

# Coronary Computed Tomography for Diagnosis of Traumatic Coronary Dissection

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**T**raumatic coronary dissection is sometimes a life-threatening condition that might not be recognized. We describe a case of traumatic left anterior descending coronary artery (LAD) dissection which was diagnosed on coronary computed tomography and successfully treated in a conservative manner.

## PATIENT DESCRIPTION

A 38 year old male healthy soccer player with no risk factors for coronary artery disease and no family history for systemic

disorders or sudden death was admitted to hospital with retrosternal chest discomfort. One hour earlier he had sustained blunt trauma in the form of a kick to the chest during a soccer match. The general examination was unremarkable. The 12-lead electrocardiogram (ECG) demonstrated normal sinus rhythm at 80 beats per minute with slight ST segment elevations in lead AVL and precordial leads V2-V5. The chest X-ray and echocardiogram were normal. The maximum troponin T level was 0.79 ng/ml (normal < 0.014 ng/ml) and creatine phosphokinase (CPK) 650 U/L (normal < 200 U/L). Coronary computed tomography (CCT) revealed a trace of pericardial effusion and dissection of the proximal portion of the LAD with an approximately 70% reduction in lumen diameter in the absence of coronary calcification [Figure 1A]. The patient was transferred to the intensive

cardiac care unit (ICCU) for non-invasive monitoring. He remained asymptomatic and hemodynamically stable. Repeated ECG showed resolution of ST elevations, T wave inversion in precordial lead, leads I and AVL within a few hours. It was decided to continue conservative therapy.

After a 10 day follow-up, a repeat CCT depicted mild thickness of the vessel wall at the site of the LAD dissection and normalization of the lumen [Figure 1B]. The patient was discharged on aspirin, clopidogrel and statin therapy and remained asymptomatic. The third CCT obtained at 6 months follow-up demonstrated complete healing of the LAD [Figure 1C].

## COMMENT

Coronary artery dissection is the rarest cardiac injury and can result from blunt



**Figure 1. [A]** Baseline coronary computed tomography. Arrow indicates dissection in the wall of the proximal part of left anterior descending artery with a 70% narrowing of the vessel

**[B]** Coronary computed tomography at 10 days follow-up

**[C]** Coronary computed tomography at 6 months follow-up

chest trauma [1]. It could potentially be a life-threatening condition and has to be treated appropriately [2]. However, traumatic coronary dissection could be unrecognized and under-reported [3]. Coronary angiography is recommended for cases of recent blunt chest trauma and suspicious acute myocardial infarction without evidence of pre-existing coronary artery disease [4]. To the best of our knowledge, there is no published data on the utilization of CCT as an additional non-invasive tool in such cases. Theoretically, cardiac magnetic resonance imaging (MRI), if available, can be an appropriate alternative for diagnosing and follow-up of coronary injuries, without contrast media and radiation exposure [5]. However, when the initial diagnostic modality is CCT (as it was in our case), the same modality should be used for follow-up.

The approach to treatment of coronary artery lesions is variable and includes percutaneous revascularization, coronary

bypass or conservative medical therapy [3]. Conservative management could be provided in hemodynamically stable patients with minimal injuries under close non-invasive monitoring in acute stages. Rapid availability of the aforementioned diagnostic tools is crucial for optimal management in such cases. From more than 80 published cases of traumatic coronary dissections, seven patients were safely observed and treated without coronary interventions.

This report demonstrates the usefulness of CCT as an additional and non-invasive diagnostic tool to evaluate multiple possible thoracic pathologies, including injury to the heart and the coronary arteries, in the setting of blunt chest trauma. Moreover, this case shows that withholding coronary intervention in some cases of non-occlusive traumatic coronary dissection is safe with close non-invasive monitoring in the ICCU with serial CCT.

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