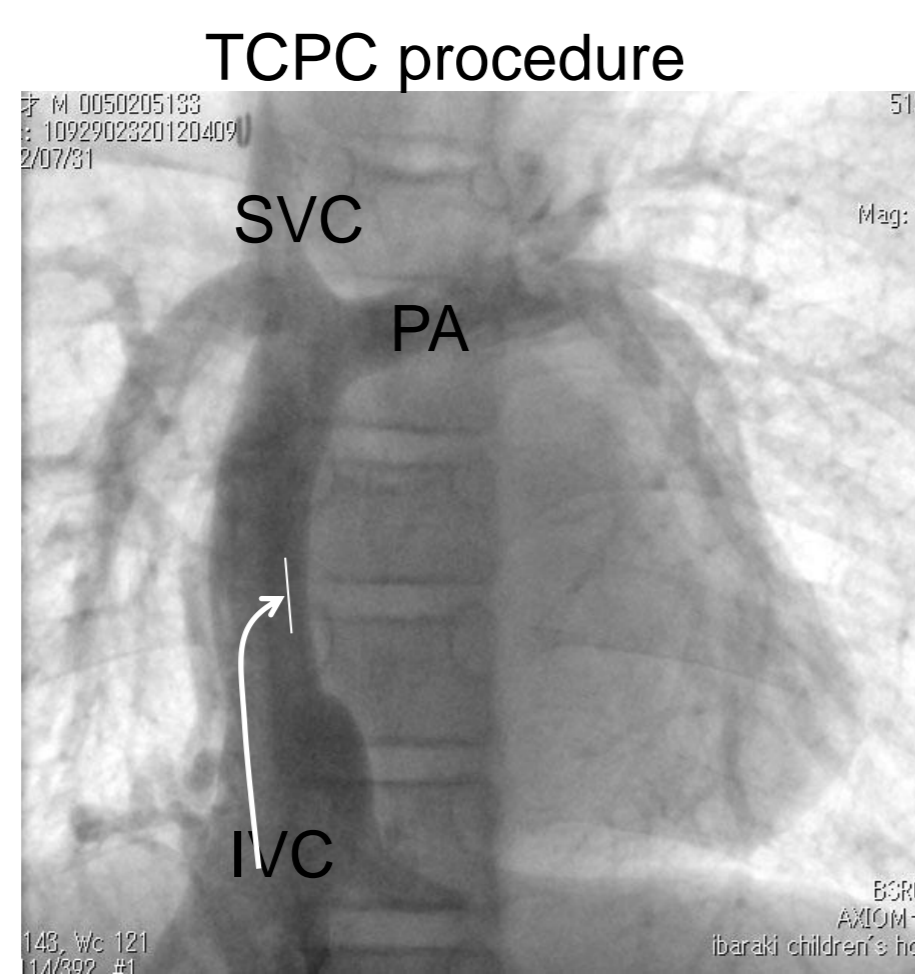


# Transseptal Perforation for Radiofrequency Catheter Ablation in Patients with Fontan Procedure

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## Background



Atrial tachyarrhythmias (ATs) are common and serious late complications after Fontan surgery. Transcatheter puncture of atrial septum, atrial baffle or extracardiac conduit may be needed for mapping and radiofrequency catheter ablation (RFCA) of the pulmonary venous atrium (PVA).

## Methods

RFCA for AT was attempted in 12 patients.

The transcatheter cardiac puncture to the PVA using a standard Brockenbrough (BRK) needle was done under the guidance of intracardiac echocardiography (ICE) in 11 patients and transesophageal echocardiography in 1.

## Patients

23 ± 10 years old      Total cavo-pulmonary connection (TCPC) 11  
Atrio-pulmonary connection (APC) 1

## Results

Case	Diagnosis	Fontan	Age at final ope. (yr)	Age at RFCA (yr)	Arrhythmia	BRK	Complication	Acute success	Recurrence	Residual leakage
1	DORV,PS	TCPC (LT)	6	12	AT	success	-	success	+	-
2	DORV,MA	TCPC (LT)	2	13	AFL	success	-	success	-	-
3	CCH	TCPC (LT)	15	33	AFL, AT	success	-	success	+	-
4	Asplenia, AVSD	TCPC (IAG)	4	24	AT	success	-	success	+	-
5	Polysplenia, L-TGA	TCPC (IAG)	11	27	AT	success	-	failure	-	-
6	Asplenia, AVSD	TCPC (ECG)	2	14	AT	success	-	failure	-	-
7	AVSD	TCPC (ECG)	1	8	AFL	success	-	success	-	-
8	L-TGA	TCPC (ECG)	5	17	AVRT	failure	+	-	-	-
9	TA	APC→TCPC (ECG)	14	24	AT	success	-	success	-	-
10	TA	APC→TCPC (ECG)	34	37	AFL, AT	success	-	failure	-	-
11	TA	APC→TCPC (ECG)	22	36	AT	success	-	success	-	-
12	DORV,MA	APC	3	28	AFL, AT	failure	+	-	-	-

DORV: double outlet right ventricle, PS: pulmonary stenosis, MA: mitral atresia, CCH: criss cross heart, AVSD: atrioventricular septal defect, TGA: transposition of great arteries, TA: tricuspid atresia, LT: lateral tunnel, IAG: intra atrial graft, ECG: extra cardiac graft, AFL: atrial flutter, AVRT: atrioventricular reentrant tachycardia

## Complication

There were 2 unsuccessful punctures to unintended cavity (to the aorta in 1 patient and to the LV in 1).

Case 7      8.y.o, AVSD, TCPC, isthmus dependent AFL

<Pre-procedural CT>

<Intracardiac echo>

<X-ray fluoroscope>

<AFL activation mapping>

Case 11      36.y.o, TA, TCPC conversion, AT

<conduit angiography>

<Balloon dilatation using Mustang, 4mm, 10atm>

Case 8      17.y.o, L-TGA, TCPC, AVRT

puncture to the LV

Case 12      28.y.o, DORV, MA, APC, AFL, AT

puncture to the aorta, the formation of L-R shunt

coil embolization of the shunt

Both had no hemodynamically insignificant event.

The BRK success rate : 10 of 12 (83%)

The acute RFCA success rate : 7 of 10 (70%)

The recurrence rate : 3 of 7 (42%)

## Conclusion

Transseptal perforation in patients following Fontan procedure is feasible and concomitant RFCA is an curative option of refractory SVT, even in patients after TCPC.

However the indication should be carefully considered because the procedure technique is not always safe.