Table 2. Distribution of lesions by territory and technical success

TASC	Aortoiliac (n=45)	Femoropopliteal (n=70)	Technical success (Global 99.1%)
A	14 (31%)	19 (27.1%)	100%
B	11 (24%)	19 (27.1%)	
C	3 (6.7%)	8 (11.4%)	98.2%
D	17 (37.8%)	24 (34.4%)	

training was 111 (60-237) meters, and after exercise it increased to 124 (74-352) meters. (5)

In our series, 93.7% of the limbs treated at a mean follow-up of 18 months were asymptomatic, 3.6% presented improved symptoms, and 2.7% showed no clinical changes. It is important to point out that 81% of the patients in this series were Rutherford grade III. The therapeutic arsenal currently available has improved the technical success rate and patency of the treated lesions –a key point in claudicant patients–, since the relapse of symptoms is directly associated with restenosis or occlusion of the treated segment, as well as the development of new lesions. In our caseload, technical success was 99.1 %, regardless of classification and arterial territory of the limbs treated.

Conventional balloons, DEB, coated stents with and without eluting drugs, and atherectomy are among current endovascular alternatives. Regarding covered stents, McQuade et al. presented a randomized study comparing the patency of prosthetic bypass grafting versus Viabahn covered stent for the treatment of extensive femoropopliteal lesions, and found no statistically significant differences in primary patency at 4-year follow-up. (6) Recently, Tepe et al. carried out a multicenter randomized study to compare the outcomes of DEB angioplasty versus conventional balloon, reporting a primary patency of 82.2% and 52.4% at 12 months, respectively. (7)

In our experience, none of the 23 limbs treated with DEB required reoperation, and remained asymptomatic during the follow up period. Therefore, we could say that endovascular therapy for IC patients performed by experienced groups is safe and effective, with low morbidity and mortality rate. The indication of endovascular therapy in these patients should be agreed between doctor and patient based on the expectations and functionality of each person. Nonetheless, endovascular therapy should be considered as the treatment of choice in patients whose medical treatment is unsuccessful or insufficient for their expectations.

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Malpositioned Pacemaker Lead Mimicking Left Myocardial Injury

Pacemaker implantation is a common practice, with minimum prevalence of associated complications. However, inadvertent left-sided lead placement is one of them, which though rare, may have serious consequences as atrial thromboembolism.

We report the case of a 73-year-old hypertensive female patient, with no history of coronary heart disease, with ostium secundum atrial septal defect (ASD), severe pulmonary arterial hypertension (PAH) and right heart dilatation, and no other cardiovascular history. A DDD pacemaker had been implanted in another center due to extreme bradycardia in acute AF conversion, 30 days before consultation.

The patient presented with FC III precordial, burning pain of moderate intensity, spreading at rest, radiating to the back and the right arm, and relieved with opioid analgesics. Upon consultation, the patient was asymptomatic and normotensive, with no signs of congestive heart failure (CHF), jugular venous distention or Kussmaul's sign.

The electrocardiogram (ECG) showed ST-segment depression in V2 and V3 with negative T-waves (Figure 1A). No other ECG abnormalities were noted over previous ECGs (the patient had deviation of the axis and right bundle branch block associated with her history of ASD and PAH. Successive records showed ST segment resolution (Figure 1B). Elevated serum cardiac enzymes (CPK and cTnI) were observed in the appropriate time window.

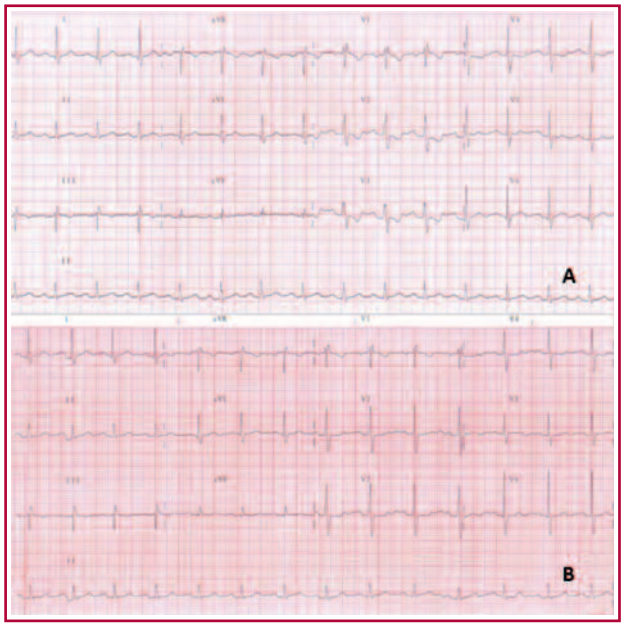

Fig. 1. Admission ECG. ST-segment changes in the anterior wall (A) with spontaneous resolution (B).

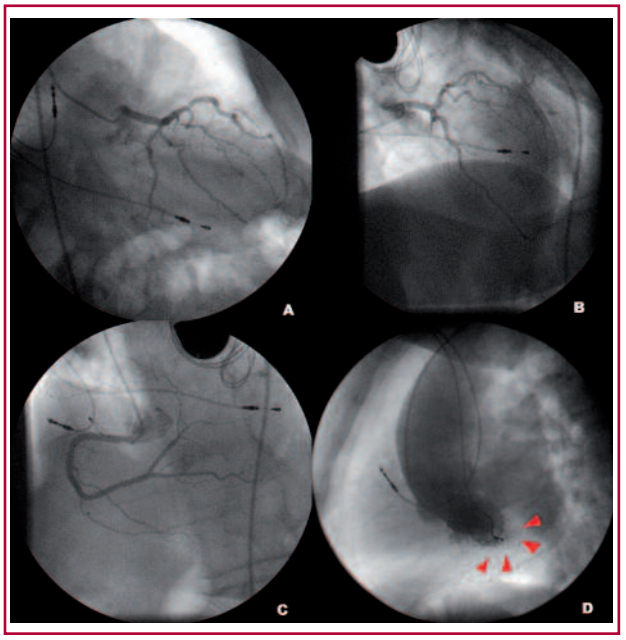

Fig. 2. Coronary angiography without evidence of significant lesions (**A:** Left coronary artery, right anterior oblique view. **B:** Left coronary artery, front cranial view. **C:** Right coronary artery, left anterior oblique view), and left ventriculography (**D:** Left view), showing lead position in the left ventricle and an akinetic segment where the lead is implanted (*arrow heads*).

The patient was admitted to the intensive care unit with presumptive diagnosis of non-ST-segment elevation acute coronary syndrome. A coronary angiography ruled out coronary artery disease, and a left ventriculography revealed the position of the pacemaker lead, in direct contact with the inferoposterior left ventricular wall, where regional motility disorders were observed (Figure 2).

The echocardiography evidenced good biventricular function without regional motility disorders, and the passage of one of the pacemaker leads through the ASD and its position in relation to the left ventricular posterior wall was observed. The pacemaker lead was repositioned.

Left ventricular pacemaker lead implantation is a rare, underdiagnosed and little reported complication; for this reason, its incidence and prevalence are unknown. It is usually associated with cardiac structural abnormalities. Patients may remain asymptomatic or have up to 37% episodes associated with cerebral arterial thromboembolism. (1, 2)

Diagnosis is simple, but requires high suspicion. The image of right bundle branch block in the pacemaker capture and the position of the ventricular lead in the chest x-ray (front and lateral) suggest this condition, which should be confirmed by echocardiography. (3-5)

The therapeutic decision is not uniform in the publications; however, in all of them the approach has been lead removal and repositioning in patients with early diagnosis, (4, 6) or chronic anticoagulation in those where lead removal was not attempted or could not be performed. (1-3, 5)

In our case, the option was lead repositioning, given the close date of pacemaker implantation and the clinical correlation with the symptoms.

Left ventricular pacemaker lead implantation is an uncommon complication when positioning these devices, but it is not exempted of serious consequences. It is easily diagnosed but demands high suspicion. There is no consensus as to its management, but both anticoagulation and lead repositioning are accepted, depending on the patient.

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Efficacy of Cryoballoon Ablation. A Comparison Between First- and Second-Generation Balloon Catheters

Atrial fibrillation (AF) is the most common sustained arrhythmia encountered in clinical practice. Clinical trials based on epidemiology data predict that its prevalence will be 2-to-3-fold higher by 2050. (1)

Catheter ablation of paroxysmal or persistent AF is the treatment of choice in refractory and symptomatic patients, according to the current treatment guidelines. However, the procedure is not without complications, which are usually between 2% and 5%, as reported in the literature. (1)

While radiofrequency (RF) is the most widely used energy source, it encounters some limitations, and cryoablation has become an alternative treatment option by offering a safer lesion profile, among other advantages. (2-4) Since 2012, a second-generation balloon catheter has been used whose technological improvement consisted in the addition of 4 refrigerant injectors to the existing ones, and the location of a more distal injection coil within the balloon. (4-6)

However, these technical improvements have not been clinically evaluated in terms of efficacy. The purpose of this article is to compare the safety, efficacy, and success rate of this procedure between first-generation balloon (CB1) and second-generation balloon (CB2) catheters.

This is an observational, retrospective, single-center (Instituto Cardiovascular de Buenos Aires) study, including the first 35 consecutive ablations of paroxysmal AF performed with 28 mm Arctic Front® cryoballoon catheter (Medtronic, Inc.) (CB1), and 35 ablations performed with Arctic Front® Advance cryoballoon catheter (CB2), from November 2013 to December 2014 (Figure 1). It should be pointed out that selection criteria for any of the two catheters were not based on clinical criteria but on availability, since the CB2 catheter has been available in the Argentine market since August 2014.

A total of 70 patients were included in the study; 71.43% in the CB1 group and 73.33% in the CB2 group were men (p=0.650). Mean age was 54.2±13.42 years in CB1 and 52.94±12.25 in CB2 (p=0.406). All patients had history of documented recurrent paroxysmal AF (PAF) of 2-6 years evolution and refractory to antiarrhythmic treatment. Average CHA2DS2-VASC score was 1 (1-3) for both groups.

Table 1. Technical characteristics of the procedure

	CB1	CB2	p
Number of applications per vein	2.27±0.59	1.11±0.32	0.01
Mean time to vein disconnection	82.08±15.67	47.02±9.45	0.0001
Mean temperature reached in each vein, °C	-38.18±4.76	-42.44±4	0.0003
Mean procedure time, min	83.83±18.34	61±12.88	0.0001
Fluoroscopy time, min	25.38±12.22	12.99±3.58	0.01
Mean fluoroscopy dose, mGy	243.43±142.43	131.73±90.03	0.002
Complications, %	0	2.85	0.307

No significant differences were found in the left atrial (LA) area, [20.10±3.63 cm2 in the CB1 group and 19.94±2.98 cm2 in the CB2 group (p=0.943)], or in the ejection fraction [59.94±4.17 in CB1 and 60.26±2.85 in CB2 (p=0.719)].

Immediate success rate was 100% for both groups, and the number of applications per vein was 2.27±0.59 in the CB1 group and 1.11±0.32 (p=0.01) in CB2 group. Mean time to vein disconnection was 82.08±15.67 seconds in the CB1 group and 47.02±9.45 seconds (p=0.0001) in the CB2 group. Mean temperature in the CB1 group was -38.18±4.76 °C, and -42.44 ±4.05 °C (p=0.0003) in the CB2 group.

Procedure time was 83.83±18.34 min in the CB1 group and 61±12.88 min (p=0.0001) in the CB2 group; fluoroscopy duration was 25.38±12.22 minutes for the CB1 group and 12.99±3.58 min (p=0.01) for the CB2 group; fluoroscopy dose was 243.43±142.43 MGy and 131.73±90.03 mGy respectively (p=0.002).

As for the safety of the procedure, the CB1 group did not have phrenic nerve paralysis, while there was one case of phrenic paralysis in the CB2 group which reversed one month after ablation (p = 0.307).

Patients with over 6-month follow-up after the procedure were included in this study. Follow-up included all 70 patients; mean follow up was 11.95±3.79 months and recurrence rate was 24.75% for the CB1 group, and 10.07±3.67 months and 14.28 % for the CB2 group (p=0.477).

Radiofrequency ablation is currently the most widely used method for the effective treatment of AF; however, success rate and limitations to RF ablation have been properly described by our study team and in the literature.

Today, cryoablation is being used as an option to