

EP CASE REPORT

Ultra-high density electroanatomic mapping through transbaffle approach of re-entrant tachycardia after Senning operation

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A 36-year-old woman with a history of d-transposition of the great arteries and Senning operation developed paroxysmal intra-atrial re-entrant tachycardia which became persistent. She reported increased dyspnoea with worsening of right systemic ventricle dysfunction. Hence, she was referred for catheter ablation. Pre-procedural computed tomography was performed to segment anatomy and appreciate atrial remodeling. Catheter ablation was performed under general anaesthesia with endotracheal intubation and Rhythmia™ system (Boston Scientific, USA) for mapping. Firstly, we realized activation map of the systemic venous atrium (SVA) using Orion™ catheter (Boston Scientific, USA) in order to rule out atrial tachycardia originating from this side of the baffle which is an unusual location.¹ This map was completed within 9 min with 19 379 electrograms showing that SVA was bystander. We chose to realize anterograde approach using previously described modified trans-septal puncture of the atrial baffle² under transoesophageal echocardiographic guidance. High-density activation map of pulmonary venous atrium was achieved after 25 min and collected 28 124 electrograms. Voltage map showed atrial scar typically located near right pulmonary veins at site of posterior anastomosis.¹ Activation analysis revealed a counterclockwise typical flutter around tricuspid annulus with slow conduction on lateral wall between annulus and the posterior scar (Figure 1A). Ablation was performed on the lateral wall at the site of slow conduction with highly fractionated electrograms with a 4 mm irrigated-tip catheter to deliver 30 W and rapidly terminated tachycardia (Figure 1B). We confirmed the complete block on lateral wall with a new activation map completed in 11 min with 5802 electrogram, while pacing near the line in the inferior limb of the baffle (Figure 1C). Intra-atrial re-entrant tachycardia was no longer inducible at baseline and after isoproterenol infusion. Procedure lasted 180 min with 24 min of fluoroscopy. The patient had no recurrence after 3 months.

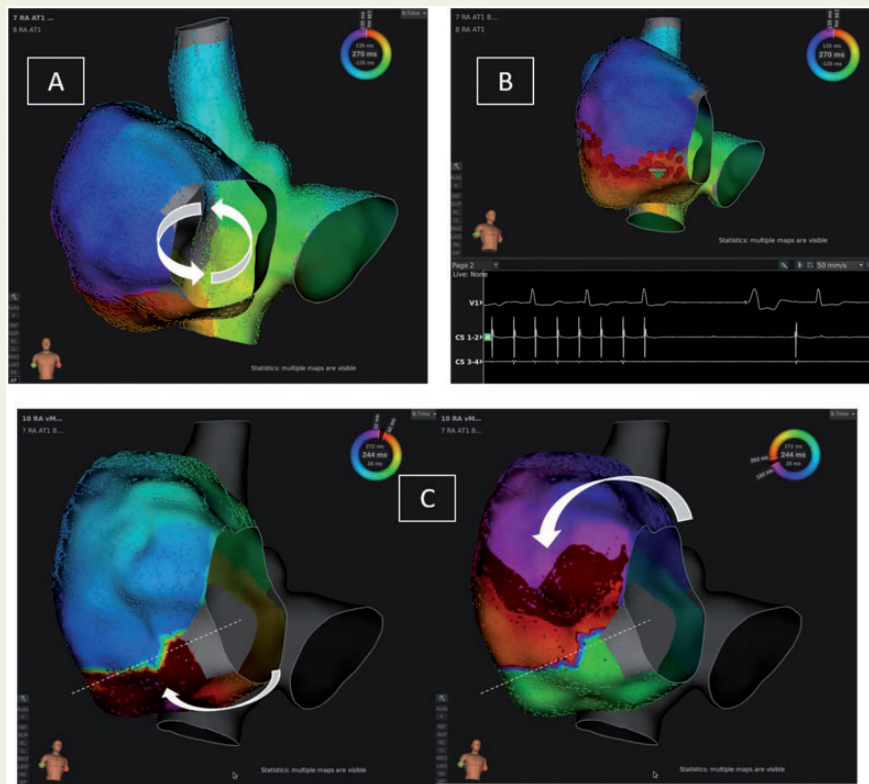


Figure 1 (A) Activation map of the intra-atrial re-entrant tachycardia within both atria. (B) Tachycardia termination during ablation (green mark). (C) Activation map while pacing inferior limb of the baffle with conduction block on left lateral wall of pulmonary venous atrium (dotted white line).

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After Senning and Mustard repairs, supraventricular tachycardias are frequent, worsen prognostic and catheter ablation is needed to restore sinus rhythm. Cavotricuspid isthmus-dependent atrial flutter is the most frequent but other mechanisms have been described, involving the different surgical scars.¹ It is thus important for these patients to have highly precise electroanatomic mapping to define the accurate target of ablation. Recently, Takigawa *et al.*³ reported the ability of Rhythmia™ mapping system to better characterize critical isthmus different from classical anatomic isthmus in scar-related tachycardias. There are only few data about the use of ultra-high density mapping system for catheter ablation of repaired congenital diseases. Our case is the first report of Rhythmia™-guided ablation after Senning repair. We highlighted the safety of using Orion™ basket catheter through a transbaffle approach, the ability of rapidly define tachycardia mechanism and its critical isthmus as well as validating complete block.

Supplementary material

Supplementary material is available at *Europace* online.

Conflict of interest: G.G. is an employee of Boston Scientific.

References

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