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Implantation of a leadless pacemaker in a young adult patient with repaired tetralogy of Fallot

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Reported herein, is the case of 21-year-old patient with repaired tetralogy of Fallot within her first year of life. Due to sick sinus syndrome and II grade atrioventricular block endocardial single-chamber permanent pacemaker was inserted transvenously during her third year of life.

The patient was admitted in generally good condition aiming at pacemaker replacement. Right ventricle lead dysfunction was observed and thus, percutaneously removing and implantation of a new electrode was planned. Angio-computed tomography showed an obstruction of the superior vena cava. Pacemaker generator and lead were removed percutaneously but it was not possible to implant a new lead. The patient was managed with temporary transvenous pacing. The Heart Team qualified the patient for implantation of a leadless pacemaker (the Micra™ Transcatheter Pacing System, Medtronic, Minneapolis, MN, USA).

Implantation of the Micra™ was performed under general anesthesia. Access via the right femoral vein was obtained with 23 Fr sheaths. Micra™ was fixed into upper part of the interventricular septum (Fig. 1). Implant parameters were optimal with 8.2 mV sensing, 650 Ohm electrode impedance and pacing threshold 0.5 V/0.24 ms. There were no complications. The time of fluoroscopy was 13 min, and exposition dose was 864 mGy.

The patient was discharged receiving beta-blocker. The pacing threshold increased, reaching a maximum of 3.5 V at 0.24 ms during the first, and second month post-implantation. At 3-month follow-up pacing threshold decreased below 3.0 V/0.24 ms and was stabile until the 21-month follow-up. Other parameters were stable during follow-up. The stimulation percentage ranged from 1% to 12.8%.

Conflict of interest: Beata Średniawa — consultant: Medtronic, Zoll, Bayer, lectures fee for: Boehringer-Ingelheim, Bayer, Pfizer; Ewa Jędrzejczyk-Patej — consultant fees from Medtronic, Biotronik, Abbott, Boston Scientific; Zbigniew Kalarus — company sponsored speaker's bureau from Pfizer, Eli Lilly, Boehringer-Ingelheim, Abbott, Bayer; travel expenses to cardiology congresses from St. Jude Medical and Adamed; advisory committee: Boehringer-Ingelheim, Amgen, AstraZeneca.

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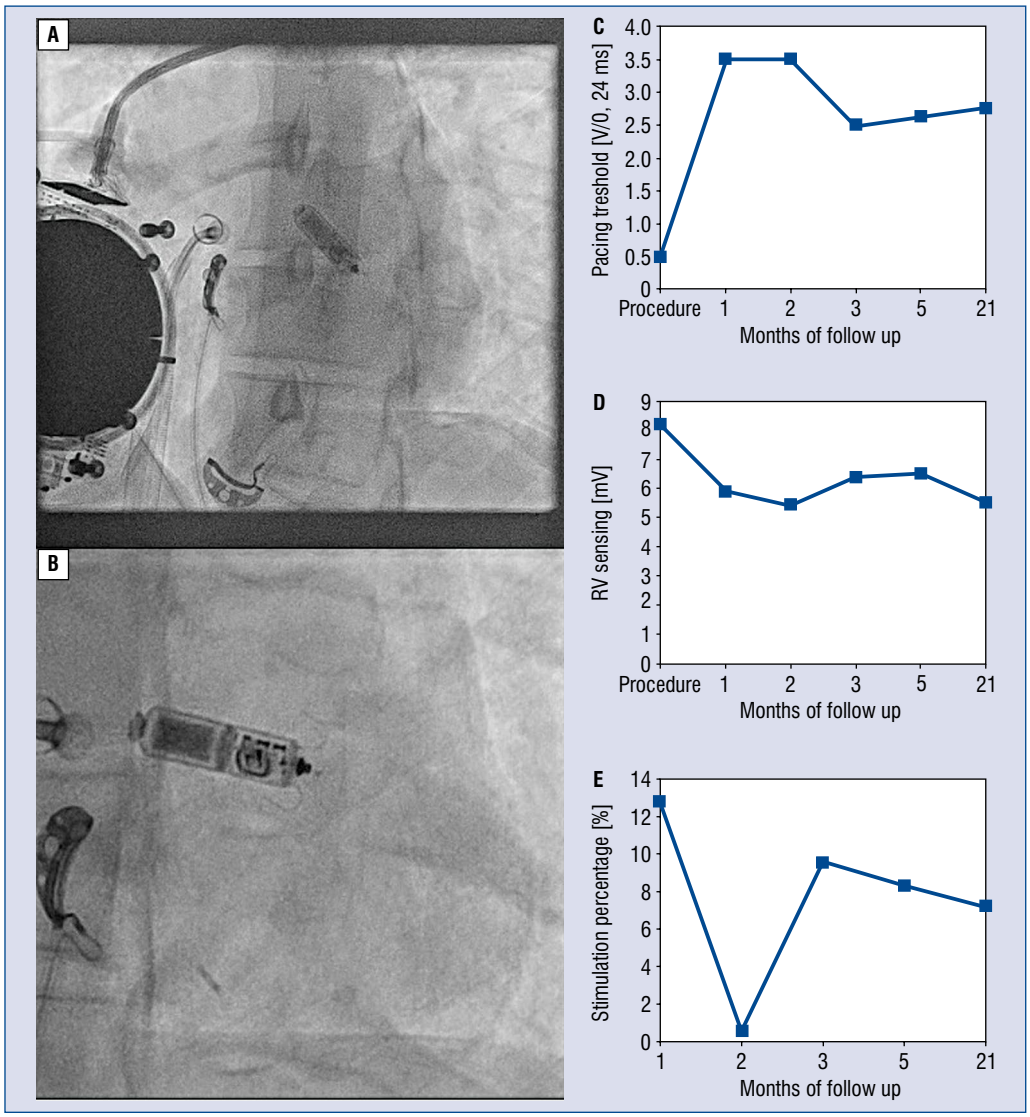

Figure 1. Location of the Micra™ device in fluoroscopy during the implantation procedure (**A**, **B**). Electrical parameters of the device: right ventricle (RV) pacing threshold (**C**), RV sensing (**D**), stimulation percentage (**E**).