

# Post-traumatic acute myocardial infarction. Is angioplasty of an occluded artery always the best option? Always be ready for alternative scenarios

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Blunt chest trauma is one possible cause of the presentation of myocardial infarction [1]. Its occurrence due to a traffic accident is quite rare. However, it still comes with its own set of complications such as an increased mortality rate compared to other patients [2]. In this case, a patient subject to a traffic accident experienced an onset of myocardial infarction with an interesting electrocardiography and coronary angiography presentation.

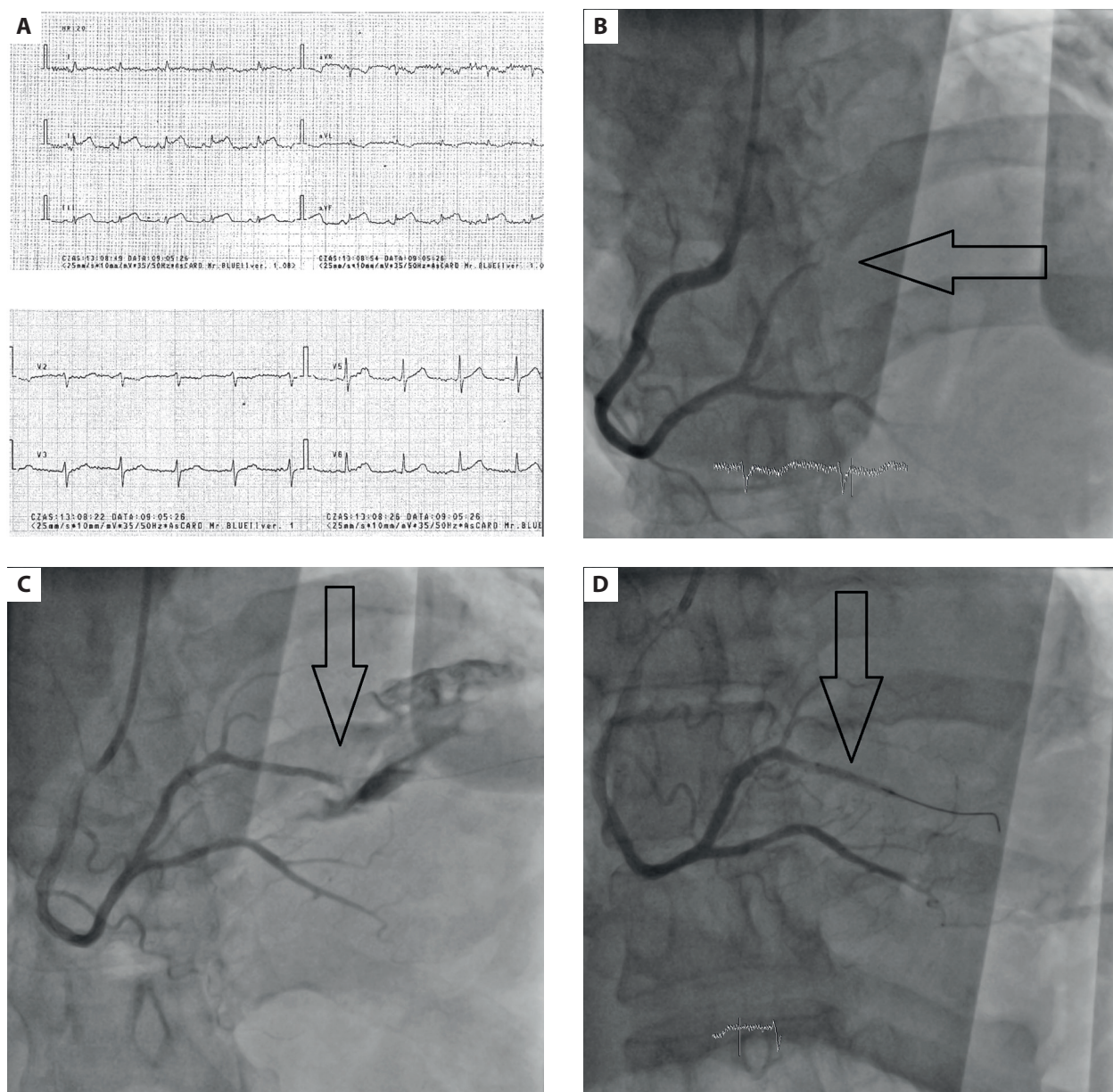
A 54-year-old man was admitted to the hospital after being run over by a car. During the diagnosis in the emergency room, among other injuries the fracture of ribs 1 to 10 on the left-hand side was found. Electrocardiography showed ST elevation in leads II, III, and aVF suggesting a case of ST-segment elevation myocardial infarction of the inferior wall (Figure 1A–B), and the patient was qualified for an emergency coronary angiography.

At that time, the patient was in a hemodynamically stable condition with blood pressure of 130/80 mm Hg. Echocardiography performed before the procedure showed no sign of tamponade and the heart was contracting properly. Angiography performed *via* a transradial approach showed an occlusion of the posterolateral branch of the right coronary artery (Figure 1C). Upon balloon dilatation of the right coronary artery, a contrast flow into the pericardium and the pleura could be observed with a drop in blood pressure to 60 mm Hg (Figure 1D). After ballooning the right coronary artery (Figure 1E) and starting a norepinephrine infusion, blood pressure increased to 100/60 mm Hg and the patient was urgently transported to

a nearby hospital's cardiac surgery department for further treatment. For the duration of the transportation, the balloon was left filled up, which prevented a hemorrhage from the coronary artery. At that time, no tamponade was found on ultrasound.

Upon sternotomy, the opening of the pericardium showed the presence of fresh blood. There was a cardiac contusion of the anterior and inferoposterior walls as well as the apex. Out of the torn right posterolateral branch, there was the previously inserted catheter with the balloon sticking out. After its removal, there was serious bleeding, which was dealt with by applying a vascular clip. TachoSil, which is an equine collagen sponge coated with fibrinogen and thrombin, was applied to the heart surface affected by the contusion. The left pleura were filled with blood and clots. Multiple broken ribs, which were cutting into the surface of the lungs creating wounds, were stitched together. Afterwards, the patient was transferred to an intensive care unit for postoperative care. Finally, the patient was discharged home from the hospital 48 days after the accident in good condition.

The presented case shows how difficult situations sometimes must be dealt with in a catheterization laboratory while performing procedures on patients with acute myocardial infarction. It must also be noted that not every occluded coronary artery might require immediate unblocking due to possible, other than atherosclerotic, mechanisms of myocardial infarction suggested by the patient's underlying condition.



**Figure 1.** A–B. Electrocardiography with visible changes suggesting ST-segment elevation myocardial infarction. C. Occluded distal part of the right coronary artery. D. Image after balloon angioplasty. E. Inflated balloon in the right coronary artery

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### REFERENCES

- Christensen MD, Nielsen PE, Sleight P. Prior blunt chest trauma may be a cause of single vessel coronary disease; hypothesis and review. *Int J Cardiol.* 2006; 108(1): 1–5, doi: [10.1016/j.ijcard.2005.04.010](https://doi.org/10.1016/j.ijcard.2005.04.010), indexed in Pubmed: 15964088.
- Alkhouli M, Alqahtani F. Incidence and Outcomes of Acute Myocardial Infarction During Motor Vehicle Accident Related Hospitalizations. *Am J Cardiol.* 2019; 123(5): 725–728, doi: [10.1016/j.amjcard.2018.11.050](https://doi.org/10.1016/j.amjcard.2018.11.050), indexed in Pubmed: 30551839.