

# Traumatic tricuspid regurgitation and right coronary artery dissection

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## Introduction

A 47-year-old male, with a history of chronic HCV infection, was admitted for blunt chest trauma after a road traffic accident. He presented with chest pain. Troponin was elevated; electrocardiogram (ECG) showed atrial fibrillation (AF) with ST elevation over inferior leads.

## Procedural findings & clinical course

Urgent coronary angiogram revealed proximal right coronary artery (RCA) total occlusion. Brief wiring re-established TIMI 2 flow with IVUS confirming proximal to distal RCA spiral dissection; stenting was avoided.

This patient later developed right heart failure symptoms requiring diuretics. Echocardiogram showed severe tricuspid regurgitation (TR) with anterior leaflet flail prolapse, with suspicion of ruptured chordae. Dilated right atrium (RA), right ventricle (RV) and inferior vena cava (IVC) was noted; severe RV systolic dysfunction was found. Cardiothoracic team (CTS) was consulted yet surgery was deferred and medical optimisation was done first due to poor RV function.

Anticoagulation was continued for RCA dissection and AF. Coronary angiogram repeated 2 months later showed partial healing but persistence of dissection with TIMI 3 flow. Repeated echocardiogram showed right ventricular enlargement with satisfactory RV systolic function (RV EF 42.3%, RV FAC 39.7%, RV free wall GLS -26%). Again, flail anterior leaflet of tricuspid valve with severe tricuspid regurgitation was noted.

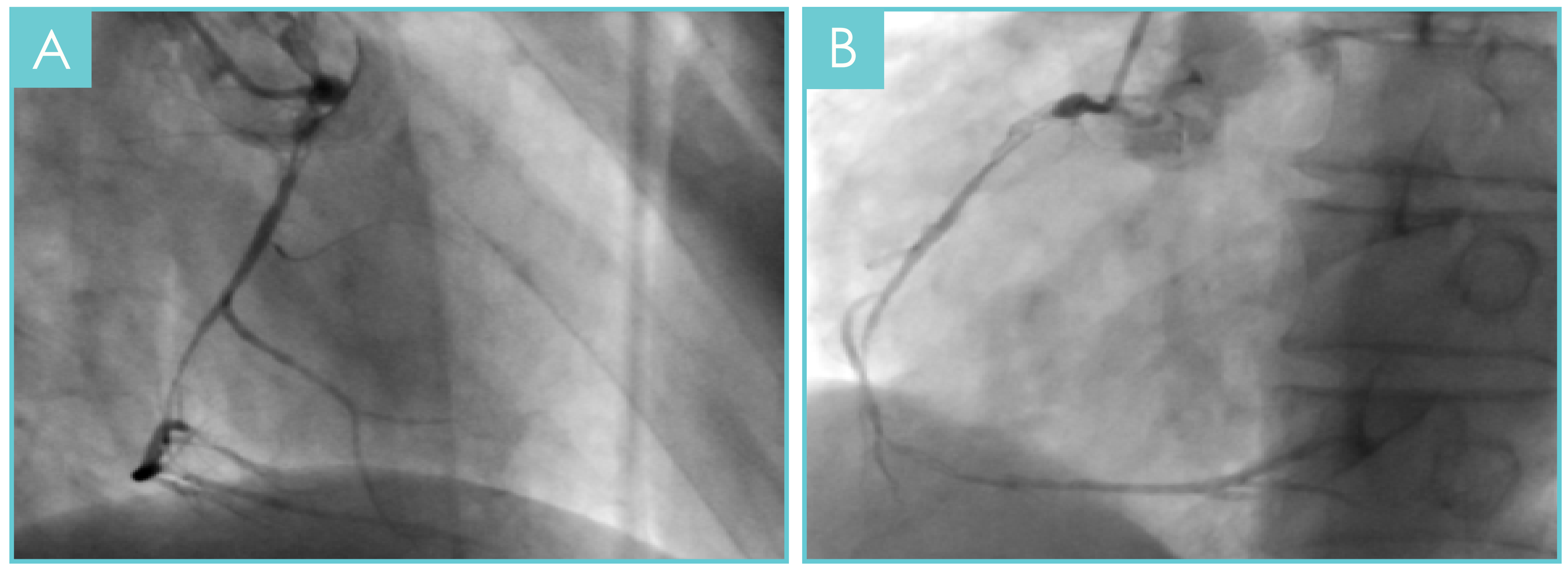


Figure 1  
On urgent coronary angiogram, both RAO (A) and LAO (B) views shows proximal RCA total occlusion

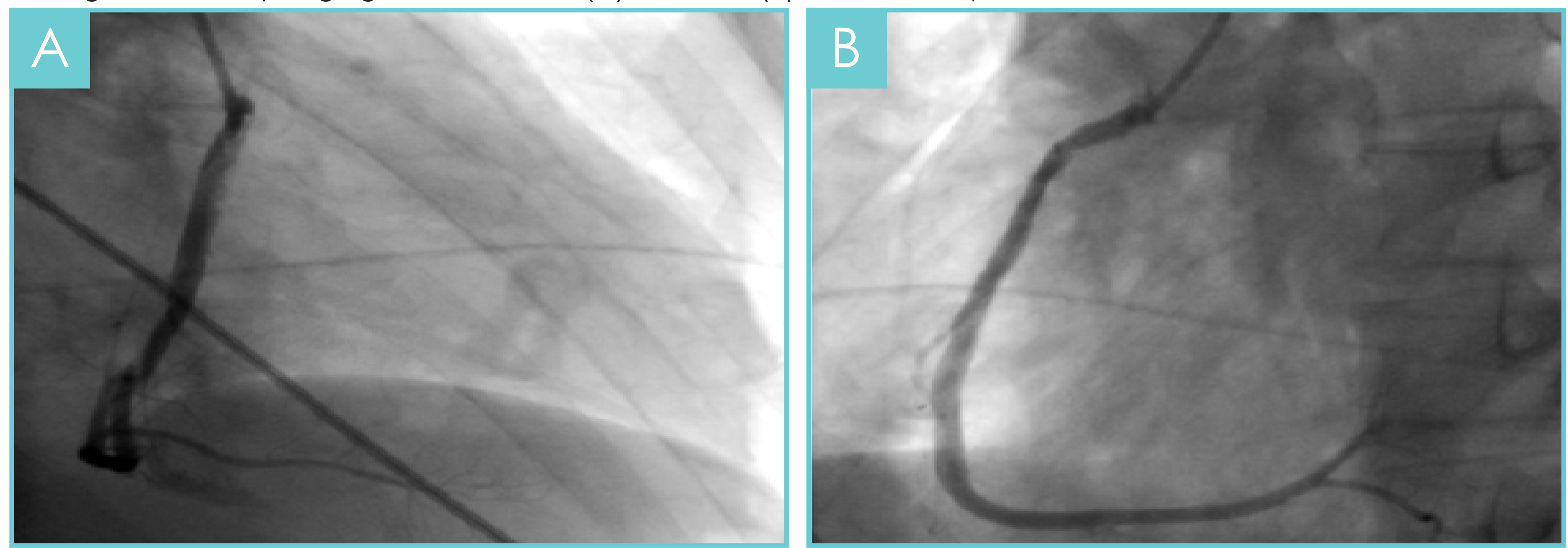


Figure 2  
Spontaneous recanalization of RCA with TIMI 3 flow on both RAO (A) and LAO (B) views

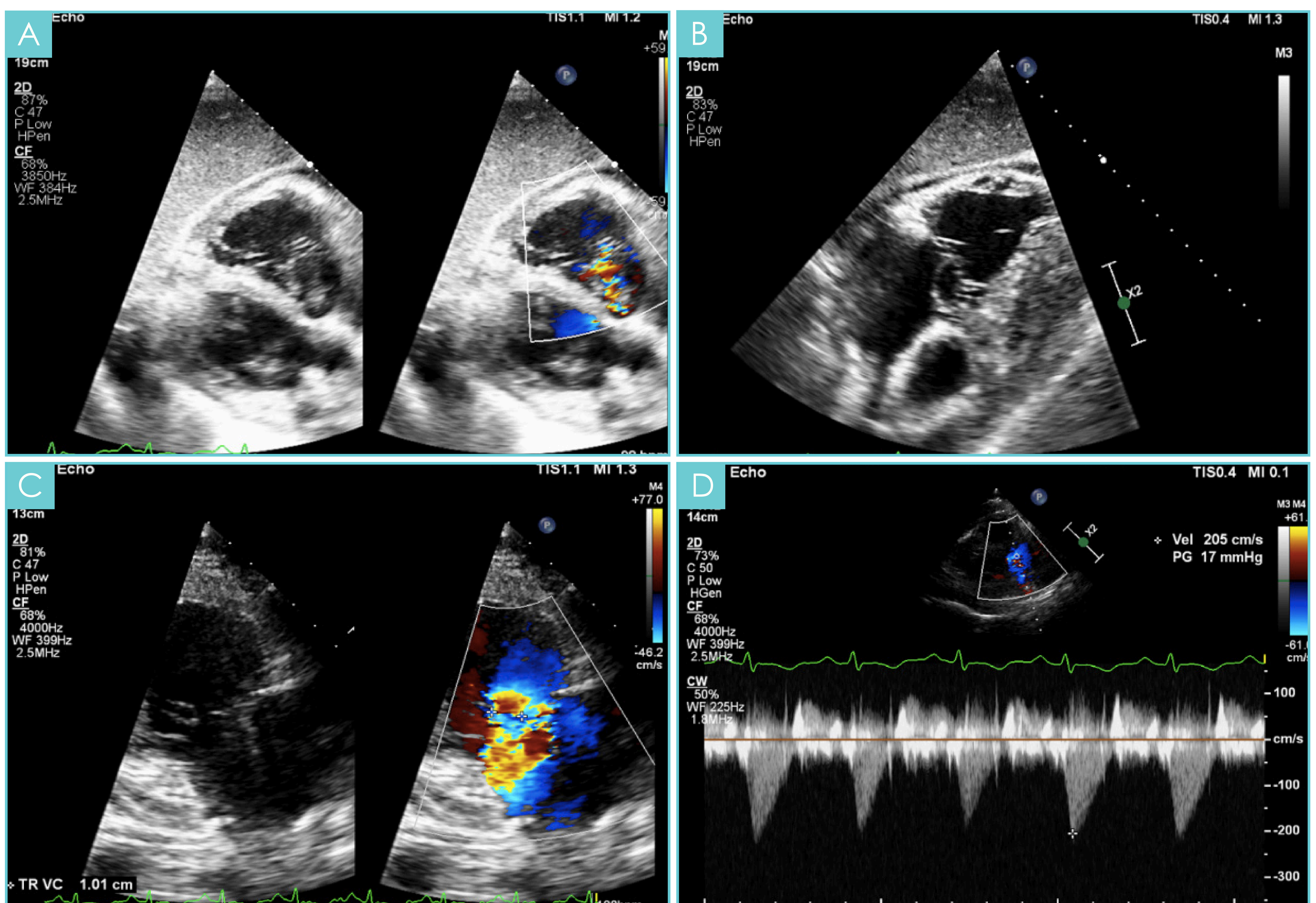


Figure 3  
Severe tricuspid regurgitation (TR) was found on echocardiogram. Subcostal view shows (A) severe TR on color-flow Doppler and (B) tricuspid valve anterior leaflet prolapse. The severity of tricuspid regurgitation is also shown by (C) large vena contracta width 1.01cm and (D) V wave cutoff sign on continuous wave doppler.

In view of acceptable RV function, this patient then underwent successful tricuspid valve replacement and CABG graft to RCA; intraoperatively confirmed rupture chordae at anterior leaflet of tricuspid valve resulting in severe regurgitation, dilated annulus and no definite evidence of infection.

This patient remained well in NYHA Class 1 status on follow up.

## Discussion

Traumatic tricuspid regurgitation (TTR) is a rare complication of blunt chest trauma, yet its frequency is deemed to be underestimated given the emphasis on other organs and that the presentation of TTR can have a slow progression and even remain asymptomatic for years. The most common mechanism of acute or subacute TTR is an anteroposterior compression of the chest with a sudden elevation of the right intraventricular pressure, resulting in marked traction and thus injury of both the valvular and subvalvular apparatus of tricuspid valve. The most frequently reported lesion observed at surgery is chordal rupture, followed by rupture of the anterior papillary muscle and leaflet tear, primarily of the anterior leaflet. The treatment for TTR is usually surgical, preferably valve repair. The traditional indication for operation is symptomatic heart failure. However, earlier intervention - before the development of irreversible right ventricular myocardial dysfunction, has also been proposed, with the aim of facilitating valve repair rather than replacement.

## Conclusion

We presented a rare case of acute severe traumatic tricuspid valve regurgitation (TR) due to blunt chest trauma, together with right coronary artery dissection. High clinical suspicion, and accurate echocardiogram diagnosis of the etiology of TR is of paramount importance because it leads to surgical intervention that may be life-changing.

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