Combined left atrial appendage occlusion with other transseptal procedures: should we use the same transseptal puncture?

Cierre percutáneo de orejuela izquierda en combinación con otros procedimientos con acceso transeptal, ¿debemos usar la misma punción transeptal?

To the Editor,

Percutaneous left atrial appendage (LAA) occlusion (LAAO) has emerged as an alternative to oral anticoagulation for patients with atrial fibrillation and high risk for oral anticoagulant-related complications or stroke despite correct anticoagulant therapy.[1] LAAO requires venous femoral access and transseptal puncture (TSP) to reach the left atrium. To improve coaxial LAA access and reduce catheter manipulation, specific TSP location (posterior and inferior) is recommended. Similarly, transcatheter edge-to-edge mitral valve repair (TEEMVR) or mitral paravalvular leak closure (PVL) also require specific TSP locations.

Previous reports have demonstrated the feasibility and safety of LAAO with combined transseptal procedures such as TEEMVR or PVL closure.[2] Nonetheless, in combined procedures, the latter are generally performed before LAAO as they are considered more technically challenging. Since the optimal site for TSP for these procedures is usually superior, the LAA approach might be jeopardized, requiring higher catheter manipulation to perform LAAO. Previous series of combined techniques focused only on the feasibility and safety of combined procedures but did not explore the optimal deployment of LAAO devices.[2] Indeed, the presence of residual LAA leaks has been linked to a higher risk of stroke in patients with surgical LAA ligation,[3] while the absence of pulmonary ridge coverage (PRC) has been associated with device-related thrombosis during follow-up.[4] Our aim was to evaluate the our procedural results of LAAO combined with other transseptal interventions.

To identify patients with combined transcatheter procedures requiring TSP, we retrospectively reviewed all patients undergoing LAAO at our center between 2011 and March 2021. Intervention reports and transesophageal echocardiogram images were reviewed. The results of LAAO in patients with or without a combined intervention were compared using the chi-square test. The study was approved by the ethics committee of Hospital Clinic Barcelona.

During the study period, 185 patients underwent LAAO. Among them, 19 (10.3%) received a combined intervention (3 mitral PVL closures [2 medial and 1 posterior]) and 16 TEEMVR (14 with functional mitral regurgitation and 2 with degenerative mitral regurgitation). The mean age was 69 ± 7 years and 10 (52%) were men. The implanted device for LAAO was Amplatzer Amulet in 17 and Lambre in 2 patients (1 patient requiring 2 simultaneous devices). The results of LAOO are summarized in figure 1. The implant success rate was 100% and there were no major complications. Nonetheless, peridevice leaks (> 3 mm) were detected in 5 patients (26.3%) and PRC was achieved in only half of the patients (n = 10, 52.6%). Only 6 patients (31.6%) had a no residual leak and PRC. Subgroup analysis revealed that all patients with combined PVL closure had suboptimal LAA closure with 2 showing residual leaks and only 1 having PRC. Regarding TEEMVR patients, 13 (81.2%) had no residual leak but almost half of them (n = 6) did not have PRC. Compared with patients with combined interventions, those with a noncombined intervention (n = 166) showed better outcomes as depicted by the absence of significant leak in 91.6% (P = .015) and a higher rate of PRC (74.3%, P = .049).

Our results suggest that the use of the same TSP for LAAO in combined interventions on the mitral valve (repair or PVL closure) may jeopardize optimal LAAO device position, especially in those patients with PVL closure, in whom the TSP is generally high and the interatrial septum is stiffer than usual due to previous cardiac surgery. In TEEMVR, the main problem was related to the high TSP, which is typically required. Although our study has several limitations and the patients were not matched for LAA morphology or implanted device, it seems reasonable to pursue optimal LAAO device positioning and, in the case of a noncoaxial LAA approach, a second guided TSP might be recommended to ensure optimal LAAO deployment. Alternatively, dedicated deflectable LAAO catheters may help to overcome the lack of alignment and allow combined procedures using the same TSP. The use of other devices such as those with a single lobe (Watchman, Watchman Flex) also needs to be tested in this setting.

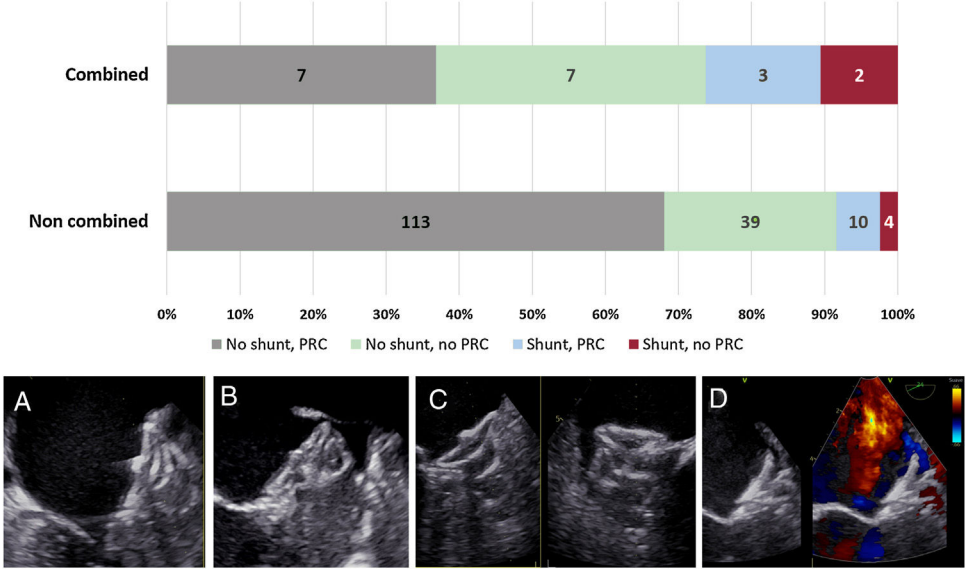

Figure 1. Left atrial appendage occlusion results according to the presence or not of combined procedures. Pictures show echocardiographic images of: adequate pulmonary ridge coverage (PRC) (A), absence of PRC (B), incomplete sealing of the posterior part of the left atrial appendage (C), and residual leak under the pulmonary ridge (D).

In conclusion, our study suggests that LAAO with other combined transseptal procedures was feasible and safe but was associated with suboptimal device deployment. Therefore, in the absence of the coaxial LAA approach, a second TSP should be performed to achieve an optimal LAAO. Further studies will be necessary to confirm the observed results.

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AUTHORS' CONTRIBUTIONS

X. Freixa and L. Sanchis conceived the study. L. Sanchis reviewed the patients' medical records and echocardiographic images. P. Cepas-Guillén contributed to completing the database and patient review. X. Freixa, A. Regueiro, M. Sabaté and M. Sitges critically supervised the initial findings and critically reviewed the initial draft of the manuscript written by L. Sanchis. All authors discussed the results and contributed to the final manuscript.

CONFLICTS OF INTEREST

L. Sanchis, M. Sitges and X. Freixa are proctors of Abbott.

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Initial experience with left bundle branch area pacing in patients with transthyretin cardiac amyloidosis

Experiencia inicial en estimulación en el área de la rama izquierda en pacientes con amiloidosis cardiaca por transtirretina

To the Editor,

We are witnessing an increase in the understanding of cardiac amyloidosis due to abnormal deposits of the protein transthyretin (ATTR), both its hereditary form and acquired (or senile) form. Current data from Spain indicate that ATTR is the most common type of cardiac amyloidosis. Heart failure (HF) is the most frequent presentation and close to 35% of patients will have deterioration in left ventricular ejection fraction (LVEF) and short survival.[1] Furthermore, a substantial number of patients with ATTR have conduction system abnormalities (7% have advanced atrioventricular block) or left ventricular systolic dysfunction.[2] Previous studies have shown a deleterious effect from frequent ventricular pacing and a clinical benefit from cardiac resynchronization therapy (CRT) in selected patients with ATTR.[3] Recently, physiological pacing of the left bundle branch (LBBP) has become a safe, feasible alternative for those who require antibradycardia treatment or CRT.[4] Our objective was to study the technical viability of LBBP in ATTR and analyze its clinical effects in a pilot experience. The study was approved by the Granada province Research Ethics Committee. Patients gave written consent for study participation and publication.

We present 3 patients with ATTR, HF, and left ventricular systolic dysfunction requiring permanent ventricular pacing; because they remained symptomatic, LBBP was performed with the aim of optimizing CRT and preventing LVEF deterioration as a consequence of the permanent pacing (table 1).

The first patient was an 83-year-old man with acquired ATTR who had a syncopal episode caused by sinus node dysfunction (SND) and nodal escape, with slight wall hypertrophy and mildly reduced LVEF. The patient had a dual chamber pacemaker, and 2 years later, in light of the etiological diagnosis, development of atrioventricular disease, and LVEF deterioration requiring permanent pacing, he was changed to conventional CRT. His progress was unfavorable, and he developed atrial fibrillation, had a deterioration in functional class and was hospitalized for HF, triggering the decision to use LBBP.

The second patient was a 72-year-old man with hereditary ATTR (p.Val142Ile variant) and paroxysmal atrial fibrillation with a severe deterioration in HF functional class since the diagnosis of the disease (1 admission and 2 visits to the emergency department for HF). He subsequently developed atrioventricular block, and was treated with LBBP with the aim of avoiding LVEF deterioration.

The third patient was an 84-year-old man who was under follow-up for ventricular hypertrophy of unknown etiology since diagnosis 4 years prior. During the follow-up, he developed difficult-to-control persistent atrial fibrillation, left bundle branch block, and progressive left ventricular systolic dysfunction. After the onset of the syncopal sinus node dysfunction, a CRT device was implanted (QRSd, 160 ms). Eventually, 1 year later, once considered a nonresponder and with deterioration in functional class, it was decided to use LBBP, and a QRSd of 140ms was obtained (figure 1).

In the 3 patients, a guide catheter was used for septal pacing (C315 HIS, Medtronic Inc, USA). Over that, a lead was introduced (Select-Secure model 3830 69 cm, Medtronic Inc., USA), connected to the polygraph to record intracavity signal. The guide catheter was positioned 2 cm apically to the His bundle electrogram and,