First-in-Poland thoracoscopic left atrial appendage closure using the Novel AtriClip® PRO-V device in a patient after heart surgery and with an LAA thrombus

Mariusz Kowalewski[1, 2, 3], Natalia Ogorzelec[1], Sebastian Stec[1, 4], Piotr Suwalski[1]

[1]Department of Cardiac Surgery and Transplantology, National Medical Institute of the Ministry of Interior and Administration, Warszawa, Poland
[2]Thoracic Research Centre, Collegium Medicum, Nicolaus Copernicus University, Innovative Medical Forum, Bydgoszcz, Poland
[3]Cardio-Thoracic Surgery Department, Heart and Vascular Centre, Maastricht University Medical Centre, Maastricht, The Netherlands
[4]Division of Electrophysiology, Cardioneuroablation, Catheter Ablation and Cardiac Stimulation, Subcarpathian Center for Cardiovascular Intervention, Sanok, Poland

Correspondence to:
Mariusz Kowalewski, MD, PhD, Department of Cardiac Surgery and Transplantology, National Medical Institute of the Ministry of Interior and Administration, Wołoska 137, 02–507 Warszawa, Poland,
phone: +48 47 722 12 60,
e-mail: kowalewskimariusz@gazeta.pl

DOI: 10.33963/v.phj.103319

Received:
September 26, 2024

Accepted:
October 29, 2024

Early publication date:
November 12, 2024

The cornerstone treatment for atrial fibrillation (AF) is based on the prevention of cardioembolism and related stroke with the use of oral anticoagulants [1, 2], which inherently increase the risk of bleeding. Left atrial appendage (LAA) exclusion/closure is additional protection from stroke and a valid alternative for patients at high risk of bleeding and/or intolerant of oral anticoagulants. The procedure can be performed percutaneously or by using surgical techniques such as epicardial AtriClip [3, 4].

A 44-year-old male with a history of persistent AF and thoracoscopic AF substrate ablation 20 years earlier, now with tachycardia-induced cardiomyopathy (ejection fraction 20%), was admitted to the Department for LAA exclusion. Earlier, he had undergone pulmonary vein isolation ablation in the referring center, but the procedure was aborted because of an LAA thrombus. In our Department, he underwent a thoracoscopic LAA exclusion procedure. Figure 1 illustrates the surgical approach. In brief, the surgery is performed under general anesthesia, with double-lumen tube intubation and selective lung ventilation. Transesophageal echocardiography was performed intraoperatively, and LAA thrombus presence was confirmed. Left-sided thoracoscopy was followed by pericardial adhesion removal and LAA mobilization for secure and safe clip placement; device deployment was further assessed on transesophageal echocardiography. A chest tube was left in the thorax for 2 days. The patient was discharged uneventfully on post-op day 4 and referred again for the pulmonary vein isolation procedure.

This procedure is the first in Poland to use the novel thoracoscopic AtriClip® PRO-V (AtriCure, Mason, OH, US) device for LAA exclusion. This is also the first in Europe use of the PRO-V clip in a patient with an LAA thrombus. The system differs from the previous generations because it has no frame supporting the clip; therefore, it is possible to avoid all the maneuvers that could potentially injure the LA roof or pulmonary artery when the frame is retracted. This is particularly important in re-do cases such as this one, as pericardial adhesions limit the movements and access to the LAA. Left atrial appendage thrombus represents a valid contraindication for any LAAO, and AtriClip® placement is an off-label use. For the thrombi located far from the LAA ostium, however, (e.g. body or apex), the risk of thrombus migration is minimal. Indeed, with the AtriClip® device, the thrombus is entrapped inside the LAA with minimal to no LAA maneuvers. The ongoing Stand-Alone Left Atrial appendage occlusion for thromboembolism prevention in Nonvalvular Atrial Fibrillation DiseasE Registry (SALAMANDER) [5] will compare the thromboembolic events following LAAO with different devices.

Article information

Conflict of interest: PS serves as a consultant for AtriCure. Other authors declared no conflicts of interest.

Funding: None.

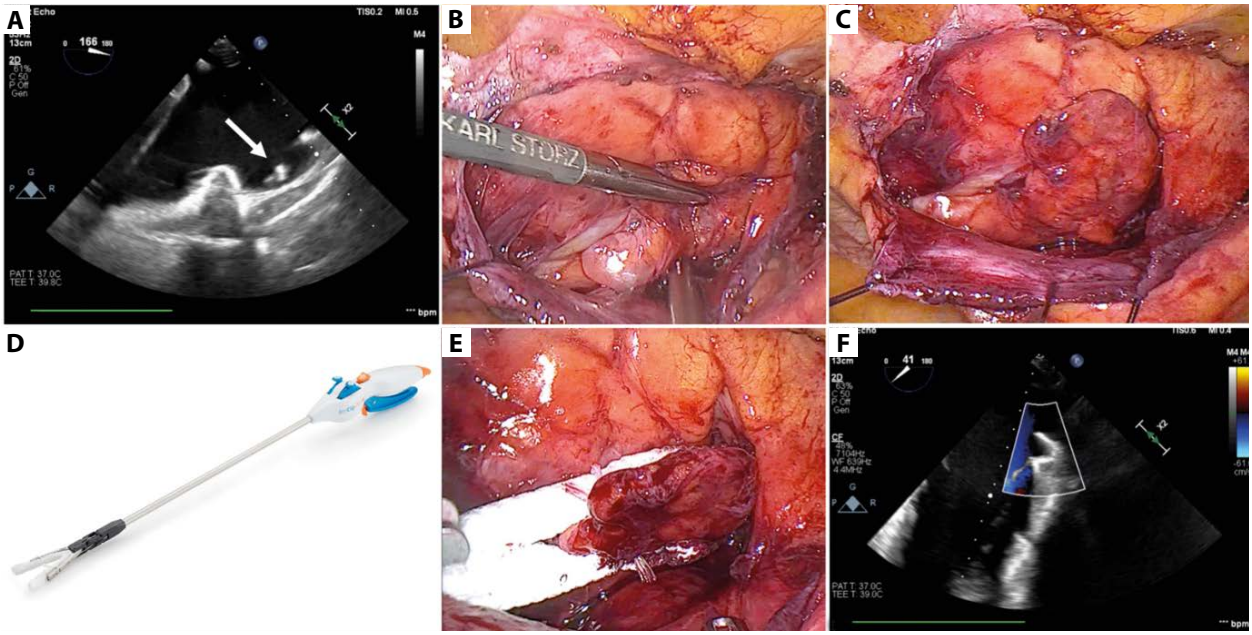

Figure 1. Intra-operative transesophageal echocardiography (**A**) the white arrow points to the dense thrombus in the left atrial appendage (LAA); thoracoscopic adhesions removal and LAA visualization; pericardial traction sutures in place (**B**). LAA fully mobilized (**C**). AtriClip® PRO-V thoracoscopic device (**D**). PRO-V clip placement (**E**). Echocardiography shows acceptable LAA closure (**F**)

REFERENCES:

1. Wolf PA, Abbott RD, Kannel WB. Atrial fibrillation as an independent risk factor for stroke: the Framingham Study. Stroke. 1991; 22(8): 983–988, doi: 10.1161/01.str.22.8.983, indexed in Pubmed: 1866765.
2. Van Gelder IC, Rienstra M, Bunting KV, et al. 2024 ESC Guidelines for the management of atrial fibrillation developed in collaboration with the European Association for Cardio-Thoracic Surgery (EACTS). Eur Heart J. 2024; 45(36): 3314–3414, doi: 10.1093/eurheartj/ehae176.PMID:, indexed in Pubmed: 39210723.
3. Kleindorfer DO, Towfighi A, Chaturvedi S, et al. 2021 guideline for the prevention of stroke in patients with stroke and transient ischemic attack: a guideline from the American Heart Association/American Stroke Association. Stroke. 2021; 52(7): e364–e467, doi: 10.1161/STR.0000000000000375, indexed in Pubmed: 34024117.
4. Perreault S, de Denus S, White-Guay B, et al. Oral anticoagulant prescription trends, profile use, and determinants of adherence in patients with atrial fibrillation. Pharmacotherapy. 2020; 40(1): 40–54, doi: 10.1002/phar.2350, indexed in Pubmed: 31758592.
5. Kowalewski M, Wańha W, Litwinowicz R, et al. Stand-Alone left atrial appendage occlusion for throMboembolism prevention in nonvalvular atrial fibrillatioN disease registry (SALAMANDER): protocol for a prospective observational nationwide study. BMJ Open. 2022; 12(9): e063990, doi: 10.1136/bmjopen-2022-063990, indexed in Pubmed: 36130748.