

Esophageal protection in radiofrequency atrial fibrillation ablation using a modified high-power, short-duration technique: Preventing additive heating

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Introduction: Esophageal thermal lesions (ETL) remain an unresolved problem in radiofrequency (RF) ablation (ABI) of atrial fibrillation (AF), occurring in up to 40% of patients (PTS). High power and short duration (HPSD) do not appear to reduce this risk. A possible mechanism to justify this result is the phenomenon of additive heating (*aquecimento aditivo*)(AA) generated by adjacent lesions. **Methods:** The hypothesis was created that avoiding AA can prevent the occurrence of ETL in ABI due to RF using the HPSD technique in the treatment of AF. AB with HPSD point-to-point was used, guided by electro-anatomical mapping, in a protocol that established a minimum wait of 1 minute or a distance greater than 20mm to create adjacent lesions. Esophageal temperature (ET) monitoring was performed, but the elevation of ET did not determine the interruption of RF applications. Upper gastrointestinal endoscopy (EGD) was performed within the first 24 hours after AB. ETL were categorized according to the Kansas City classification (KCc). **Results:** The technique was used in 54 consecutive PTS. There were 38 men, mean age of 62 ± 11 years, BMI of 29 ± 4.6 , and 50 PTS without heart disease. 22 PTS had persistent AF and 22 associated atrial flutter. The indexed left atrial volume was 40 ± 11 mL-mL² and the left ventricular ejection fraction was 0.63 ± 0.09 . The pulmonary vein isolation time was 90 ± 27 minutes. The maximum esophageal temperature ranged from 35.7 to 45° C, mean of $38 \pm 2^\circ$ C. ETL occurred in 6 PTS (11%), 4 of which were KCc 1 and 1 KCc 2a. There was no occurrence of a fistula. Compared with 60 consecutive PTS undergoing ABI of AF with HPSD without using the technique, a 56% reduction in the incidence of ETL was observed. **Conclusion:** This pilot study indicates that the modified ABI technique with HPSD can significantly reduce the incidence of ETL.