Real-time assessment of bidirectional block during pulmonary vein cryoablation

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Real-time assessment of the occurrence of bidirectional block during balloon cryoablation is not routinely performed.

We paced continuously inside the pulmonary vein (PV) at high amplitude (12 mV/1.0 ms) with the Achieve™ (laser 7–8). These tracings illustrate the left superior PV before and during the beginning of balloon cryoablation. The left atrium (LA) was constantly captured (change in P-wave morphology—†) at a rate slightly faster than the spontaneous sinus rhythm (preserved exit conduction). Observe that the first intracardiac electrograms clearly shows a sharp PV potential (e.g. lasso 2–3 and 7–8) in spontaneous sinus rhythm (preserved entrance conduction). An ectopic beat is shown (‡) (also demonstrating preserved exit conduction because originated within the PV), followed by loss of LA capture (§—exit block). Immediate stopping of pacing after loss of LA capture allowed the demonstration of the entrance block (loss of PV potentials within the Achieve). The bidirectional block was confirmed by the presence of a dissociated PV potential (black arrow) and an atrial fibrillation spontaneously induced inside this very active vein (dotted arrow) without conduction to the LA (Figure).

Real-time assessment of exit block may be of interest, as an alternative to entrance block evaluation, when PV potentials are not very clear or when the presence of far-field from the LA appendage impairs the analysis of the potentials.


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