

V652 - Occlusion of pulmonary veins with Cryo balloon catheter as a basic prerequisite for successful PVI. A comparison between contrast medium injection and wedge pressure

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Background: Success of pulmonary vein isolation (PVI) with the Cryo balloon technique in patients (pts) with atrial fibrillation depends on a possible maximum contact of the inflated balloon at the antrum of a pulmonary vein (PV) with full occlusion of the ostium. The degree of occlusion can be certain by the injection of contrast agent (CA) through the guide wire channel (GWC) of the catheter into the PV while the balloon (B) is pressed against the PV ostium during fluoroscopy. That means for each placement of (B) contrast injection with fluoroscopy is mandatory before freezing. As a first step to avoid this, we compared differences of pressure measurement through the GWC at baseline in the left atrium with wedge pressure after balloon inflation versus the degree of occlusion obtained by CM injection in the same position.

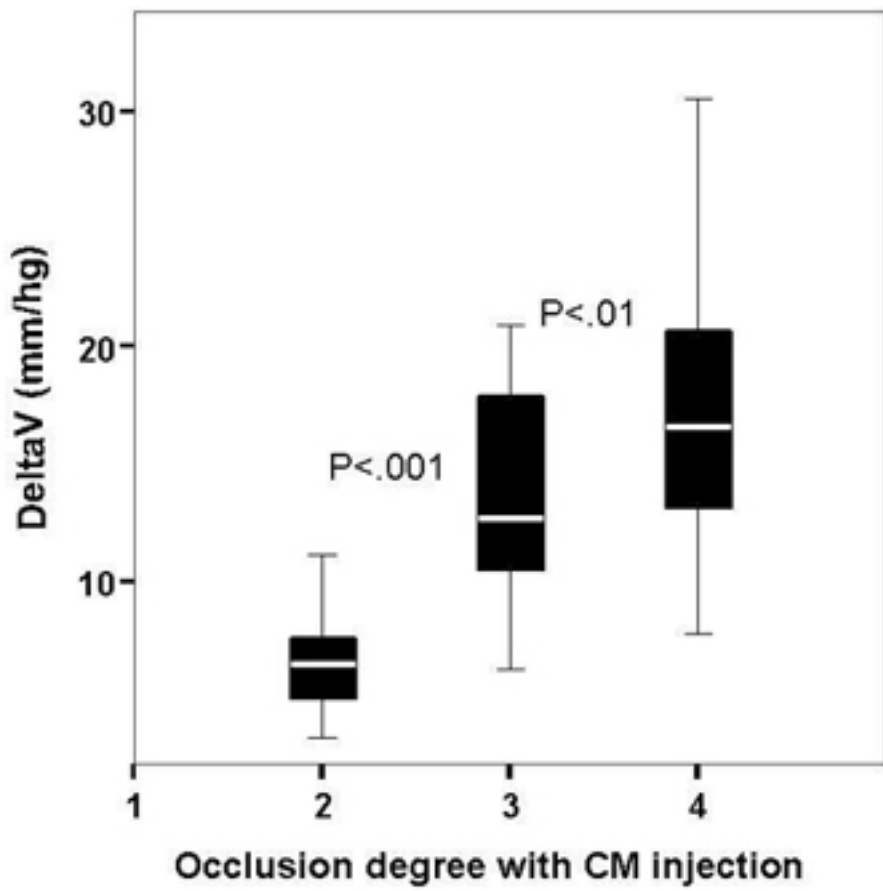
Methods: After transseptal puncture a steerable 12F sheath (FlexCath; CryoCath[®], Canada) was introduced in the left atrium. A long .032 J shaped guidewire was introduced into the target PV. A 28 mm cryoballoon catheter was guided over the wire in front of the PV ostium. Pressure curve was recorded before inflation of the (B). The inflated (B) has been pressed against the ostium and CA injected over the GWC. During injection a fluoroscopy loop was documented in LAO 60°- and RAO 30° projection.

The degree of occlusion was semiquantitatively estimated from 1= no occlusion - free flow of CM back to atrium with possible 4 degrees to 4=full occlusion - without any flow of the CM into the atrium. Immediately after injection the guide wire channel was flushed with saline and a pressure curve recorded again. The difference between baseline systolic V-wave pressure and wedge pressure were compared with the degree of occlusion to define a range between low or high occlusion grade. All measurements were done at sinus rhythm to allow possible disappearance of the A wave at the pressure curve. Values are given as median and IQR.

Results: We investigated relation between estimated occlusion degree by CA injection and curves at 73 different placements of the balloon at different PV ostium in 16 pts. In wedge position the conducted pressure of the pulmonary artery is measured and the A - wave disappeared in 90% when a occlusion degree of 3 or 4 was estimated for the position. Delta systolic pressure between baseline and wedge position at different degrees of occlusion (1-4) are given in the figure. A difference $V_{syst.} > 15$ mm has a positive predictive value of 77% for an occlusion of grade 4. Combined with a non detectable A -wave at wedge pressure the positive predictive value increases to 92%.

Conclusion: Using a .032 guide wire reliable pressure measurement over the GWC is possible. Pressure curve measurement can replace CM injections. This has to be certified with a further study with control of electrical PVI isolation as an endpoint without CM injections

Impact of occlusion degree on increase of PV pressure



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