Introduction: His-Purkinje system pacing (HPSP) has been demonstrated an effective therapy for atrial fibrillation (AF) patients who need atrioventricular node (AVN) ablation in studies with short-term follow-up. We aimed to evaluate the long-term clinical outcomes of HPSP in AF patients with narrow intrinsic QRS duration and HF who underwent AVN ablation in a larger population.

Methods: From August 2012 to April 2018, consecutive AF patients with narrow QRS who underwent AVN ablation and HPSP were enrolled. Echocardiographic left ventricular ejection fraction (LVEF), left ventricular end systolic dimension (LVESV), and pacing parameters were assessed at implant and during follow-up.

Result: A total of 143 patients were enrolled (age 69.6 ± 9.9 years; ICM 10%; NICM 55%; LVEF 44.3 ± 15.4 %), with 132 (93.6%) of them received permanent HPSP and AVN ablation with a mean follow-up time of 28±19 months. In the subgroup of patients with reduced LVEF who implanted permanent HPSP more than 1 year, LVEF improved from baseline of 31 ± 6 to 48 ± 14 % at 1 year follow-up (N=43, P<0.001) and from baseline of 29 ± 6 to 51 ± 13% at 3 year follow-up (N=13, P<0.001), with a greater improvement in LVESV. In the subgroup of patients with preserved LVEF who implanted permanent HPSP more than 1 year, LVEF improved from baseline of 57 ± 11 to 63 ± 7% at 1 year follow-up (N=55, P=0.001) and from baseline of 57 ± 11 to 63 ± 6 % at 3 year follow-up (N=19, P=0.03). The threshold of HPSP was 0.8 ± 0.6 V@ 0.5 ms at implanted and maintained stable during long-term follow-up.

Conclusion: HPSP is feasibility and effectiveness in AF patients with narrow QRS who underwent AVN ablation during long time follow-up.