Radiofrequency (RF) has been the most widespread energy source for catheter ablation. Pulmonary vein (PV) isolation is a cornerstone in catheter ablation for any type of atrial fibrillation (AF). In complex cases of persistent AF, additional linear ablation can be added, or complex fractionated electrograms (CFAE) can be targeted for ablation. Although the evolution in ablation strategies led to increasingly complex and lengthy procedures, little progress has been made in the development of new ablation catheters. Traditional catheter ablation is performed in a single-tip, point-by-point ablation process. This technique requires an operator skill and procedures are lengthy, due to the number of potential targets. In addition, creating reliable contiguous transmural lesions with a single-point catheter is difficult. Recently, multi-electrode mapping and ablation catheters that allow simultaneous delivery of duty-cycled bipolar and unipolar RF energy from multiple points have been developed (Ablation Frontiers, Medtronic, Minneapolis, MN, USA). Available designs include a circular ring catheter (PVAC) for PV isolation, a linear array (TVAC) for creating linear lesions, and multi-array catheters (MASC and MAAC) for CFAE ablation. The generator (GENius, Medtronic) has five preset bipolar-to-unipolar energy settings, which, according to experimental data allow creation of different lesion depths. In this presentation, we will summarize our experience and current status of this new technology including some complications recently reported.

Keyword: multielectrode catheter