

Traumatic Anterior Tricuspid Papillary Muscle Rupture: Role of Cardiac POCUS

A 34-year-old comatose man was transferred to the emergency department with traumatic injuries following a fall during skydiving. His medical and family history was unremarkable. The patient presented with hypotension (94/54 mm Hg), tachycardia (118 beats/min), and tachypnea (16 breaths/min). Cardiac Point-of-Care Ultrasound (POCUS) performed by the emergency intensive care unit (ICU) revealed torrential tricuspid regurgitation (Figure 1A, Video 1) and flailing of both the anterior and posterior tricuspid valvular leaflets (Figure 1B-E, Videos 2 and 3). Carefully, a hyperechoic mass was identified at the tip of the flail anterior leaflet, suggesting a ruptured papillary muscle (Figure 1B-E, Videos 2 and 3). Emergency cardiac surgery confirmed complete anterior papillary muscle rupture (Figure 1F).

It is necessary to identify the possible cause of new-onset severe tricuspid regurgitation in trauma patients. This case demonstrates the value of cardiac POCUS in detecting traumatic papillary muscle rupture and may be beneficial in clinical management.

E-PAGE ORIGINAL IMAGE

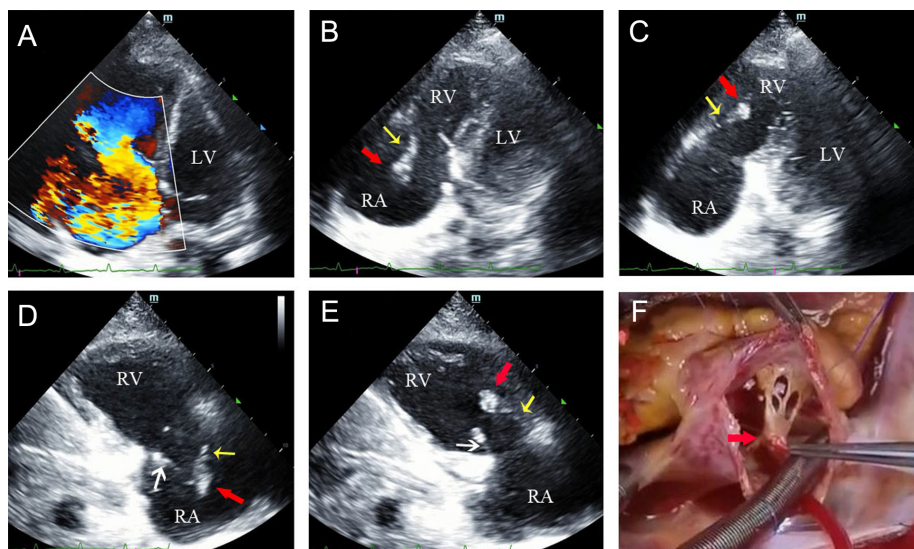


Figure 1. Echocardiography and gross pathology findings. (A) Oblique apical 4-chamber view revealing torrential tricuspid regurgitation; (B, C) Oblique apical 4-chamber view showing flailing of the anterior tricuspid valvular leaflet (yellow arrows) and the papillary muscle rupture (red arrows); (D, E) Parasternal right ventricular inflow tract view showing flailing of the anterior (yellow arrows) and posterior (white arrows) tricuspid valvular leaflets and the papillary muscle rupture (red arrows); (F) Intraoperative view demonstrating the anterior papillary muscle rupture (red arrow). LV, left ventricle; RA, right atrium; RV, right ventricle.

Rong Ma^{1,2,3*}
Manwei Liu^{1,2,3*}
Lingyun Fang^{1,2,3}
Mingxing Xie^{1,2,3}

¹Department of Ultrasound Medicine, Union Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, China

²Clinical Research Center for Medical Imaging in Hubei Province, Wuhan, China

³Hubei Province Key Laboratory of Molecular Imaging, Wuhan, China

Corresponding author:

Lingyun Fang
 ✉ fangly@hust.edu.cn

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*These authors contributed equally to this manuscript.

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Video 1: Transthoracic echocardiographic oblique apical 4-chamber view showing torrential tricuspid regurgitation.

Video 2: Transthoracic echocardiographic oblique apical 4-chamber view disclosing flailing of the anterior tricuspid valve leaflet and rupture of the papillary muscle.

Video 3: Transthoracic echocardiographic parasternal right ventricular inflow tract view indicating flailing of the anterior and posterior tricuspid valvular leaflets and rupture of the papillary muscle.