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Pacing from his bundle area in patients with severe conduction disease and high burden of the right ventricular pacing

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Background: Pacing from His bundle area is a method which allows the most physiological activation of the myocardium in patients indicated to pacemaker implantation. It should minimize adverse effects of right ventricular pacing and reduce the risk of pacing-induced cardiomyopathy.
Methods: Patients with severe conduction disease and an indication to dual chamber pacemaker, were randomized 1:1 to a pacing from His bundle area and the right ventricular septum. The groups were inter alia compared in these parameters: the success of the lead fixation in the selected destination, the duration of the procedure, the radiation dose (measured as total DAP) and the development of pacing-induced cardiomyopathy during 6 months of follow up.
Results: A total of 25 patients were randomized (13 to pacing from the His bundle and 12 from the septal area). The lead tip was successfully placed into the His bundle region in 8 patients from the 1st group, against 11 patients with the lead tip in the septum in the 2nd group (p=0.08). Average procedure time (78 vs. 63 minutes, p=0.02) and radiation dose (total DAP 8.6 versus 4.7 Gy.cm-2, p=0.035) were different between both groups. The average burden of right ventricular pacing was after 6 months of follow up similar (96 vs 94%, p=NS), but pacing-induced cardiomyopathy developed in 2 patients with septal, against no patient with His bundle area stimulation.
Conclusion: Pacing from the His bundle area is in patients with severe conduction disease associated with longer procedure time and higher radiation dose. It appears it can prevent the development of pacing-induced cardiomyopathy in patients with the high burden of right ventricular pacing.

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His pacing improved ejection fraction on long term follow-up in the subgroup of patients with low ejection fraction at implant

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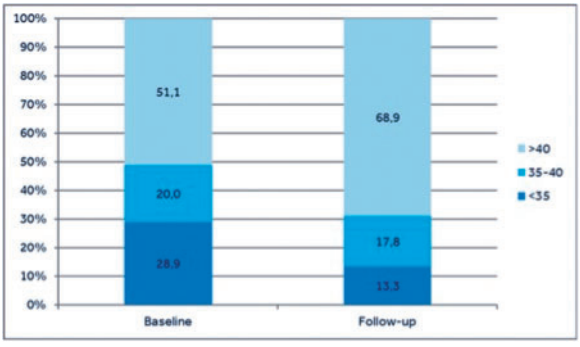
Background: His bundle pacing (HBP) has recently emerged as a novel therapy to avoid the detrimental effects of right ventricular apical pacing especially in patients with depressed ejection fraction (EF) at implant without a clear indication for CRT.
Purpose: compared the EF in the long term follow-up in a patient population implanted in HBP, splitting the implanted population in two groups 1) group of depressed EF with an arbitrary cut-off of less then 45% 2) group of patients with EF more then 45%
Methods: From May 2004 to February 2016 all consecutive patients implanted with a pacemaker and a lead screwed in His and at least a follow up duration of 1 year have been considered for this analysis. Patients with CRT indication were excluded. Intracardiac intervals, QRS duration, New York Heart Association functional class, EF, echocardiography evaluation, and lead performance were measured at baseline and at follow-up.
Results: HBP was successfully implanted in 305 patients (mean age 75.5 ± 8.1, 58% male QRS 126 ± 29) with standard pacemaker indications. The mean follow up duration was 6.2 ± 3.2 years. On the whole population, the mean EF was 56.9 ± 11.0 and 45 (14.8%) patients were included in group 1. Considering only the patients in group 1 (EF≤ 45%), at baseline the 51% of patients had EF in the range between 40% and 45%, the 20% of patients between 35-40% and the 29% of patients ≤ 35%. At the last follow up the percentage of patients with EF in the range 40%-45% was increased to 69%, while the percentage of patients with EF ≤ 35% was decreased to 13.3 % (p=0.004), as shown in figure 1. Conversely, considering the patients in group 2 (EF>45%), the 97.7% of patients maintains the EF >45% in the follow up, and only 0.8% reduced the EF to < 35% (P=0.2)
Conclusions: Permanent HBP significantly improved EF in long term follow-up in patients with baseline reduced EF.



Abstract P411 Figure. Change in EF

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Relative width of interventricular septum at different levels as approach to RV pacing: morphological study in general population cohort

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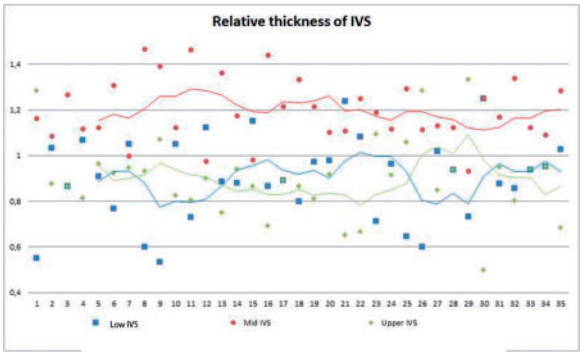
Background: There is still controversy about best spot for RV pacing. Different regions were proposed with little difference in outcomes. Lead positioning in a thinner part of interventricular septum (IVS) logically might result in shorter transmyocardial conduction with more homogeneous LV depolarization, shorter QRS and better cardiac performance.
Purpose: To define the thinnest part of IVS as a preferable target for conventional RV pacing and the possible area of IVS puncture.
Methods: Results of 35 autopsies were analyzed (aged 60±18 yrs, 20 males, 26 pts had previous history of cardiovascular diseases, including hypertension, ischemic heart disease, heart failure). The thickness of IVS was measured at 3 levels: upper, mid and low parts using transaxial slices. Received data were analyzed using MS Excel: relative IVS width at each level as proportion of an average was calculated and compared using Student t-test. Moving average trendlines (period 5) were used then for visual representation.
Results: IVS width was significantly thicker at the mid-level (0.9±0.18 vs 1.2±0.13 p<0.05 and 0.9±0.17 vs 1.2±0.13 p<0.05), difference between upper and lower levels was insignificant. Results are presented on picture.
Conclusion: In our study in non-selected patients the thinnest IVS parts were upper- and low ones and the middle part was significantly thicker. Study protocol – one transaxial section excluded measurement of RVOT's and apical septum. By our experience lower part of IVS is simply achievable and safe area for RV lead placement with no need of special tools. Also it could be used to facilitate IVS puncture as approach for LV endocardial pacing. Further studies including MRI with larger selected cohort of patients with additional spots (RVOT and apex) and connection with clinical data would be necessary to prove our concept.



Abstract P412 Figure.

SYNCOPE

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Aetiology of syncope and orthostatic intolerance in older patients with pacemakers: SYSTEMA cohort

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Background: Pacemaker (PM) therapy is usually successful in bradyarrhythmia. However, recurrent syncope and orthostatic intolerance in patients treated with PM is a common dilemma, especially in the elderly.
Purpose: We aimed to determine the aetiology of recurrent and unexplained syncope and/or symptoms of orthostatic intolerance in patients with implanted PM aged 65 years or more.
Methods: Among 616 patients > 65 years that were investigated by head-up-tilt-test (HUT) in a tertiary syncope unit, 26 patients (4.2 %) had a pacemaker at referral. In these patients, we explored symptoms, final HUT diagnoses, and further clinical workup, if the diagnosis was not obtained during the initial assessment, including HUT.
Results: The indication PM therapy in the 26 patients at the time of referral was sick sinus in 10, AV-block in 10, atrial fibrilation (AF) with bradycardia in 5 and ventricular tachycardia in 1 (PM + cardioverter defibrillator). Patients' characteristics, their medical history and the final HUT-derived diagnoses are displayed in Table 1. During further workup in the five patients without diagnosis after HUT, one was found to have ventricular tachycardia and a cardioverter-defibrillator was implanted. In four patients (3 with syncope and 1 with orthostatic intolerance), no clear aetiology was established. The PM-indications in these patients followed guidelines (1 sick-sinus, 2 AV-block, 1 AF with bradycardia). During follow-up one of these patients died due to