was 60 seconds or until impedance rise occurred. Lesion dimensions were determined by stereomorphometric analysis.

Results: A total of 77 lesions were analyzed. Lesion volume increased with higher power from 40 to 60W (0.61 ± 0.08 cm³ vs. 1.01 ± 0.10 cm³, P = 0.006) (Figure). Beyond 50W, power duration was progressively limited by earlier impedance rise (Figure) and was associated with diminished lesion volume at 70W (0.71 ± 0.44 cm³; P = 0.04 vs 70W).

Conclusion: A dose-response relationship for chilled-tip RF ablation can be demonstrated in vivo, and lesion volume is maximized with RF power of 60W, a value substantially higher than that found with standard RF ablation.

**777-4 Relationship Between Fluoroscopy Duration, Ablation Target, and Success During Catheter Ablation Procedures**

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Radiation exposure is an important risk during ablation (abl) procedures. To determine the relationship between the target arrhythmia, fluoroscopy time (fluoro), and the success of abl procedures we analyzed data from 450 patients in the Atakr multicenter clinical study (217 F, 233 M, 38 ± 21 yrs). Target arrhythmias included AVNRT (154 pts), the AV junction (54 pts, AVJ), and 241 accessory pathway (APs). Results: Similar success was achieved during abl of APs, AVNRT, and the AVJ (93%, 98%, and 94% respectively, p > 0.1). In contrast, fluoro time was greater during abl of APs than during abl of AVNRT or the AVJ (62 ± 48, versus 31 ± 29 ± 36 ± 24 min, p < 0.05). Cumulative success of catheter abl of APs rose rapidly during the first 90 min of fluoro exposure and then plateaued. In contrast, cumulative success during abl of the AVJ and AVNRT plateaued after 40 and 70 min. Concl: Similar success can be achieved during abl of APs, AVNRT, and the AVJ, but greater fluoro is needed during abl of APs. Resultant radiation risk should be considered when determining an appropriate termination point.

**777-5 The Relationship Between Impedance and Temperature During Radiofrequency Ablation of Accessory Pathways**

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Temperature monitoring is a useful tool for radiofrequency (RF) ablation of accessory pathways (AP), but this technology is not universally available and is not suitable for some catheter designs. Impedance monitoring is also helpful and prior studies in humans have demonstrated that an impedance fall of 20 ohms is predictive of coagulum formation or a loss of AP conduction. The purpose of this study was to prospectively quantify the correlation between impedance and temperature during RF ablation of APs. Thirty-three consecutive patients, each with a single AP, underwent RF ablation using a thermistor ablation catheter. Temperature and impedance were continuously recorded during each RF application. The initial and final temperatures and impedance measurements for 319 applications of RF energy were analyzed. The initial and final impedance and temperature measurements were 109 ± 17 ohms and 102 ± 17 ohms (p < 0.0001), and 77 ± 1°C and 57 ± 1°C (p < 0.0001). Among the 319 applications of RF energy, 158 were associated with >20°C increase in tissue temperature. There were 10 applications of RF energy associated with coagulum formation. A >20°C increase in tissue temperature was observed in 84 of 104 applications associated with a >10 ohm decrease in impedance (81% positive predictive value and 93% negative predictive value). The mean change in impedance for applications associated with and without coagulum formation was −19 ± 7 ohms and −6 ± 6 ohms (p < 0.0001), respectively, and was never less than 12 ohms. In conclusion, successful tissue heating without coagulum formation can be achieved by titrating the power to achieve a 5–10 ohm decrement in impedance. Impedance decrements beyond 10 ohms increase the likelihood of excessive tissue heating and coagulum formation.

**777-6 Assessment of Radiofrequency Boiling and Thrombus Formation During Catheter Ablation by Transesophageal Echocardiography**

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Eighty-four patients (age 43 ± 28 years) suffering from refractory tachycardia underwent RF ablation: 48 patients with an accessory pathway (left side 29, right side 19), 24 patients with ventricular tachycardia (ischemic 13, idiopathic 11) and 12 with junctional tachycardia. Continuous transesophageal echocardiography (TEE) was performed during the procedure — mean duration 124 rain (48–212) — and RF was delivered with an average of 15 applications (1–35), energy of 31.2 Watts (20–40) and temperature of 68°C (47–84) during 48.6 min (20–66) with a heparin anticoagulation (ACT 2 × 3). TEE demonstrated a progressive micro-cavitations advent during 29% of the sessions (WPW: 69%; VT: 42%; junctional: 41%;), preceding with an average of 32 sec (10–66), a major rise of impedance (>200 Ω). No relationship was found between the micro-cavitations appearance and RF success, tip temperature, initial power and anticoagulation level. There is a correlation (r = 0.68 p < 0.05) between micro-cavitations and both impedance level (>120 Ω) and catheter endocardial-contact estimated by the injury current of the unipolar catheter recording (>8 mV). A charred thrombus was seen at the catheter tip in all cases when the catheter was withdrawal, micro-thrombus (<2 mm) at the echogenic bubbles appearance and macro-thrombus (>2 mm) when impedance increases. In the mean time, if micro-cavitations occur during a first application without or with a slight impedance rise, successive applications with the same catheter lead to an enhancement of echogenic bubbles and finally to the impedance increase.

These results suggest that the micro-cavitations observed with TEE during RF ablations are linked to the beginning of a thrombus formation related to endocardial lesions resulting from an overrated catheter contact pressure and tip delivered energy.