

Zero-fluoroscopy catheter ablation of symptomatic pre-excitation from non-coronary cusp during pregnancy

Ablacja objawowej preekscytacji z niewieńcowego płątka aortalnego bez użycia fluoroskopii w czasie ciąży

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Current recommendations avoid the use of antiarrhythmic drugs in pregnancy and support catheter ablation (CA) due to symptomatic arrhythmias prior to pregnancy. Zero-fluoroscopy (ZF) mapping and navigation with three-dimensional electroanatomical mapping systems (3D-EAMS) allowed routine and safe non-fluoroscopic guidance of the procedure without X-ray exposure. We present the first case of a pregnant patient who underwent successful ZF CA of symptomatic pre-excitation from non-coronary cusp (NCC). A 24-year-old Caucasian pregnant without structural heart disease at the 24th week of pregnancy was referred for CA due to three recurrences of syncope and drug-refractory palpitations associated with Wolf-Parkinson-White (WPW) syndrome. Twelve months prior to pregnancy the woman had failed radiofrequency (RF) ablation procedure in another centre for para-Hisian right-sided pathway. A 12-lead electrocardiogram (ECG) showed pre-excitation with a positive delta wave in leads I, II, aVF, V4, and V5 and a negative delta wave in lead V1, suggesting a para-Hisian accessory pathway (Fig. 1). She was referred to our hospital for rescue CA with ZF. Our centre had at least five years of experience with the minimally invasive non-fluoroscopic imaging and navigation approach using the Ensite NavX system (St. Jude Medical, St. Paul, MN) for CA of regular supraventricular arrhythmias and idiopathic ventricular arrhythmias. A multidisciplinary consultation reached the consensus that only pre-excitation is a substrate for syncope recurrences and poses a potential risk to the foetus and mother. The right femoral vein was cannulated with a 7 F or 8 F sheath and one ablation 4 mm Gold tip catheter and one diagnostic decapolar catheter (Biotronik, Berlin, Germany) were introduced. Atrial pacing protocols demonstrated a septal accessory pathway, but no isoproterenol was given to induce tachycardia. The refractory period of the accessory pathway was 300 ms. After six failed right-sided applications right sided mapping was stopped due to frequent junctional beats and proximity of His potential recordings. Then, the right femoral artery was cannulated with an 8 F introducer, and the ablation catheter was removed using a right to left retrograde approach (Fig. 2). Finally, six RF applications (240 s) were delivered approximately in the NCC and the accessory pathway was successfully ablated (Fig. 1). The procedure time was 71 min and no fluoroscopy was used. Several ECGs and Holter monitoring confirmed no pre-excitation and arrhythmias within 14 months. The patient delivered a healthy male child at 35 weeks of gestation by Caesarean section. Both mother and child had an uneventful postoperative course. The case documents that routinely using ZF for CA may support this approach even for unfavourable locations (e.g. NCC) and not only as the last resort for several arrhythmias including WPW-syndrome in pregnant patients.

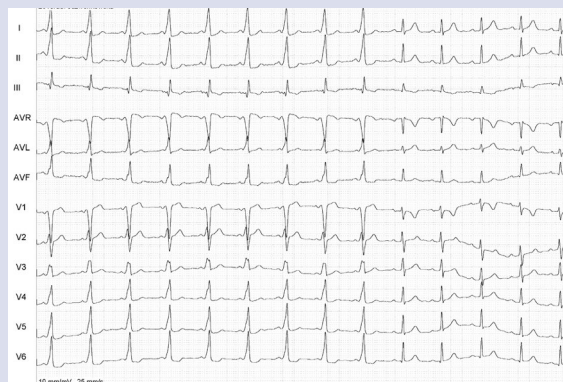


Figure 1. Standard 12-lead electrocardiogram during radiofrequency (RF) ablation from non-coronary cusp. Sudden disappearance of pre-excitation after RF energy application from non-coronary cusp



Figure 2. Simplified three-dimensional electroanatomical mapping in LAO 30 and RAO 30 view. Retrograde approach from femoral artery. Blue dots represent His and left main os. Red dots represent ablation point. Note that ablation points are located just posterior to far field His bundle recordings. Yellow shadow represents decapolar diagnostic catheter located in coronary sinus, red shadow represents ablation catheter in aorta and non-coronary cusp. Contour of aortic arch and sinuses of Valsalva are shown in light red

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Conflict of interest: S. Stec is a co-founder/stock-holder Medinice S.A. and co-author of patents (Pace-Press, Cryoapplicator, Cathaio, Ep-Bioptom catheter, Mini-Max for non-fluoroscopic navigation and procedures); J. Śledź is co-author of Ep-Bioptom for non-fluoroscopic navigation and procedures.

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