

Percutaneous Left Atrial Appendage Closure in Patients with Non-Valvular Atrial Fibrillation and End-Stage Renal Disease on Hemodialysis: A Case Series

JOSÉ DE LA FLOR MERINO¹, E.BASABE², VIRGINIA LOPEZ DE LA MANZANARA³ , JESÚS HERNANDEZ VAQUERO¹, JOSE HERRERO CALVO³, LUIS NOMBELA-FRANCO⁴ , DAVID MARTI SANCHEZ², BEATRIZ SUALDEA¹, CRISTINA ALBARRACIN¹, MIGUEL RODELES DEL POZO¹

- (1) SERVICIO DE NEFROLOGIA DEL HOSPITAL CENTRAL DE LA DEFENSA GOMEZ ULLA (MADRID)
- (2) SERVICIO DE CARDIOLOGÍA DEL HOSPITAL CENTRAL DE LA DEFENSA GOMEZ ULLA (MADRID)
- (3) SERVICIO DE NEFROLOGIA DEL HOSPITAL CLINICO SAN CARLOS (MADRID)
- (4) SERVICIO DE CARDIOLOGÍA DEL HOSPITAL CLINICO SAN CARLOS (MADRID)

INTRODUCTION

Non-valvular atrial fibrillation (NVAF) is the most common cardiac arrhythmia in the general population, and its prevalence increases among patients with advance chronic kidney disease (ACKD) undergoing hemodialysis. This population presents high risk of both hemorrhagic and thrombotic events, with little evidence regarding the use of oral anticoagulation treatment (OAT) and multiple complications arising from it; however, stroke prevention with percutaneous left atrial appendage closure (LAAC) is an alternative to be considered.

OBJECTIVES

Therefore, this study aimed to address this significant knowledge gap by investigating the safety and efficacy of LAAC in this particularly high-risk group of patients. In light of the heightened risks and limited therapeutic alternatives, understanding the potential benefits and risks associated with LAAC in the context of CKD and AF is of paramount importance, both for the improvement of clinical outcomes and the optimization of patient care in this complex, at-risk population.

METHODS AND RESULTS

We retrospectively described the safety and efficacy in eight patients with NVAF and ACKD on hemodialysis during a 12-month follow-up. Mean age was 78.8 years (range 64-86; SD $\pm$ 6.7), and seven patients were male. The mean CHA2DS2-VASC and HAS-BLED were high, 4.8 (SD $\pm$ 1.5) and 3.8 (SD $\pm$ 1.3), respectively. Seventy-five percent of patients were referred for this intervention due to a history of major bleeding, with gastrointestinal bleeding being the most frequent type, while the remaining 25% were referred for high bleeding risk. The percutaneous LAAC procedure was successfully completed in 100% of patients, with complete exclusion of the appendix without complications or leakage greater than 5 mm. There was one death unrelated to the procedure, four days after the intervention. In the other seven patients, there were no deaths, cardioembolic episodes or major bleeding during the procedure and 12-month

Table 1. Basal characteristics before left atrial appendage closure.								
	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5	Patient 6	Patient 7	Patient 8
Age	86	83	81	85	78	80	74	64
Sex	Male	Female	Male	Male	Male	Male	Male	Male
Hypertension	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Type 2 Diabetes mellitus	No	No	No	No	No	Yes	No	Yes
Dyslipemia	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Smoker	No	No	Yes	No	Yes	Former	Yes	Yes
Time on dialysis until LAAC (months)	71	1	59	65	38	13	54	12
CHA ₂ DS ₂ -VASC	4	8	4	5	5	6	3	3
HAS-BLED	5	6	3	2	5	3	4	3
Previous stroke	No	Yes	No	No	No	No	No	No
Previous bleeding	Yes	Yes	No	Yes	No	Yes	Yes	Yes
	Hemorrhagic shock secondary to UGB	Hemodynamic instability secondary to GI bleeding	Labil INR	UGB	Anemia	GI and GU bleeding	Bleeding from dialysis vascular access	Hematuria / anemizati on
Permanent AF	No	Yes	No	No	Yes	No	No	No
Persistent/paroxysmal AF	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Heart failure	No	No	Yes	No	Yes	Yes	No	No
Ischemic heart disease	Yes	No	Yes	Yes	Yes	No	No	No
Previous treatment								
- VKAs	Yes	Yes	Yes	No	No	No	No	No
- DOACs	No	No	No	No	No	Yes (Apixaban 2,5mg/12h)	Yes (Apixaban 2,5mg/12h)	Yes (Apixaban 2,5mg/12h)
- DAPT	No	No	No	Yes	Yes	No	No	No
Left ventricular ejection fraction (%)	50	60	30	33	51	59	60	60
Left atrium area (cm ²)	50	45	48	38	39	21	32	30
LAAC device	Watchman-FLX 27 mm	Watchman-Flx 24 mm	Watchman Flx 24 mm	Watchman Flx 24 mm	Watchman FLX 24 mm	Watchman FLX 24 mm	Watchman FLX 31 mm	Watchman FLX 24 mm
*LAAC: Left atrial appendage closure. UGB: Upper gastrointestinal bleeding. GI: gastrointestinal. GU: genitourinary. AF: atrial fibrillation. VKA: Vitamin K antagonist. DOAC: Direct oral anticoagulant. DAPT: Doble antiplatelet therapy								

Table 2. Results after LAAC.								
	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5	Patient 6	Patient 7	Patient 8
Intervention success	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Follow-up (months)	17	26	12	14	26	12		10
Major or minor bleeding (<30 days)	No	No	No	Yes	No	No		No
Major or minor bleeding (>30 days)	No	No	No	No	No	No	...	No
Stroke (<30 days)	No	No	No	No	No	No	...	No
Stroke (>30 days)	No	No	No	No	No	No	...	No
Myocardial infarction	No	No	No	Yes	No	No	...	No
Thrombosis or leaks at 3-month control echocardiogram	No	No	No	Yes (leak <3 mm)	No	No	...	No
Death	No	No	No	No	No	No	Yes	No
Post procedural treatment	ASA + clopidogrel 5 weeks	Clopidogrel	Acenocoumarol 2 months	ASA + clopidogrel	ASA + Clopidogrel	Apixaban 2.5mg/12h 2 months	ASA + clopidogrel	Apixaban 2.5mg/12h 2 months
Long term therapy	ASA	Clopidogrel	ASA	ASA + clopidogrel	ASA	ASA		ASA

*LAAC: Left atrial appendage closure. ASA: acetylsalicylic acid

CONCLUSIONES

In our sample, percutaneous closure of the left atrial appendage appears to be a safe and effective alternative to oral anticoagulation in patients with NVAF and ACKD on hemodialysis.