of the RSPV and LCPV revealed the least temperature drop (RSPV average 0.341 °C; range: 37.03 - 34.31; and LCPV average 0.397 °C; range: 36.27-34.9°C). The LSPV had the second greatest average and range of temperature drop (average: 0.752 °C; range 38.81 - 33.52°C). The LIPV results are (average: 0.622 °C; range 37.14 - 33.75 °C).

Conclusion: Regardless of balloon size, the effects of cryothermal energy on the esophagus are most pronounced during RIPV ablation. Similar to “heat sink” in radiofrequency ablation, the temperature change continues to drop after the ablation is terminated, creating a “cold sink” phenomenon. Despite the observed temperature changes, there were no occurrences of atrial-esophageal fistulas or evidence of esophageal damage

Esophageal Temperature Drop in Subject 204 LSPV



Presented at the Heart Rhythm Scientific Sessions 2006, Boston, MA, May 17-20