The Efficacy and Safety of Contact Force-guided Catheter Ablation for Paroxysmal Atrial Fibrillation in a Chinese Population: A Prospective Randomized Single-center Study

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Introduction: Contact force-sensing (CF) catheter can provide real-time catheter-tissue CF during atrial fibrillation (AF) radiofrequency (RF) ablation. However, the long-term efficacy and safety benefit from CF-guided ablation has not been widely studied.

Methods: Patients with paroxysmal AF undergoing first-time ablation were randomized into two groups: CF group and No-CF group. Pulmonary vein isolation (PVI) was performed by using SmartTouch™ Catheter, with CF information available to the operator in CF group and blinded in the no-CF group. Acute PV reconnection was assessed with 30 minutes waiting period and adenosine triphosphate (ATP) testing. The primary endpoint was freedom from AF.

Result: From July 2015 to January 2019, 120 paroxysmal atrial fibrillation patients (mean age of 61±9 years, 58% male) were randomized into CF group (n=60) and no-CF group (n=60). PVI was achieved in all patients. There's no significant difference for RF time per PV circle between two groups (P>0.05), but the incidence of first-pass isolation in all PVs was significantly higher in CF group when compared to no-CF group (69% vs 47%, p=0.025). 34% patients in CF group and 40% patients in no-CF group had acute PV (≥1) reconnection after 30 minutes waiting phase (p=0.496), while 7% and 9% patients had acute PV (≥1) reconnection in the following ATP-testing (p=0.725). No significant difference of long-term (20±10 months) success rates were found between two groups (82% vs 83% for CF and no-CF group, respectively). Procedural and fluoroscopy times were not significantly different (P>0.05). No major complication was observed in both groups.

Conclusion: CF-guided ablation benefits first-pass PV isolation, but not improved long-term success rates, or reducing acute PV reconnection.