

septal branch treated has no flow. VT is re-induced again but if unsuccessful, the procedure is considered terminated. Not being able to induce VT is not a guarantee for future success. But if VT is actually induced, the procedure can be repeated using a different septal branch—the distal sub-branch of the first septal branch—to induce ischemia-necrosis in the edges of the area already treated.

While the procedure is being performed targeting the ablation of the focus of VT, the pressure gradient is being monitored. The procedure may also be useful to reduce the subaortic dynamic gradient, but we should remember that we need to wait for a full year before confirming that it has been effective. However, if the gradient does not fall in the cath. lab, we can use the procedure to test the first septal branch, inflate the balloon in its proximal sub-branch, for ultrasound-guided contrast infusion, to see if the basal septum opacifies in contact with the anterior mitral leaflet and to see what's happening with the gradient. If the gradient does fall, we would have confirmation that such septal branch is causing the gradient, which is important for an eventual procedure if the patient's functional class gets worse.

The most common complication is atrioventricular block that has a higher prevalence in alcohol septal ablation (ASA) procedures of VT compared to procedures to reduce the gradient: 35% vs 5% to 10%.<sup>2</sup> In the absence of complications, the patient will stay 2 days in the coronary unit with a temporary pacemaker and another 5 at the hospital ward with telemetry.

## REFERENCES

1. Brugada P, de Swart H, Smeets JL, Wellens HJ. Transcatheter chemical ablation of ventricular tachycardia. *Circulation*. 1989;79:475-482.
2. Tokuda M, Sobieszczek P, Eisenhauer AC, Kojodjojo P, Inada K, Koplan BA. Transcatheter ethanol ablation for recurrent ventricular tachycardia after failed catheter ablation. An update. *Circ Electrophysiol*. 2011;4:889-896.
3. Roca-Luque I, Rivas-Gándara N, Francisco-Pascual J, Rodríguez-Sánchez J, Cuellar-Calabria H, Rodríguez-Palomares J, et al. Preprocedural imaging to guide transcatheter ethanol ablation for refractory septal ventricular tachycardia. *J Cardiovasc Electrophysiol* 2019;30:448-456.

# Bail-out alcohol septal ablation in the management of obstructive hypertrophic cardiomyopathy and refractory electrical storm. Case resolution



## *Ablación septal con alcohol de rescate en miocardiopatía hipertrófica obstructiva y tormenta eléctrica refractaria. Resolución*

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## CASE RESOLUTION

The outcome was successful with a final 19-mmHg intraventricular gradient and after the extrasystole of 25 mmHg (figure 1). No more new events of ventricular tachycardia (VT) were reported, disease progression was good, and the patient remained asymptomatic at 3 months.

Sustained monomorphic VT in hypertrophic cardiomyopathy is a rare entity. These patients are considered eligible to receive an automated implantable-cardioverter defibrillator and antiarrhythmic drugs. Also, in cases of VT of focal origin, the mapping of cardiac

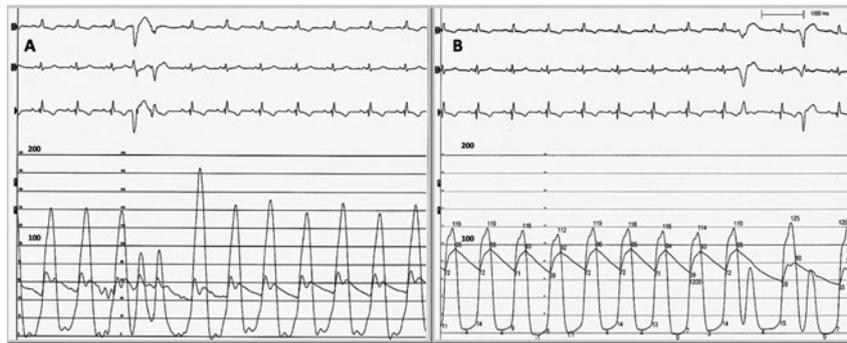
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**Figure 1.** A: gradient between left ventricle and initial aorta. B: gradient between left ventricle and final aorta.

electrophysiology and ablation is indicated. In 1989, Brugada et al.<sup>1</sup> first published that in the management of patients in whom other options have failed, alcohol ablation of the coronary branches that irrigate the origin or route of VT is a valid therapeutic option to treat persistent tachycardia.

Our case is unique because it describes the role of septal ablation for arrhythmic and hemodynamic control purposes in a septal region where the maximum gradient and origin of VT were located. Even though septal ablation can be less effective in large scars and hypertrophies  $\geq 30$  mm, it can also be a successful procedure and replace myectomy in high risk patients or centers with low surgical experience with similar long-term mortality rates for both strategies. Bubble contrast echocardiography is effective to enhance the region perfused by the target branch with the corresponding lower use of alcohol and fluoroscopy. The ablation of VT in hypertrophic cardiomyopathy is successful in up to 80% of the cases<sup>2</sup>; however, sometimes its utility is limited because the ventricular wall is too thick and there is an unreachable deep intramural reentry circuit. Magnetic resonance imaging is useful in the electrophysiological search of the circuit and to help identify the size, location, and thickness of the scar. When radiofrequency ablation fails in the management of VT, as it was the case here, alcohol ablation can prevent recurrences and improve control.<sup>3</sup> In conclusion, it is a good alternative to treat refractory VT during the management of hypertrophic cardiomyopathy.

## REFERENCES

1. Brugada P, de Swart H, Smeets JL, et al. Transcoronary chemical ablation of ventricular tachycardia. *Circulation*. 1989;79:475-482.
2. Dukkupati SR, Koruth JS, Choudry S, et al. Catheter Ablation of Ventricular Tachycardia in Structural Heart Disease. *J Am Coll Cardiol*. 2017;70:2924-2941.
3. Kumar S, Barbhuiya CR, Sobieszczyk P, et al. Role of Alternative Interventional Procedures When Endo and Epicardial Catheter Ablation Attempts for Ventricular Arrhythmias Fail. *Circ Arrhythm Electrophysiol*. 2015;8:606-615.