

A hybrid one-day approach to multisite atherosclerosis and coronary artery disease: Case report

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Multisite atherosclerosis is a challenge when choosing a revascularization strategy. Despite available guidelines, the optimal timing of each intervention remains undetermined. We present a successful hybrid approach to treating multivessel coronary artery disease and concomitant carotid, left subclavian and femoral stenosis in one day.

The patient was a 64-year-old male qualified for elective coronary artery bypass grafting (CABG) with multivessel coronary artery disease (Figure 1A–B); type 2 diabetes, hypertension, lower extremities atherosclerotic disease (LEAD), nicotine use, with no neurological incidents in the past (detailed information in Supplementary material, Table S1). Further preoperative testing was advised on admission due to the discrepancy in blood pressure measurements taken on the upper limbs. Ultrasound showed significant left internal carotid artery (LICA) stenosis with contralateral occlusion, significant left subclavian artery (LSA) stenosis, and no impairment in iliac and femoral arteries blood flow. These findings were confirmed by computed tomography angiography (Figure 1C–D).

The patient was requalified for a hybrid one-day approach, LSA and LICA angioplasty under local anesthesia, with subsequent CABG. Despite preoperative screening, the left external iliac artery was determined to be too narrowed to introduce endovascular systems during angiography. Therefore, a successful left external iliac artery stenting was performed first (Figure 1E) with subsequent LICA and LSA stenting (Supplementary material,

Figures S1 and S2). During the procedure, a UHF bolus (5000 IU) with activated clotting time control was given. The patient was then put under general anesthesia, and on-pump CABG with the left internal mammary artery to the left anterior descending artery and the saphenous vein to the marginal branch was performed. The loading dose of clopidogrel (300 mg per os) was postponed to 6 hours after surgery completion as per institutional protocol [1]. Dual antiplatelet therapy with aspirin (75 mg daily) and clopidogrel (75 mg daily) was continued for 30 days.

The postoperative stay was uneventful, and none of the potential complications were observed, including increased postoperative bleeding, myocardial infarction, stroke or transient ischemic attack, acute kidney injury, or acute limb ischemia.

The patient was discharged on postprocedural day 14. Thirty-day follow-up with ultrasound imaging and computed tomography angiography showed no residual stenosis in the treated arteries and grafts (Figure 1F).

There is no clear diagnostic algorithm for preoperative screening for multisite atherosclerosis in patients qualified for CABG. Based on current guidelines, carotid ultrasound is recommended only in patients who underwent transient ischemic attack/stroke within 6 months with weaker recommendations for other high-risk patients with no recent neurological incidents [2, 3]. Carotid stenosis treatment modality and timing remain under debate. Diagnostic screening for LEAD should be considered although no large trials are

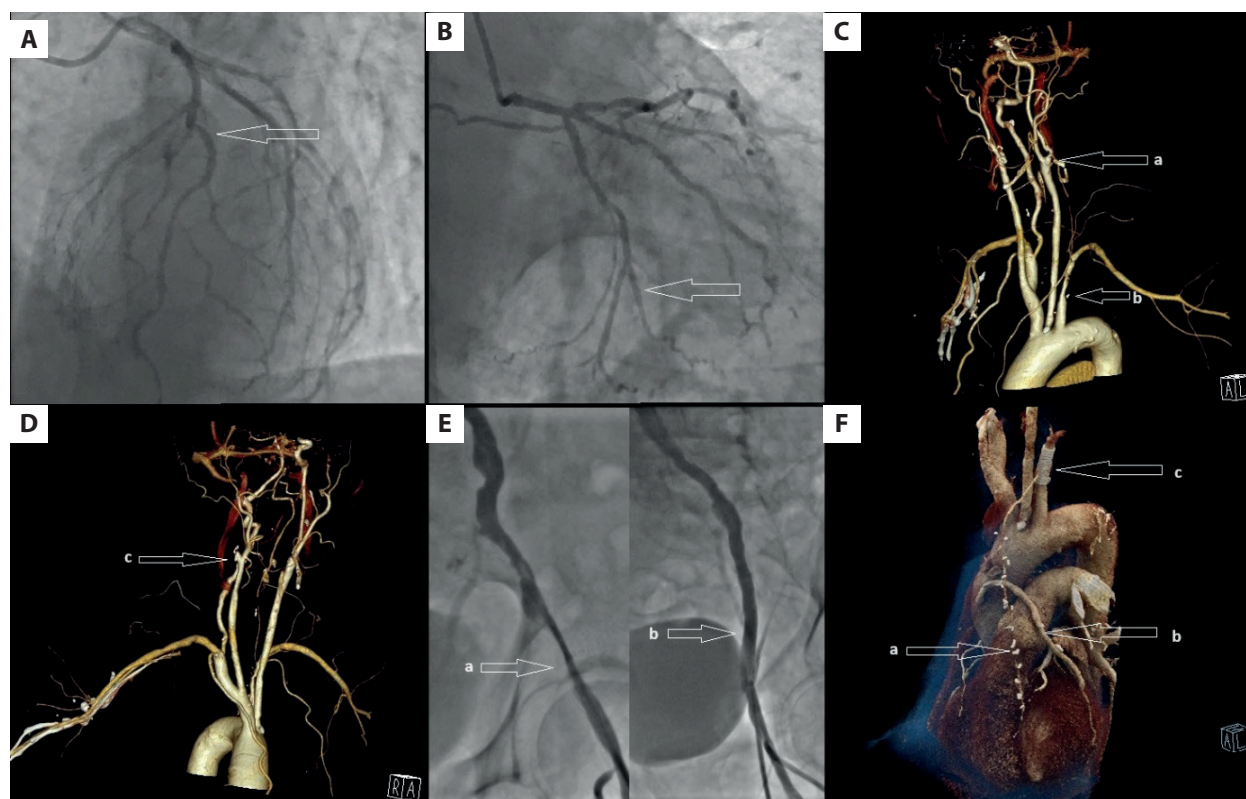


Figure 1. **A.** Coronarography before surgery — view of the left anterior descending artery (FFR confirmed critical stenosis). **B.** Coronarography before surgery — view of the marginal branch (FFR confirmed critical stenosis). **C–D.** 3D reconstruction CT-angiography of aortic arch with branches before surgery. The picture shows stenosis in the left internal carotid artery (a), left subclavian artery (b), and total occlusion of the right internal carotid artery (c). **E.** Angiography of the left external iliac artery before stenting (a) and after stent implantation (b). **F.** 3D reconstruction of CT-angiography of the implanted grafts — the left internal mammary artery to the left anterior descending branch (a), the saphenous vein graft to the obtuse marginal branch (b), stent in the left subclavian artery (c)

Abbreviations: CT, computed tomography; FFR, fractional flow reserve

available to guide LEAD management before planned cardiac surgery. LSA is usually visualized during routine LIMA-angiography with a clear indication to revascularize before planned CABG [4].

Therefore, the main question that this case raises is how extensively should we investigate all patients qualified for CABG with a history or clinical signs of peripheral artery disease. Caution and rigorous physical examination with further imaging can reduce the risk of life-threatening complications in the postoperative period. Moreover, a hybrid one-day approach can be a feasible and safe option even in cases with severe atherosclerosis on multiple levels.

Supplementary material

Supplementary material is available at https://journals.viamedica.pl/polish_heart_journal.

Article information

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