

Radiofrequency catheter ablation for atrial tachycardia in patients with complex congenital heart disease after intracardiac operation

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Background: Atrial tachycardia (AT) is known as a difficult complication in patients with complex congenital heart disease (CHD) late after surgical correction.

Purpose: We retrospectively analyzed the results of radiofrequency catheter ablation (RFCA) for AT.

Methods: We divided patients into three groups; group A: atrial switch (Mustard or Senning) procedure in 17 cases, group B: Fontan (atrio-pulmonary connection) procedure in 36 cases, group C: Fontan (total cavo-pulmonary connection) procedure in 3 cases.

Results: Induced ATs were isthmus-dependent atrial flutter, intra atrial reentrant tachycardia and atrial fibrillation. In group A, tachycardia substrate existed in the pulmonary venous atrium (PVA) in 15 of 17 cases. Catheter access to the PVA was transaortic approach in 2 patients, transseptal approach in 10, and baffle leak 3. We could not puncture the Senning route and could not eliminate the tachycardia in 4 cases. In group B, the mean number of induced tachycardia was four. RFCA for atrial fibrillation and unmappable AT in 15 cases were unsuccessful. We could not reach the PVA in 3 patients in group B, and could not ablate the tachycardia. Three cases in group C had isthmus-dependent atrial flutter in the PVA. RFCA was successful in all 3 cases, by a transaortic approach, using a puncture of conduit, and via a fenestration. The success rate was 76% (13/17) in group A, 50% (18/36) in group B, 100% (3/3) in group C.

Conclusion: There were many difficulties and limitations in RFCA for the patients with complex CHD after operation. ATs after atrial switch operation and TCPC procedure can be managed with catheter ablation with favorable success rate.