Mesh-type flexible tip catheter or contact force catheter for paroxysmal atrial fibrillation: Prospective randomized trial

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Introduction: Catheter technology has been evolving to improve the efficacy and safety of atrial fibrillation (AF) catheter ablation. Mesh-type flexible tip (MFT) catheter is developed to generate bigger radiofrequency (RF) lesion, and contract force (CF) catheter improves the maintenance of catheter-tissue contact. We compared MFT catheter and CF catheter in AF ablation.

Methods: We randomly assigned 230 patients with AF (paroxysmal AF 73.5%, male 69.1%, 59.93 ± 10.69 years old) in a 1:1 ratio to ablation by MFT catheter (Flexibility) and CF catheter (Tacticath). We performed circumferential PV isolation (CPVI) and cavotricuspid isthmus (CTI) ablation in all patients, and additional extra-PV left atrial (LA) ablation was done by the operator’s discretion in patients with persistent AF. The primary end point was AF recurrence after single procedure, and the secondary end point was response to antiarrhythmic drugs (AAD).

Result: 1. Randomization of two groups was well matched, but ablation time was significantly longer in MFT group than in CF group (4426.6 ± 1302.0 vs. 3712.0 ± 1131.6, p<0.001), and Fluoroscopy time was longer in CF group than in MFT group. (31.4 ± 11.4 vs. 26.8 ± 8.0, p=0.001) 2. RA ablation was performed more by MFT catheter than by CF catheter (94.1% vs. 65.2%, p<0.001). CPVI and CTI ablation only showed using CF catheter higher than MFT catheter. (33.9% vs. 3.4%, p<0.001) 3. Major complication rate was not statistically different between MFT group and CF group. (0.8% vs. 4.5%, p=0.112). 4. During 15.3 ± 4.7 months follow-up, clinical recurrence rate was not significantly different between two groups (19.5% vs. 16.1%, p=0.498; log rank p=0.538), but 28.0% in MFT group and 39.3% in CF group were taking AAD (p=0.069). 5. When the logistic regression analysis was performed, there was no significant difference in recurrence of AF according to the site of operation in both types of catheters.

Conclusion: MFT catheter and CF catheter result in similar effectiveness in AF rhythm control by catheter ablation, and there was no significant difference between two catheters with regard to overall safety.