The “big hockey stick” technique for cryoballon-base pulmonary vein isolation

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**Introduction**: Cryoballoon ablation is increasingly used for pulmonary veins isolate (PVI) in patients with paroxysmal atrial fibrillation (PAF) and Hockey Stick manoeuvre is commonly performed in LIPV and RIPV. However, this approach is challenging even for skilled operators and remains high occurrence of complications. Here, We introduced a new technique (Big hockey stick) to facilitate ablation of RIPV and compared its efficacy and safety with Hockey Stick is manoeuvre.

**Methods**: Patients with paroxysmal atrial fibrillation (PAF) were prospectively recruited and underwent 1:2 randomization to either big hockey stick (BHS) group (n = 20) or hockey stick (HS) group (n = 40). Big hockey stick was performed as following steps: Firstly, the sheath was curved to the maximum bending with the tip of the sheath directed towards the mitral annulus. Secondly, clockwise rotating the sheath toward RIPV. Thirdly, placing the Achieve in the early branching RIPV and pulling the sheath to one or two balloon height on the RIPV port, then, the sheath was further pulled down to guide the balloon over the Achieve into the RIPV ostium. The primary endpoint is acute PVI. Complications and operation details were taken into consideration.

**Result**: Patients were largely comparable between groups and PVI was achieved in all patients. Big hockey stick approach reduced X-ray exposure (354.28±218.4 vs 239.25±101.87, P= 0.017), time to balloon inflation (14.25±4.44 vs 11.56±2.10, P=0.007) without increased of operation time (41.06±8.99 vs 37.5±9.84, P= 0.23). Hemoptysis occurred in one patient in HS, no Cardiac tamponade and phrenicus palsy occurred.

**Conclusion**: Big hockey stick manoeuvre is efficient without increased the occurrence of complications.