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# UNIVERSITÀ DEGLI STUDI DI TORINO

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## **Left persistent superior vena cava as a source of focal atrial arrhythmias: a late arrhythmia recurrence due to a latent proximal focus.**

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Case report. Atrial fibrillation (AF) is the most common supraventricular arrhythmia; it is often triggered by ectopic atrial activity originating from the pulmonary veins. Transcatheter ablation, aiming to obtain a pulmonary vein electrical isolation, has proved to be a promising therapeutic strategy. In patients with underlying cardiomyopathy AF can be both maintained by a focal electrical activity, not always localized in pulmonary vein, and substrate remodelling. Technology evolution leads us to apply AF transcatheter ablation also in patients with underlying cardiomyopathy. Focusing on patients with grown up congenital heart disease the present case report follows on a previous published case of paroxysmal atrial fibrillation (PAF) triggered by focal activity in the distal left persistent superior vena cava (LSVC) [1]. Briefly, this 50 year old woman with highly symptomatic PAF, refractory to antiarrhythmic therapy, referred to our centre for transcatheter pulmonary vein isolation. During catheter manipulation a self-terminating episode of AF triggered by focal activity from LSVC was observed and therefore selective circumferential ablation of the junction between the LSVC and the distal coronary sinus (CS) was performed. No procedure related complications occurred. The patient was discharged without antiarrhythmic drugs and did not present arrhythmias during a 60 months follow up. Thereafter she returned due to persistent heartbeat associated with a common atrial flutter like ECG (See Fig. 1). At catheterization the activation map (Carto 3, Biosense Webster) demonstrated an ectopic focus in the posterior portion of the proximal CS, radially activating the remaining atrium (See Fig. 2 or Video 1). Radiofrequency (RF) delivery (Smarttouch, Biosense Webster) on the site of earliest activation (negative unipolar signal 15 msec before P wave) during the arrhythmia restored sinus rhythm after few seconds. No complications related to the procedure occurred. The patient was discharged without antiarrhythmic drugs and no arrhythmia recurrence occurred during a 6 months follow up. To the best of our knowledge this is the first case documenting a focal atrial fibrillation triggered by a distal focus in the LSVC (junction between LSVC and distal CS) followed, after a long term period, by another focus located proximally (junction between CS and the right atrium) both treated efficaciously with transcatheter ablation.

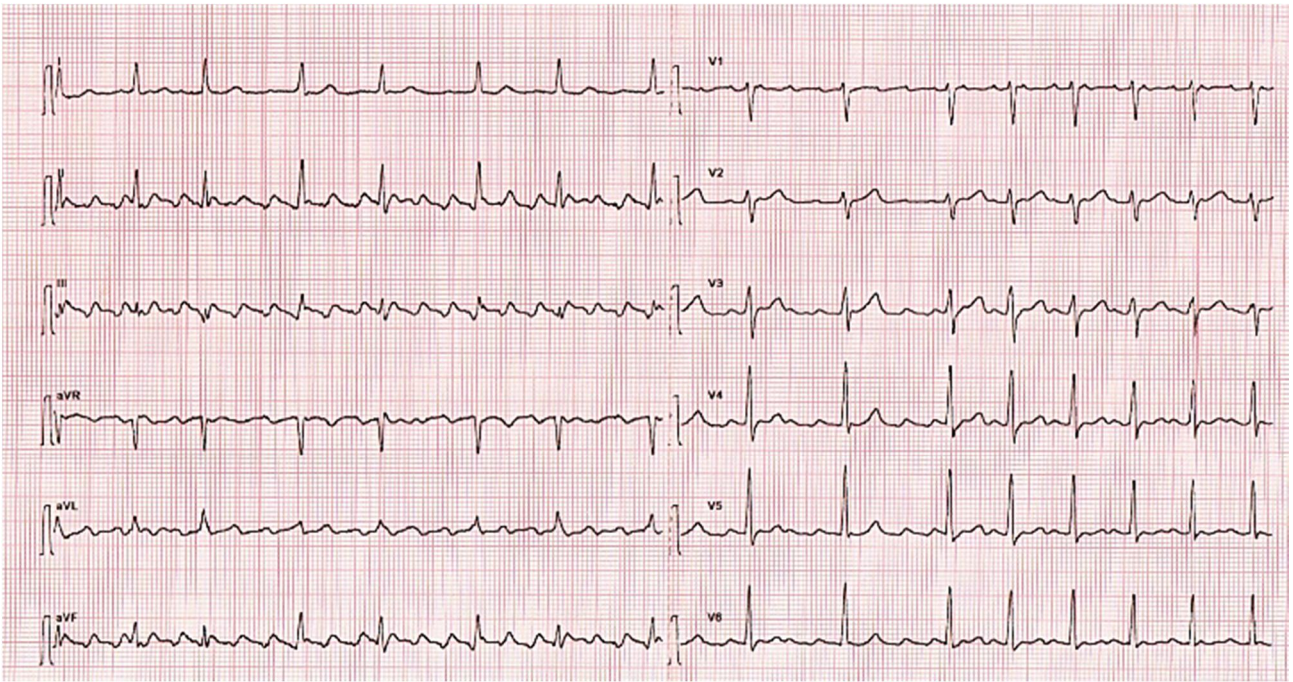


Figure 1 Atrial flutter. See the negative F wave in inferior leads and aVL and positive in V1.

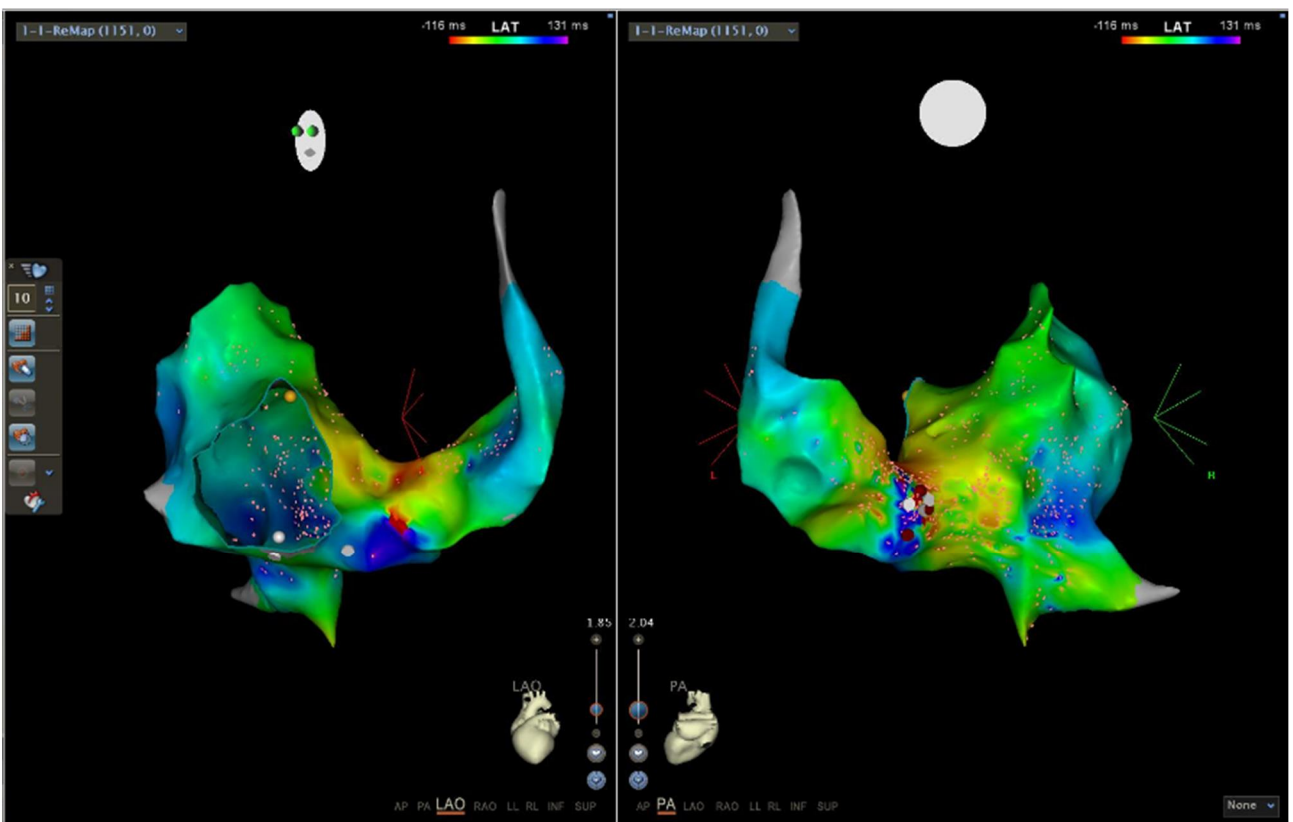


Figure 2 Focus located in posterior wall in the proximal coronary sinus with radial activation of both atria. Note the counterclockwise activation of the right atrium due to a previous line on cavo-tricuspid isthmus.