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## **Marinade technique: A strategy for thrombus burden reduction in the setting of an acute coronary syndrome**

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## **Marinade technique: A strategy for thrombus burden reduction in the setting of an acute coronary syndrome**

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Primary percutaneous coronary intervention (PPCI) is the gold standard treatment for ST-segment elevation myocardial infarction [1]. However, large thrombus burden in the context of ST-segment elevation myocardial infarction has an increased risk of no reflow and distal embolization and represents a technical challenge [2]. Several devices are being developed and tested to overcome this situation. We present a case combining manual aspiration and local intracoronary thrombolysis with ‘marinade’ technique to achieve procedural success.

A 25-year-old man, current smoker and with previous history of obesity, polysubstance drug abuse and a previous episode of deep vein thrombosis in his right leg and heterozygous to the factor V Leiden mutation, was admitted with acute chest pain and ST segment elevation in anterior leads in the electrocardiogram. Urgent PPCI was performed after a loading dose of 300 mg of aspirin and 180 mg of ticagrelor. The angiography showed an acute occlusion of the ostial proximal left anterior descending coronary artery (LAD) and distal embolization of second diagonal artery (**Figure 1A**). Repeated thrombus aspiration, infusion of glycoprotein IIb/IIIa inhibitors and balloon angioplasty failed to restore distal flow (**Figure 1B**). Through a *Guideliner* 6 French

extensor catheter and distal occlusion of the vessel with a  $3.5 \times 12$  mm balloon catheter (“marinade technique”), local infusion of fibrinolytic was decided (3 bolus of 5 mg of tenecteplase each for 5 minutes) (Figure 1C), achieving thrombolysis in myocardial infarction 3 flow in LAD artery (Figure 1D) with residual stenosis of 70% with luminal area of  $5 \text{ mm}^2$  measured by intravascular ultrasound. For PPCI a total of 10000 IU of unfractionated heparin were given. Triple antithrombotic therapy with aspirin, ticagrelor and unfractionated heparin was maintained for seven days, when a new coronary angiography was performed. LAD presented thrombolysis in myocardial infarction 3 flow and absence of significant stenosis. An optical coherence tomography showed a simply plaque erosion with scarce red thrombus burden without significative plaque rupture and adequate luminal area at LAD (Figure 1E–F). Transthoracic echocardiogram showed moderate reduced systolic dysfunction and an intraventricular thrombus and patient was discharged on aspirin 100 mg per day, clopidogrel 75 per day and apixaban 5 mg every 12 hours during the first month.

The combined use of intracoronary fibrinolytic infusion with distal coronary occlusion, previously referred to as the marinade technique, may prove beneficial for patients undergoing PPCI with failed intracoronary thrombus aspiration.

The marinade technique relies on the advantages of intracoronary fibrinolysis, encouraging the dissolution of the thrombus with both proximal and distal occlusion of the coronary vessel. For drug administration, an extension guide catheter is introduced into the vessel, followed by immediate inflation of a 1:1 balloon after the thrombus, blocking the distal flow for 5 minutes, intensifying the fibrinolytic effect.

Further potential benefits of this maneuver include protecting the distal circulation from microembolisms and potentially promoting ischemic postconditioning of the heart during reperfusion after balloon retrieval [3–5].

## **Article information**

**Conflict of interest:** None declared.

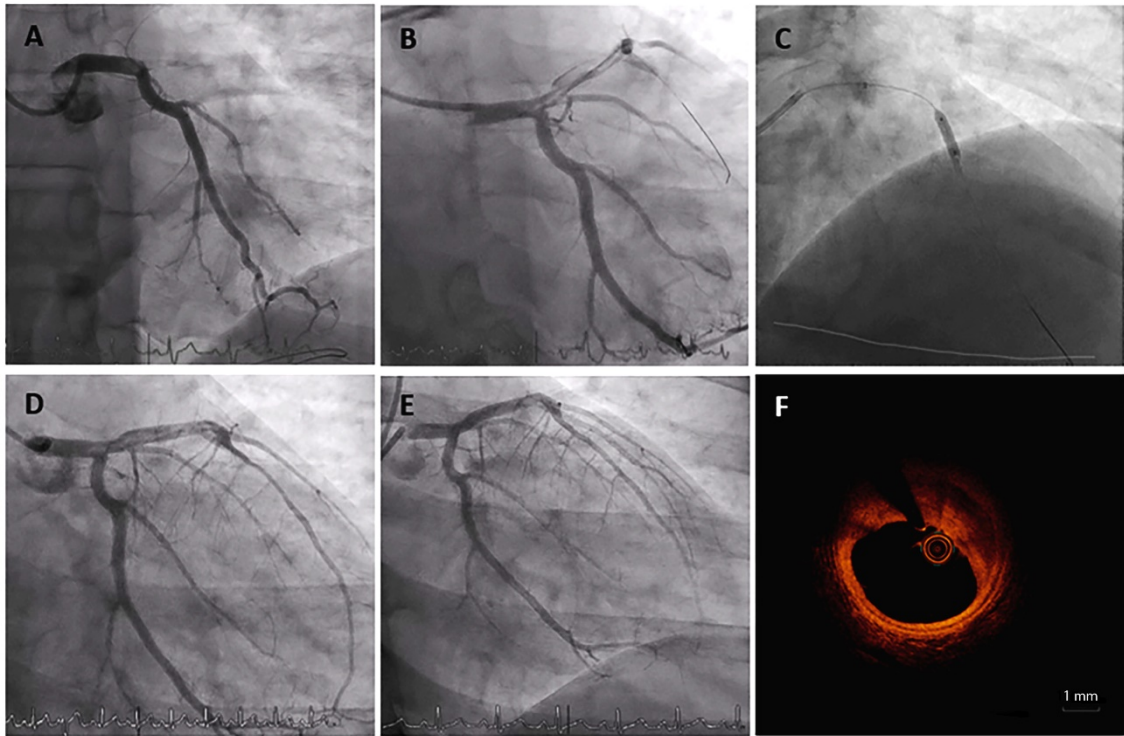
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**Figure 1.** **A.** Initial angiography showing a complete occlusion of the ostial left anterior descending coronary artery. **B.** Angiography after thrombus aspiration, glycoprotein IIb/IIIa inhibitors infusion and balloon angioplasty. **C.** Marinade technique. **D.** Angiography after marinade technique with thrombolysis in myocardial infarction 3 flow in left anterior descending coronary artery. **E–F.** Final angiography and optical coherence tomography of left anterior descending, respectively