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**Multimodality imaging of intramyocardial dissecting haematoma**

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## **Multimodality imaging of intramyocardial dissecting haematoma**

A 78-year-old man candidate to surgery for early-stage lung cancer (IIIa stage), without past cardiology history, underwent a pre-operative electrocardiogram showing Q waves in the anterior leads. The subsequent transthoracic echocardiogram (TTE) demonstrated severe left ventricle (LV) ejection fraction reduction due to apex and mid-distal septal wall akinesia. Furthermore, a suspected thrombus (Panel A, Supplementary data online, Video S1) was observed. Two days later, a hypoechoic intramyocardial cavity replacing the thrombus was showed by TTE (Panel B, Supplementary data online, Video S2).

Computed tomography angiography (CTA) followed by late iodine scans showed occlusion of mid-left anterior descending artery with a large post-ischaemic scar involving mid- and apical septal wall and the whole apex. Moreover, a hypodense well-demarcated crescentic shape area in the LV apical wall was identified (Panels C–F).

The patient underwent a cardiac magnetic resonance (CMR) showing dissecting haematoma of the apical wall associated with LV thrombus (Panels G and H, Supplementary data online, Videos S3 and S4). CMR (GE Discovery MR450 1.5 T) confirmed a large anteroseptal ischemic scar (Panels I and J). T2\* exhibited the presence of blood in the apical wall of the LV (Panel K). These results were confirmed with parametric mapping. In particular, T1 mapping revealed a central core with a mean value of 946.628 ms and a peripheral layer with a mean value of 1218.627 ms (Panel L). Extracellular Volume (ECV) sequences confirmed the presence of apical thrombus (Panel M).

Heart Team discussion based on these evidences gave indication to apex ventriculoplasty.

Intraoperative transoesophageal echocardiography (TOE) showed an echo-lucent area within the LV myocardium by 3D reconstruction and colour flow was demonstrated inside the cavitory defect (Panel N, Supplementary data online, Videos S5 and S6). (Panels A and B) TTE long-axis view showing a suspected thrombus (asterisk) (Panel B) same TTE view obtained 2 days later revealing a hypoechoic intramyocardial cavity (asterisk). (Panels C and D) CT angiography four-chamber

(Panel C) and short-axis (SA) view (Panel D) demonstrating crescentic LV apical area (asterisks). (Panels E and F) Late iodine CT four-chamber (Panel F) and SA view (Panel E) scans showing post-ischaemic scar and hypodense crescentic LV apical area suggestive of thrombus (arrow). (Panels G–M) Steady-state free precession CMR SA acquired after contrast administration (Panel G) and three-chamber (Panel H) revealing a mobile endomyocardial flap (arrowhead). late gadolinium enhancement three-chamber (Panel I) and SA (Panel J) view showing an extensive antero-septal and apical transmural scar (arrowhead). T2\* four-chamber view (Panel K) demonstrating a blood signal ( $T2^* = 15.17 \pm 6.08$  ms) in the apical LV with altered value of T1 mapping (Panel L). ECV SA view (Panel M) confirming the presence of apical thrombus. (Panel N) 3D-TOE SA view showing an apical endocardial flap (arrow).