

investigate the effect of pulmonary artery systolic pressure (PASP) to the response of patients with CRT.

Methods 93 patients (76 male, mean ages: 61.23 ± 15.56) with heart failure involved in our study. According to the level of preoperative PASP, they were divided into three groups (Group I: PASP ≥ 50 mm Hg, $n=29$; Group II: 30 mm Hg 0.05) and Group II (from 69 mm to 66 mm, $p>0.05$). LVEF increased averagely by 31–38% ($p<0.01$) in Group III at 3–6 months, But in Group I and II which had not obvious increased at 3 months ($p>0.05$) and had increased by 17% (Group I, $p<0.05$) and 26% (Group II, $p<0.01$) at 6 months. LVEF in Group III had increased more than that in Group I and Group II ($p<0.05-0.01$).

Conclusions Clinical outcomes post-CRT can be predicted by elevated PASP. A preoperative PASP ≥ 50 mm Hg is associated with increased risks for adverse events and a higher mortality for aggravation of heart function.

e0554 **QRS DURATION CHANGES DURING DIFFERENT VV INTERVALS AFTER CARDIAC RESYNCHRONISATION THERAPY**

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Introduction The aim of this study was to investigate the influence of different VV intervals on QRS duration of surface ECG after cardiac resynchronisation therapy (CRT).

Methods 54 patients after CRT treatment due to congestive heart failure (CHF) in our hospital were enrolled in this study, of which 43 cases with the QRS duration of surface ECG >120 ms and 11 cases with QRS duration ≤ 120 ms (Tissue doppler ultrasound showed the existence of ventricular asynchrony), all patients were appropriate for CRT or CRT-D implantation with type I or IIa indication. After CRT implantation, the VV durations were programmed by the pacemaker programme at 9 different settings: simultaneous left and right ventricle pacing, left ventricle pre-excitation (left ventricle+20, 40, 60 and 80 ms, respectively), and right ventricle pre-excitation (right ventricle+20, 40, 60 and 80 ms, respectively). During these VV intervals, the aortic velocity time integral (VTI) was measured by echocardiography, and we defined the VV intervals with the highest VTI as the best VV interval, QRS duration of surface ECG was recorded at the same time.

Results There is no significant difference of QRS durations among different VV intervals. In the simultaneous pacing of LV and RV model, the best VV interval was 12.96% of all the 54 patients, it was 37.02% in left ventricle pre-excitation and 49.98% in right ventricle pre-excitation. This was suggested that sequential pacing of the two ventricles was superior to the synchronously pacing. There was no significant correlation between the best VV interval and the width of QRS wave ($r=0.205$, $p=0.136$), and the width of QRS wave were the smallest in 9 patients (9/54, 16%) in the best VV interval, but that of the other 45 patients were not the smallest, so it was inaccurate for assessing the best VV interval merely by the width of QRS wave, and we'd better to optimise VV intervals with the help of echocardiography.

Conclusions There were no significant changes of the QRS durations during different VV intervals after CRT treatment. The sequential pacing of the two ventricles could bring 87% patients better haemodynamic effects. There was no significant correlation between the best VV interval and the width of QRS wave, and the width of QRS duration of most patients in the best VV interval was not the smallest. The effect of CRT could be improved more by optimisation of the VV interval individually.

e0555 **AN 5-YEAR FOLLOW-UP OF PATIENT WITH VALVULAR HEART DISEASE AND CHRONIC ATRIAL FIBRILLATION UNDERGOING ABLATION OF THE ORIFICES OF THE PULMONARY VEINS UNDER DIRECT VISION BY USING THE TRANSBALLOON ULTRASOUND ABLATION CATHETER**

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Objective To evaluate the effect and possibility of surgical ablation of the pulmonary vein orifices under direct vision with transballoon ultrasound ablation catheter for patients with permanent atrial fibrillation and rheumatic valve disease.

Methods 21 consecutive patients with rheumatic valve disease and permanent atrial fibrillation undergoing mitral valve replacement surgery from December 2002 to September 2003 were enrolled for this study. All cases were divided into 2 groups by whether or not receiving an additive pulmonary vein ablation procedure. The test group (6 male, 5 female, aged 51.55 ± 7.83 years, atrial fibrillation duration 5.50 ± 5.40 years, left atrial diameter 7.27 ± 1.39 cm, LVEF $53.95 \pm 4.54\%$ and NYHA class II–IV) undertook a surgical isolation of the pulmonary vein orifices by using a transballoon ultrasound ablation catheter addition to routine mitral valve replacement. The control group (3 male, 7 female, aged 53.30 ± 7.86 years, atrial fibrillation duration 4.50 ± 3.47 years, left atrial diameter 6.74 ± 0.62 cm, LVEF $56.91 \pm 3.78\%$ and NYHA class II–IV) received the valve replacement surgery alone.

Results There were not any complications in both groups. With an electrical cardioversion 3 months after the surgery, 73% patients in the ultrasound ablation group were free from AF over 1 year while only 10% patients in control group ($p=0.003$). During an average follow-up duration of 69.92 ± 4.61 months, 65.6% were in sinus rhythm in ultrasound ablation group while none in the control group. Left atrial volume decreased significantly at 5 year after surgery compared to 3 months after surgery in the test group (78.83 ± 32.39 cm³ VS 150.78 ± 52.32 cm³ $p<0.05$), and the end systolic diameter (LAESD) and end diastolic diameter? (LAEDD) also decreased (3.92 ± 0.43 cm vs 5.09 ± 0.98 cm, $p<0.05$; and 3.92 ± 0.43 cm vs 4.46 ± 1.15 cm, $p<0.05$, respectively).

Conclusions Ablation of the orifices of the pulmonary veins under direct vision with transballoon ultrasound ablation catheter during mitral valve surgery is effective to maintain sinus rhythm after electrical cardioversion and can be performed safely. The function of left atrial and cardiac output improves during long term follow-up.

e0556 **CATHETER ABLATION OF ATRIAL TACHYCARDIA FROM THE NONCORONARY CUSP OF THE AORTIC VALVE**

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Objective In this study, we examine the characteristics of antero-septal Atrial tachycardias (AT) originating from the Noncoronary Cusp (NCC) of the Aortic Valve, and demonstrate the long-term efficacy and safety of targeting the arrhythmias by Catheter Ablation.

Methods From among a cohort of 43 patients with symptomatic focal AT undergoing electrophysiological evaluation, the point of earliest activation was at NCC region in 7 patients.

Results The arrhythmia terminated with <10 seconds of radio-frequency delivery and was successfully eliminated in 7 patients. All patients have been arrhythmia free during follow-up (20 ± 6) months.

Conclusions Catheter ablation from the base of the NCC represents a safe and effective means to eliminate focal AT.

e0557 **CARTO MAPPING TO GUIDE ABLATION OF RIGHT VENTRICULAR OUTFLOW TRACT TACHYCARDIA VENTRICULAR CONTRACTION**

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Objective The aim of this study was to determine whether CARTO mapping is feasible in the right ventricle and assess its utility in guiding ablation of right ventricular outflow tract (RVOT) ventricular tachycardia (VT).

Background In patients with RVOT VT; CARTO mapping permits ablation guided by a VT complex, which may facilitate ablation of VT cases. However, the mapping system may be geometry-dependent, and it has not been validated in the unique geometry of the RVOT.

Methods 30 patients with left bundle branch block and right axis VT, no history of structurally cardiac disease and normal left ventricular function underwent CARTO guided ablation.

Results The procedure was acutely successful in 27 of 30 patients, 3 had failed ablation. During a mean follow-up of 6 months, 26 of 30 patients remained arrhythmia-free.

Conclusions In this study, CARTO mapping was safely and effectively used to guide ablation of patients with RVOT VT.

e0558 **EFFECTS OF RIGHT VENTRICULAR APICAL PACING ON CARDIOPULMONARY FUNCTION IN PATIENTS WITH NORMAL HEART FUNCTIONS**

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Objective To estimate the effects of long term right ventricular apical pacing on cardiopulmonary functions in patients with normal heart function.

Method A total of 30 patient underwent dual-chamber pacemaker implantation with normal heart function (LVEF>55%, NYHA classification I–II) were enrolled and divided into two groups according to the percentage of ventricular pacing (VP), VP≤45% group (n=16) and VP>45% group (n=14). Patients with disease of respiratory, nervous or motor systems were excluded. Cardiopulmonary exercise test (CPET) was performed in all patients. We recorded the peak oxygen uptake (VO₂ peak), anaerobic threshold (AT), ventilatory response (VE/VCO₂ slope) and other parameters during the exercise. Left ventricular ejection fraction (LVEF), left ventricular end diastolic dimension (LVEDd), left ventricular end-diastolic volume (LVEDV), systolic volume and E/A were measured using echocardiography before and after the pacemaker implantation.

Results There were no significant differences in baseline characteristics between the two groups. The meantime of enrollment after pacemaker implantation was 5.8 years. Cardiopulmonary function was significantly better in VP≤45% group than VP>45% group. Independent-samples t-testing showed a significantly higher VO₂ peak (19.8±3.3 ml/kg·min vs 17.5±2.5 ml/kg·min, p=0.047) and AT (18.5±1.4 ml/kg·min vs 16.6±2.3 ml/kg·min, p=0.038) in VP≤45% group than VP>45% group. While VE/VCO₂ slope (31.4±3.0 vs 35.1±5.9, p=0.04) was significantly lower in VP≤45% group than VP>45% group. But there were no significant differences

with respect to the LVEF and other echocardiography parameters between the two groups.

Conclusion Long Term right ventricular apical pacing is associated with the deterioration of cardiopulmonary function in patients with normal heart functions. Cardiopulmonary exercise test is a sensitive diagnostic method to show the early changes of cardiac function.

e0559 **EFFECTS OF LONG-TERM RIGHT VENTRICULAR APICAL PACING ON LEFT VENTRICULAR REMODELLING AND CARDIAC FUNCTION**

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Objectives To investigate the impacts of long-term right ventricular apical pacing on the ventricular remodelling and cardiac functions of patients with high-grade and third-degree atrioventricular blockage with normal heart structures and cardiac functions. In addition, we provide evidences for choosing an optimal electrode implantation site.

Methods Study participants included patients who were admitted for pacemaker replacements and who revisited for examinations of implanted pacemakers at outpatient. Pacemakers were implanted to treat high-grade and third-degree atrioventricular blockage. At the time of pacemaker implantation, patients had normal cardiac functions and showed no serious heart diseases or cardiac dilatation. The durations from the implantation to follow-up were more than 5 years. The pacing rate was higher than 80%. Patients with a left ventricular ejection fraction (LVEF) 55 mm were excluded. Ventricular remodelling was defined as: increase of LVEDD by 10% and a reduction of LVEF by 25% 5 years after implantation. Cardiac functions were evaluated according to the New York Heart Association (NYHA) classification.

Results A total of 82 patients with a mean age of 66.97±13.19 years (range, 12–91 years old), including 39 male and 43 female were enrolled in this study. The average duration between two assessments was 8.7 years (104.4 months). Before pacemaker implantation, the average left atrial diameter (LA), LVEDD and LVEF were 37.0 mm, 50.23 mm and 64.87%, respectively. After the implantation, these values were 39.39 mm (p=0.000163), 50.82 mm (p=0.177842) and 60.50% (p=0.000104), respectively. 4 patients (4.87%) had ventricular remodelling with deteriorations of cardiac function. Among them, three patients had anterior wall myocardial infarction after implantation and one had type II diabetes. Clinical heart failure symptoms were not found in the patients who did not exhibit ventricular remodelling.

Conclusion Through a long period follow-up study, we found that long-term right ventricular apical pacing in patients with normal heart structure and cardiac function generally would not cause ventricular remodelling and clinical deteriorations of cardiac function. Right ventricular apical is a safe and effective site for pacing electrode wire implantation.

e0560 **ROLE OF SEVERITY OF OSAS ON CRP AND LEFT ATRIAL SIZE IN PATIENTS WITH PREMATURE ATRIAL CONTRACTION**

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Objective Recent studies have suggested an emerging link between sleep apnoea and atrial fibrillation (AF). It has also been reported that an inflammatory process is involved in the development of atrial fibrillation. In this study we hypothesised that premature atrial contractions (PAC) might be the precursor of atrial fibrillation.