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Transseptal Perforation for Radiofrequency Catheter Ablation in Patients with Fontan Procedure

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Introduction:

Atrial tachyarrhythmia is a common late complication and a major cause of late morbidity after Fontan surgery. The reentrant tachycardia may be localized to the pulmonary venous atrium, transseptal perforation should be needed for mapping and radiofrequency catheter ablation (RFCA).

Methods:

A total of 12 patients had attempted transseptal perforation. Median age was 22 years. One patient had undergone atrio-pulmonary connection procedure, eleven had undergone total-cavo pulmonary connection. We chose intracardiac echocardiography in 11 cases, and trans-esophageal echocardiography in one case, using Brockenbrough needle for transseptal puncture. The procedure of balloon dilatation was needed in two cases.

Results:

The indication for pulmonary venous access was RFCA of atrial flutter and atrial tachycardia, and atrio-ventricular reentrant tachycardia. There were two clinically significant complications. The needle tip passed into the ascending aorta in one case following L-R shunt from aorta to right atrium. We performed coil embolization for the shunt. Transmuscular perforation of left ventricle in another case had no L-R shunt. Both had no hemodynamically insignificant event. In ten patients after successful puncture, we had successful RFCA in seven cases (70%).

Conclusion: Transseptal perforation can be a challenging method of obtaining pulmonary venous atrial access for electrophysiologic procedures in patients with Fontan procedure. Acute success rate of RFCA was acceptable, and then RFCA can be an effective option to treat refractory tachycardia following Fontan surgery.