

A faraway complex bifurcation hidden behind an occluded left main in an elderly patient

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A 82-year-old man, with a previous history of ischemic heart disease due to 3-vessel disease with left main (LM) involvement. Twenty years before he underwent a double coronary artery bypass graft (left internal mammary artery (LIMA) to left anterior descending coronary artery (LAD) and saphenous graft to Posterior Descend-

ing coronary artery (PDA)); subsequent follow-up was uneventful. He was admitted to our hospital due to an acute coronary syndrome with ST segment abnormalities in the lateral and inferior leads on baseline EKG.

Urgent coronary angiography showed chronic total occlusion of both LM (**Figure 1A**) and right

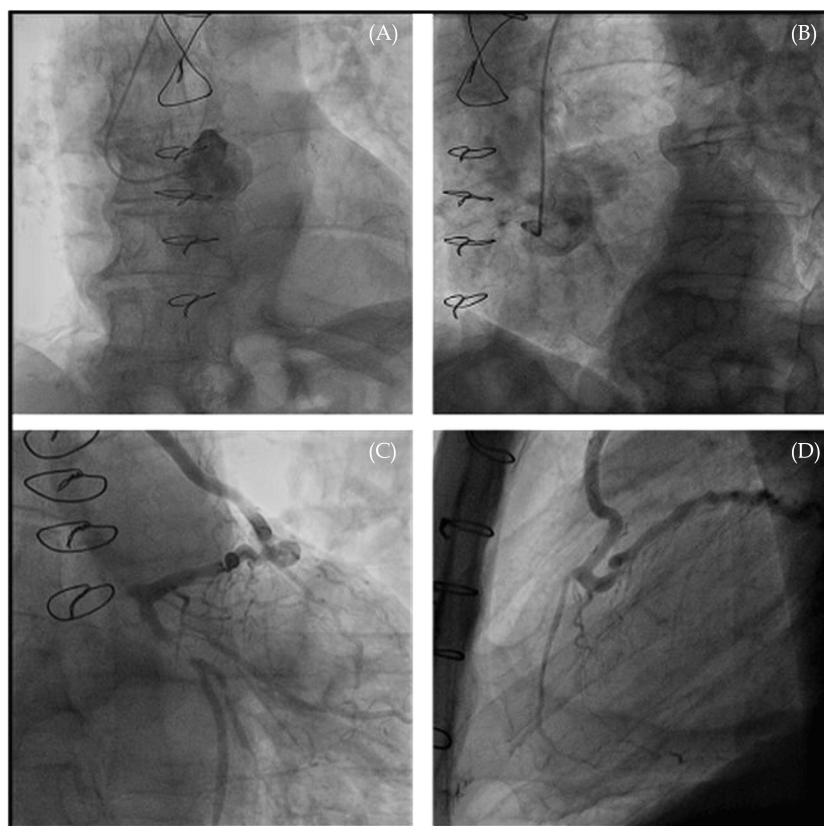


Figure 1 Diagnostic coronary angiography demonstrating occlusion of both LM and RCA (A & B) and patency of the single patent vessel, the LIMA for LAD (C). LAD: left anterior descending coronary artery; LIMA: left internal mammary artery; LM: left main; RCA: right coronary artery.

coronary artery (RCA, [Figure 1B](#)). The LIMA graft to LAD was the last patent vessel ([Figure 1C & D](#)) supplying both RCA (through collateral circles) and circumflex artery which presented proximal subocclusive stenoses of two large obtuse marginal (OM) branches. A percutaneous revascularization of both the LM CTO and circumflex artery was planned. The procedure was performed through a 5 Fr left radial access to engage LIMA and a 6 Fr right femoral artery. Using a JL 4.0 guide catheter with an antero-grade approach, after puncturing the proximal cap with a Conquest Pro guidewire (Asahi Intecc Co. LTD, Aichi, Japan), a Finecross microcatheter (Terumo, Tokyo, Japan) was advanced on LAD using a Fielder XTA guidewire (Asahi Intecc Co. LTD, Aichi, Japan, [Figure 2A](#)). The latter was then exchanged with a BHW guidewire and LM was pre-dilated with 1.5 and 2.0 mm semi-compliant balloons ([Figure 2B](#)). After wiring both the circumflex artery and the second obtuse marginal, two overlapping 2.25 × 22 mm (Orsiro, Biotronik, Bulach, Switzerland) were implanted cross-over ([Figure 3A-3C](#)) on CX-OM2; POT-side-POT optimization to distal CX was performed. Then a 4.0 × 18 mm DES (Orsiro, Biotronik, Bulach, Switzerland) was implanted in reverse cross-over fashion on LM to pro-

ximal CX ([Figure 4A](#)) and post-dilated with a 4.5 mm NC balloon ([Figure 4B](#)). Finally, a 2.5 × 15 mm DES (Orsiro, Biotronik, Bulach, Switzerland) was implanted on the first OM with a T and protrusion (TAP) bifurcation technique ([Figure 5A & B](#)), followed by final kissing balloon. Angiographic final result was satisfactory on both the circumflex artery and all its branches ([Figure 5C](#)), whereas LIMA remained patent serving the middle-distal LAD. During the subsequent hospitalization there were no major complications and the patient was persistently asymptomatic at 12 months follow-up.

Although percutaneous intervention of acute or subacute occlusion of LM is not infrequently performed during STEMI and NSTEMI presentation,^[1] recanalization of chronic occlusion of LM is an unusual occurrence in the standard cath lab of workload,^[2] becoming less rare in elderly patients, in particular when a previous LIMA for LAD is still working.^[3] In the present case the recanalization of LM was necessary to treat the culprit lesion, the two bifurcations of left circumflex artery and both OM. Knowledge of the basic techniques for CTO and also for bifurcation treatment is mandatory for the modern interventional cardiologist.

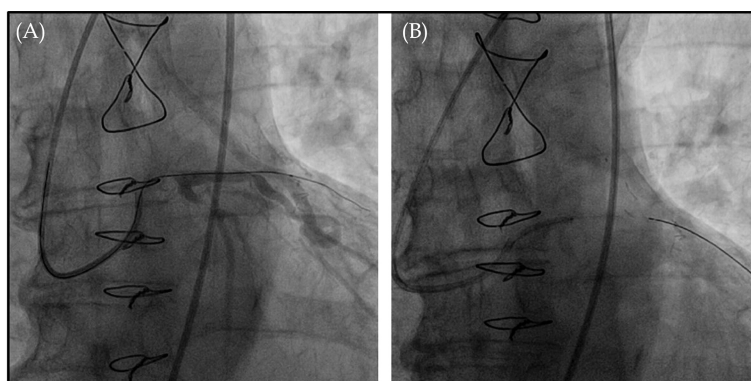


Figure 2 Recanalization of LM by Fielder and Finecross microcatheter (A) and multiple dilation of the vessel (B). LM: left main.

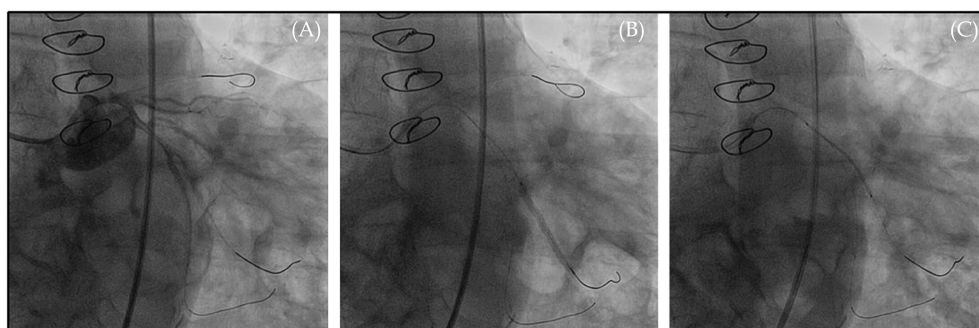


Figure 3 Revascularization of OM 2 branch by cross-over technique. OM: obtuse marginal.

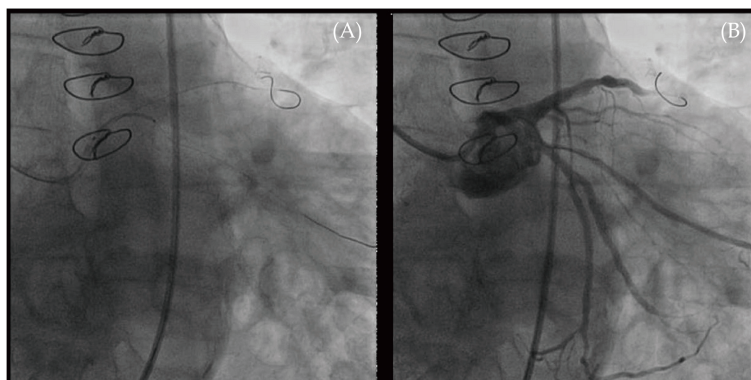


Figure 4 Reverse cross-over of LM versus LCx and POT. LCx: left circumflex artery; LM: left main.

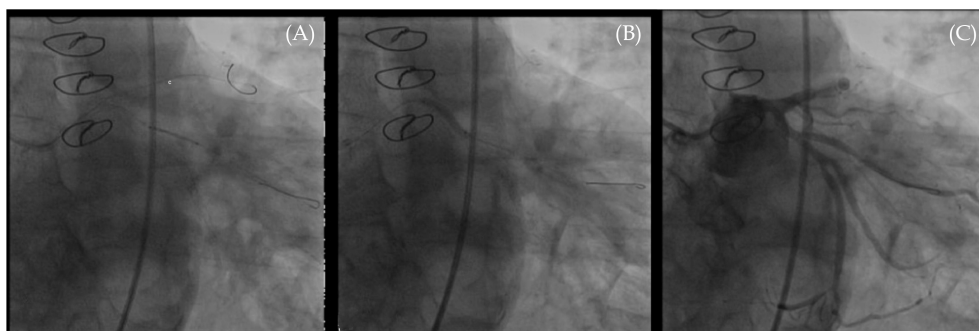


Figure 5 TAP technique stent implantation of OM 1 (A-B) and final angiographic result (C). OM: obtuse marginal.

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