

Subepicardial aneurysm after blunt chest trauma: a life-saving complication?

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A 19-year-old man was admitted to our hospital immediately after being run over by a tractor-trailer. Clinical examination was unremarkable. Electrocardiography (ECG) showed inverted T wave in leads aVL and V₁ as well as ST depression in leads II, III, aVF, and V₄–V₆. Transthoracic echocardiography (TTE) revealed a mildly dilated left ventricle with an end-diastolic diameter of 62 mm; systolic function was normal with an ejection fraction of 60%. All cardiac valves and great arteries were normal. Further examination revealed an oval, echolucent intramyocardial area (35 × 15 mm) within the basal lateral wall segment communicating with the left ventricle through a narrow neck. Color Doppler ultrasound showed a bidirectional blood flow within that cavity (FIGURE 1A and 1B). An ECG-gated cardiac computed tomography scan confirmed a subepicardial aneurysm with preserved epicardial integrity (FIGURE 1C). The aneurysm formation

caused the displacement of the left circumflex artery branches (FIGURE 1D). The patient was managed conservatively and remained stable. Serial TTE showed no progression of the aneurysm or worsening of heart function. Cardiac magnetic resonance imaging (MRI) revealed a subendocardial fibrous scar in the mid-lateral wall segment and a transmural fibrous scar covering the aneurysm (FIGURE 1E). Coronary angiography was performed and revealed dissection of the obtuse marginal branch, which was successfully treated by angioplasty. The patient was discharged home 3 days later.

Control MRI at 3 months showed complete aneurysm regression with the transmural fibrous scar in its previous location (FIGURE 1F). The patient remained asymptomatic.

Subepicardial aneurysm is considered a rare form of a partial myocardial rupture and can occur as a result of myocardial infarction, chest trauma,

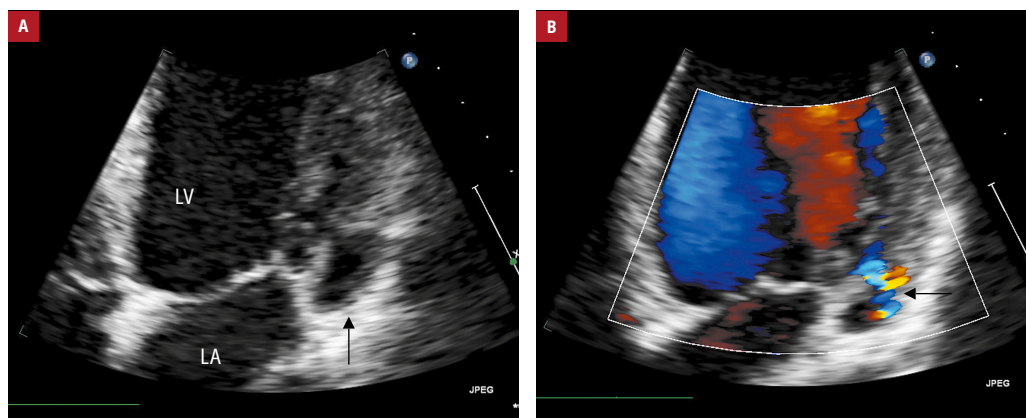


FIGURE 1 Imaging studies of subepicardial aneurysm: **A** – transthoracic echocardiography, a zoomed apical 4-chamber view; the arrow indicates the aneurysm; **B** – systolic blood flow (arrow) on Doppler color flow imaging
Abbreviations: LA, left atrium; LV, left ventricle

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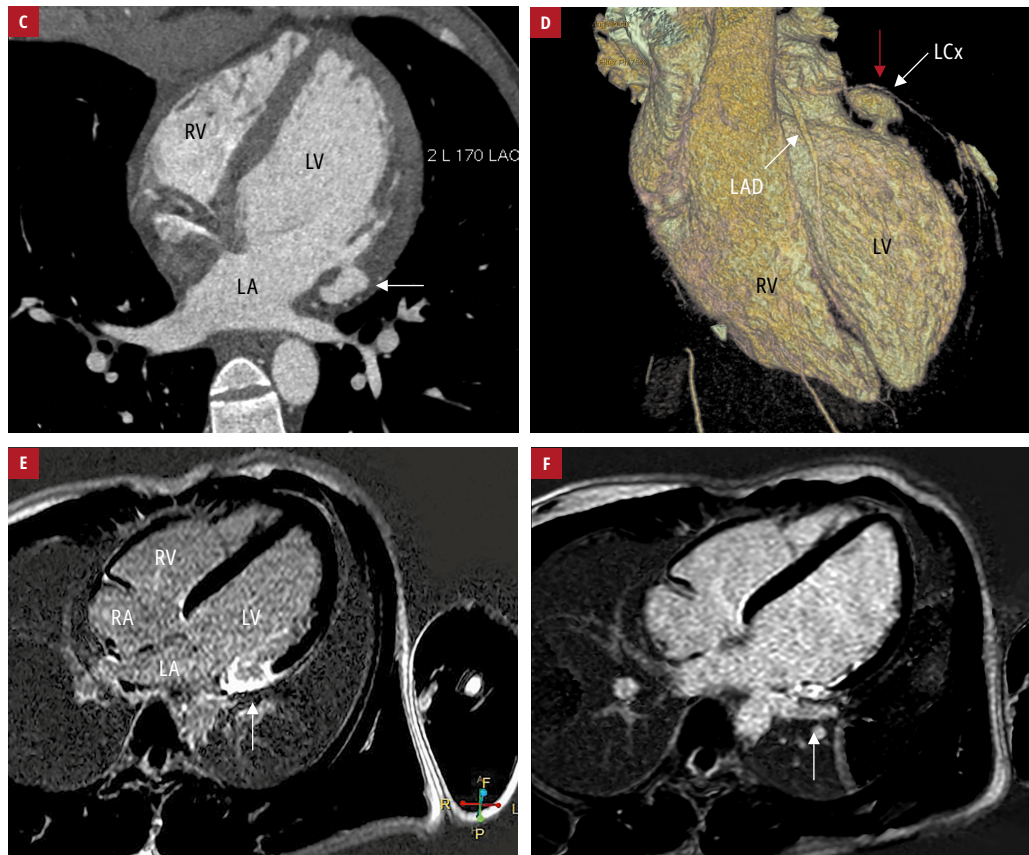


FIGURE 1 Imaging studies of subepicardial aneurysm: **C** – cardiac computed tomography showing the aneurysm in the basal lateral wall (arrow); **D** – cardiac computed tomography (3-dimensional reconstruction) demonstrating left circumflex artery displacement (red arrow); **E** – initial cardiac magnetic resonance imaging: a transmural scar covering the aneurysm (arrow); **F** – aneurysm regression (arrow) on follow-up cardiac magnetic resonance imaging
Abbreviations: LA, left atrium; LAD, left anterior descending artery; LCx, left circumflex artery; LV, left ventricle; RA, right atrium; RV, right ventricle

percutaneous coronary intervention, or can form spontaneously.¹ Abnormalities on ECG in patients with blunt chest trauma are nonspecific but can indicate potentially life-threatening complications. Multimodal imaging is essential in diagnosing and monitoring subepicardial aneurysms, as they may remain stable, resolve with time, or progress to cardiac rupture as well as true aneurysm or pseudoaneurysm formation.² Clinically stable patients can be managed with careful surveillance, while surgical treatment or percutaneous embolization is recommended if complications occur.³ In this case, the patient was extremely fortunate as cardiac rupture following blunt chest trauma is usually fatal.

ARTICLE INFORMATION

CONFLICT OF INTEREST None declared.

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REFERENCES

- Martins RP, Coquerel N, Zabalawi A, et al. Coronary embolization of an intramyocardial hematoma after myocardial infarction. *Circulation.* 2010; 121: 220-224.
- Vargas-Barrón J, Roldán FJ, Romero-Cárdenas ÁA, Vázquez-Antona CA. Intramyocardial dissecting hematoma and postinfarction cardiac rupture. *Echocardiography.* 2013; 30: 106-113.
- Gollol-Raju N, Olearczyk B, Johnson R, Menzies DJ. Pseudo-pseudoaneurysm: a rare and unexplored mechanical complication of myocardial infarction. *J Am Soc Echocardiogr.* 2007; 20: 1317.e1-1317.e3.