Pulmonary vein ostial ablation with the aim of electrically isolating the arrhythmogenic tissue is the commonest ablation strategy for AF. Attempts are being made to simplify pulmonary vein isolation by creating 3D versions of the atrial anatomy, and robotic as well as remote catheter navigation has been developed. Single shot circular ablation devices, using RF, ultrasound, cryo and laser energy, are under evaluation. Despite these different innovations, the most commonly used technique is the composite multiple point ablation lesion created with a fundamentally simple radiofrequency energy delivering ablation catheter. The high recurrence rate and low efficacy of current ablation procedures may be traced in large part to the inherent variability in individual lesion size with this technology. Real-time measurement of catheter tip contact force may allow electrophysiologists to avoid both ineffective lesions because of insufficient contact and complications due to excessive contact force. Currently, fiber-optic as well as electro-magnetic sensor based technologies offer the most precise real-time measurement although impedance and friction based measures are also available. The greatest experimental and clinical experience is with the fiber-optic technology, with more than 700 human patients. Three prospective human studies are underway evaluating the correlation between contact force and acute as well as chronic efficacy in isolating the pulmonary veins. This technology may help reduce re-do procedure rates for atrial fibrillation and also improve procedural safety.

Keywords: contact force, catheter ablation, atrial fibrillation