Objective: This study aimed to examine the long-term feasibility, safety, and efficacy of LBBP in patients with atrial fibrillation (AF) and heart failure (HF) after AVJ ablation and provide a comparison of LBBP versus His bundle pacing (HBP) through a propensity score (PS) matched analysis.

Methods: We prospectively enrolled patients with AF and HF who were referred for AVJ ablation and LBBP between July 2017 to December 2019. The control group patients were selected from HBP implantations performed in the years 2012-2019 using PS matching with a 1:1 ratio.

Results: A total of 99 patients were enrolled in this study. LBBP implant success rate was 100%. Significant improvements in the LVEF were observed in patients with HFrEF and HFpEF (p < 0.05). Threshold rise above 2V@0.5ms occurred in only one patient. Of 176/215 (81.9%) who received permanent HBP post-AVJ ablation, 86 patients were matched to the LBBP group by 1:1 PS (PS-HBP, N = 86; PS-LBBP, N = 86). No significant differences in echocardiographic or clinical outcomes were observed between the two groups (p > 0.05), while lower thresholds, greater sensed R-wave amplitudes, and fewer complications were observed in the PS-LBBP group (p < 0.05).

Conclusion: LBBP is feasible, safe, and effective in patients with AF and HF post-AVJ ablation, which has similar clinical benefits, higher success rate, better pacing parameters, and fewer complications than HBP.

Background: Benefit from cardiac resynchronization therapy (CRT) varies by QRS characteristics; individual randomized trials are underpowered to assess benefit for relatively small subgroups.

Objective: To determine the relationship between QRS characteristics (morphology and duration) and CRT benefit using pooled patient level data from pivotal CRT trials.

Methods: We analyzed patient level data from pivotal CRT trials (MIRACLE, MIRACLE-ICD, MIRACLE-ICD II, REVERSE, RAFT, COMPANION, and MADIT-CRT) using adjusted Bayesian Hierarchical Weibull survival regression models to assess CRT benefit by QRS morphology (LBBB, RBBB and IVCD) and duration (with 150ms partition). The continuous relationship between QRS duration and CRT benefit was also examined within subgroups defined by sex and QRS morphology. Results are presented using hazard ratios and 95% posterior credible intervals. The study endpoint was heart failure hospitalization (HFH) or death.

Results: Of the 6,264 patients included, 25% were women, the mean age was 65 years, and 61% received CRT. CRT reduced the risk of HFH/death (HR 0.73, CI 0.65 - 0.84), due to an effect on patients with QRS/C21 150ms and either LBBB (HR 0.56, CI 0.48 - 0.66) or IVCD (HR 0.59, CI 0.39 - 0.89). No benefit for CRT was observed when QRS was >150ms (regardless of morphology) or for patients with RBBB and QRS duration >150ms. Sex specific differences in the QRS duration threshold at which CRT benefit appeared for LBBB and IVCD (Figure).

Conclusion: CRT reduces HFH/death among patients with QRS >150ms and LBBB or IVCD; no statistically significant benefit was seen among those with RBBB. Aggregating RBBB and IVCD into a single “Non-LBBB” category when selecting patients for CRT might be inappropriate.