VIA MEDICA

IMAGE IN CARDIOVASCULAR MEDICINE

Cardiology Journal
2023, Vol. 30, No. 3, 489–490
DOI: 10.5603/CJ.2023.0038

ISSN 1897–5593
eISSN 1898–018X

Left-anterior descending chronic total occlusion percutaneous coronary intervention complicated by great cardiac vein fistula: An unusual route for intravascular ultrasound guided successful recanalization

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A 52-year-old gentleman, previously revascularized with double arterial conduit to left anterior descending (LAD) artery and to intermediate ramus branch, was admitted for worsening angina; echocardiography showed preserved left ventricular function with inferior wall akinesia. Coronary angiography revealed chronic total occlusion (CTO) of the native mid LAD (Fig. 1A) and of the right coronary artery, together with the occlusion of the arterial grafts. Multidisciplinary discussion prioritized the CTO-percutaneous coronary intervention of the native LAD. Consequently, antegrade wire escalation technique was performed.

The occlusion was supposed to be crossed by Gaia 3rd guidewire (Asahi) and a gentle dilatation with 2.0 semicompliant balloon was performed. However, angiography revealed a LAD to great cardiac vein (GCV) fistula with complete opacification of coronary sinus (Fig. 1B). The patient had no hemodynamic compromise and echocardiography ruled out pericardial effusion. After 1 week a second attempt with intravascular ultrasound (IVUS) guidance was performed. The entry-point of the CTO proximal cap could be accurately identified in an IVUS pullback from the GCV (Fig. 1C), that was thus successfully penetrated with a Conquest Pro 12 (Asahi) stiff guidewire supported by Corsair pro XS 135 cm microcatheter (Asahi), after a failed attempt with a soft polymer jacketed guidewire (Fileder XTA, Asahi). After multiple pre-dilatations, two drug-eluting stents were deployed from distal LAD to left main. Angiography revealed persistence of the fistula that was finally sealed with the implantation of two expanded Polytetrafluoroethylene covered stents (BeGraft, Bentley). Final angiography revealed complete occlusion of LAD to GCV fistula and recanalization of LAD with final TIMI 3-flow (Fig. 1D). The patient was discharged 2 days later in good clinical condition.

Conflict of interest: None declared

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Received: 29.01.2023 Accepted: 12.03.2023

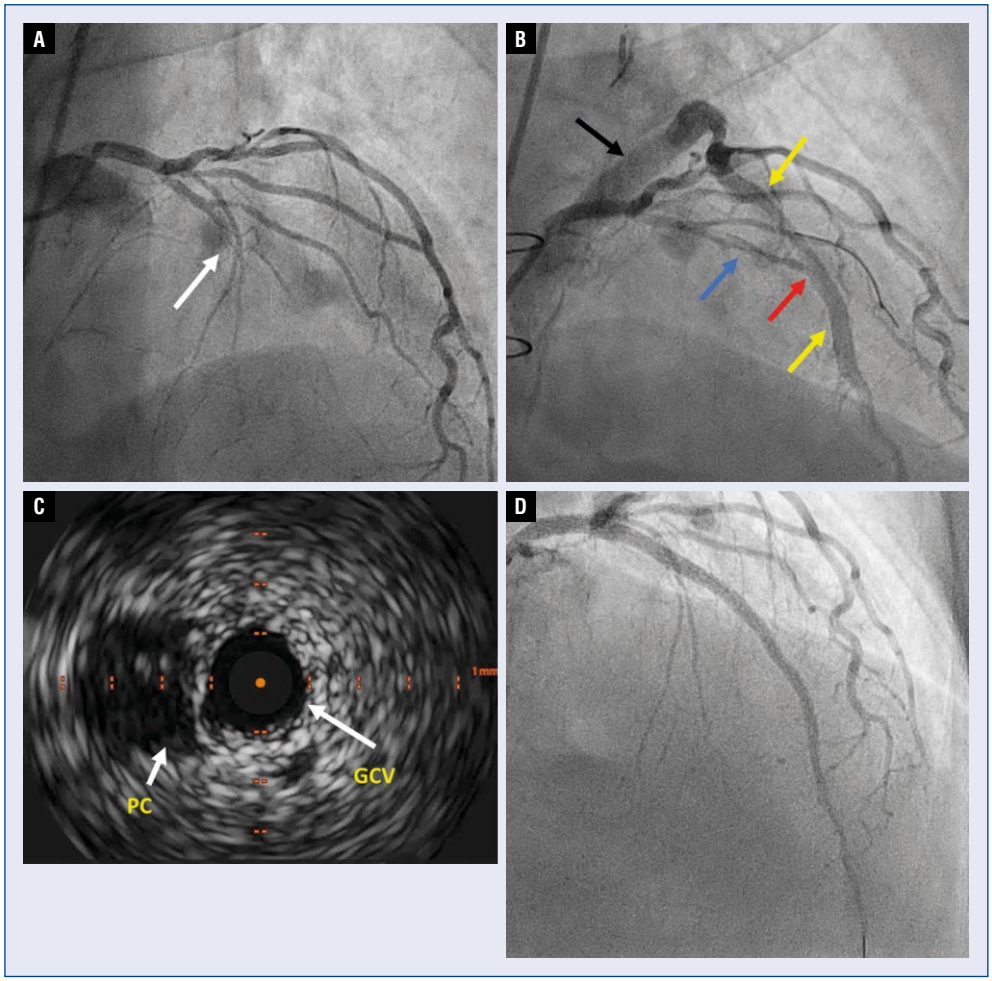

Figure 1. A. Left anterior descending (LAD) occlusion (white arrow); **B.** LAD to great cardiac vein (GCV) fistula; blue arrow — native LAD; red arrow — fistula; yellow arrows — GCV; black arrow — coronary sinus; **C.** Intravascular ultrasound identification of LAD proximal cap of occlusion with probe located in the GCV; PC — proximal cap; **D.** Final result of LAD percutaneous coronary intervention with complete sealing of the fistula.