

Interventricular Septal Dissection Secondary to Inferior Wall Myocardial Infarction

A 72-year-old female with no prior history of hypertension or diabetes mellitus, presented with chief complaints of dyspnea on exertion and chest pain. Cardiac examination revealed a pan-systolic murmur at the left lower sternal border and electrocardiogram revealed ST-segment elevation in leads II, III, and aVF along with T wave inversion. A coronary catheter angiography revealed chronic total occlusion of the right coronary artery and a diagnosis of inferior wall myocardial infarction was made. Transthoracic echocardiography demonstrated regional hypokinesia in the basal inferior and infero-septal segments with mild left ventricular systolic dysfunction; additionally, it demonstrated a serpiginous tract within the myocardium of interventricular septum with a large ventricular septal defect suggesting a possibility of septal rupture.

Computed tomography angiography was performed for further anatomical characterization which revealed thinning of inferior and inferoseptal wall of the basal left ventricle with a well-defined defect in the basal infero-septal wall leading to an outpouching communicating with the left ventricular cavity and extending along the inferior wall of the basal left ventricle towards the diaphragmatic aspect of left atrio-ventricular groove. The contrast opacified blood was also seen traversing the entire length of the septum, dissecting between the layers of the inferoseptal and anteroseptal wall of the basal left ventricle, resulting in a false lumen within the interventricular septum which in turn was seen communicating with right ventricular cavity (Figure 1). The above findings were consistent with interventricular septal dissection secondary to inferior wall myocardial infarction.

Interventricular septal dissection is an extremely rare and often fatal complication of acute myocardial infarction and is more frequently observed in the setting of inferior wall infarcts.¹ Only few cases of interventricular septal dissection secondary to myocardial infarction have been reported in the existing literature. In an institutional review of 789 114 transthoracic echocardiograms, only 13 cases of interventricular septal dissection were found with most cases occurring secondary to right sinus of Valsalva aneurysm.² It can also occur following aortic valve replacement, bacterial endocarditis, cardiac surgery, endomyocardial biopsy or a congenital myocardial developmental anomaly. Secondary to myocardial infarction due to right coronary artery occlusion as was observed in the present case, there is disruption of blood supply from the septal perforators arising from right coronary artery whereas there is normal blood supply from the left anterior descending artery. This discrepancy in blood supply leads to shearing forces within the septum at the junction of hyperkinetic septum (supplied by the left anterior descending artery) and the akinetic septum (supplied by right coronary artery) leading to dissection.³ While transthoracic echocardiography is often the primary imaging modality for making the diagnosis, CT angiography aids in accurate anatomical characterization for better pre-surgical planning and often provides additional insights regarding the coronary artery disease.

Although the incidence of ventricular septal rupture has reduced with the advent of effective thrombolytic therapy and reduced time to revascularization, radiologists should pay attention while reporting cases with certain high-risk features like advanced age, female gender, right coronary artery occlusion or significant

E-PAGE ORIGINAL IMAGE

Vidiyala Pujitha¹ 

Niraj Nirmal Pandey¹ 

Sanjeev Kumar¹ 

Rakesh Yadav² 

¹Department of Cardiovascular Radiology & Endovascular Interventions, All India Institute of Medical Sciences, New Delhi, India

²Department of Cardiology, All India Institute of Medical Sciences, New Delhi, India

Corresponding author:

Niraj Nirmal Pandey

✉ nirajpandey2403@gmail.com

Cite this article as: Pujitha V, Pandey NN, Kumar S, Yadav R. Interventricular septal dissection secondary to inferior wall myocardial infarction. *Anatol J Cardiol.* 2024;28(5):E-17-E-18.

DOI:10.14744/AnatolJCardiol.2024.4242



Copyright@Author(s) - Available online at anatoljcardiol.com.
Content of this journal is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License.

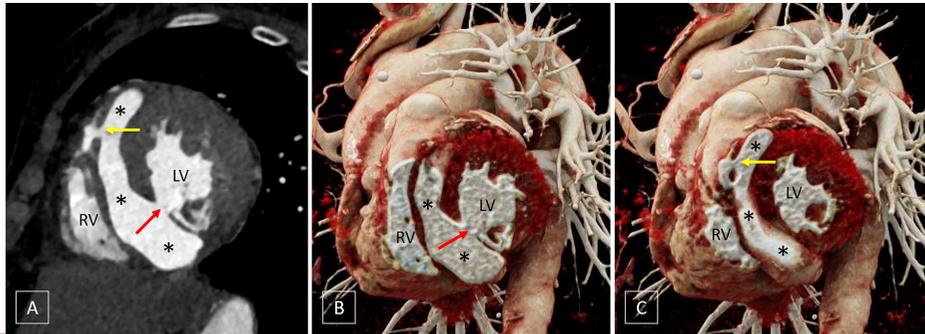


Figure 1. Oblique sagittal image (A) and volume rendered images (B and C) demonstrate the well-defined defect (red arrow) in the basal infero-septal wall of the left ventricle (LV) leading to an outpouching communicating with the left ventricular cavity. The contrast opacified blood is seen dissecting between the layers of the inferoseptal and anteroseptal wall of the basal left ventricle, resulting in a false lumen (indicated by asterisks) within the interventricular septum which in turn is seen communicating (yellow arrow) with right ventricular (RV) cavity.

circumflex artery disease in a left dominant circulation, inferior wall myocardial infarction, and conduction abnormalities.

Informed Consent: Written informed consent was obtained from the patient for the publication of this case report and accompanying images.

Declaration of Interests: The authors have no conflict of interest to declare.

Funding: The authors declare that this study received no financial support.

REFERENCES

1. Edwards BS, Edwards WD, Edwards JE. Ventricular septal rupture complicating acute myocardial infarction: identification of simple and complex types in 53 autopsied hearts. *Am J Cardiol.* 1984;54(10):1201-1205. [\[CrossRef\]](#)
2. Gu X, He Y, Luan S, et al. Dissection of the interventricular septum: echocardiographic features. *Med (Baltim).* 2017;96(10):e6191. [\[CrossRef\]](#)
3. Kalvin L, Yousefzai R, Khandheria BK, Paterick TE, Ammar KA. Ventricular septal dissection complicating inferior wall myocardial infarction. *Case Rep Cardiol.* 2017;2017:9680891. [\[CrossRef\]](#)