

## A Double Edged Sword-anticoagulation Treatment in a Patient with Mechanical Prosthetic Mitral Valve Complicated by Brain Hemorrhage

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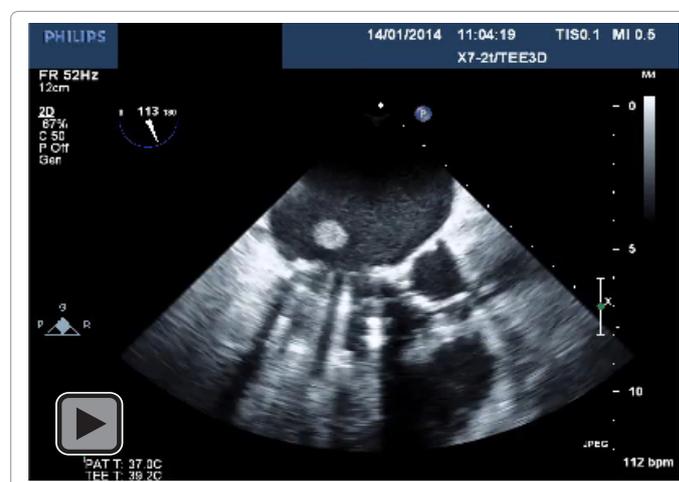
### Abstract

In the current case presentation, a patient with prosthetic mechanical mitral valve developed brain hemorrhage following head trauma. Cessation of anticoagulation treatment resulted in left atrial thrombus; patient presented with recurrent emboli events to major arteries that required recurrent embolectomy. This case highlights the clinical conflict of restarting vitamin K anticoagulation following brain hemorrhage in a high risk patient and demonstrates the importance of multimodalities imaging in assessing those patients.

**Keywords:** Intracranial hemorrhage; Mechanical valve; Anticoagulation

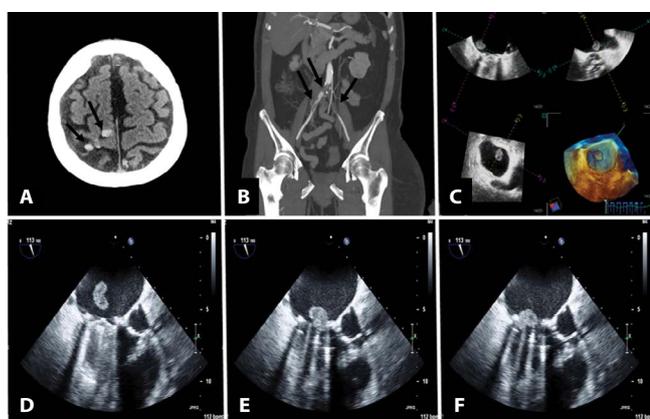
### Case Report

A 74-year-old female patient was admitted with a syncopal episode and head trauma. Head CT scan revealed traumatic frontal subarachnoid hematoma (Figure 1A). The medical history was significant for paroxysmal atrial fibrillation and mitral valve replacement with a mechanical valve 10 years ago. The INR on admission was 3.1 and patient was treated conservatively. The warfarin was held and her INR returned to normal values spontaneously with no coagulation factors replacement. Fourteen days later (during which she did not receive anticoagulation), a follow up head CT showed partial resolution of the hematoma and warfarin was renewed without any bridging therapy. A day later, the patient was re-admitted due to bilateral leg weakness and the physical examination was consistent with bilateral leg ischemia. CT angiography revealed thrombotic obstruction of the distal aorta proximal to the bifurcation to the iliac arteries (saddle thrombus), (Figure 1B) and the patients underwent urgent bilateral trans-femoral thrombectomy with full clinical resolution. A trans-esophageal echocardiography revealed a normal functioning mechanical mitral valve with a large mobile thrombus (1.2 × 1.2 × 1.4 cm) in the left atrium (LA). The thrombus bounced of the mechanical



**Video 1:** 2D – Two dimensional transesophageal echocardiography of the mobile thrombus.

valve intermittently (Figures 1C-F) (Videos 1 and 2). Cardiothoracic surgeons neglected open heart surgery due to the recent head trauma and hemorrhage. Consequently, patient was treated with warfarin and enoxaparin until reaching an INR of 3. There was no resolution of the LA thrombus on serial echocardiography but since surgery was not possible, she was discharged. The following day, the patient presented with acute ischemia of the right arm; Ultrasound Doppler confirmed right axillary artery obstruction and the patient underwent right brachial embolectomy. Her INR on admission was 2.7. At this time, the echoacardiography showed disappearance of her LA thrombus. Patient was discharged uneventfully and she is doing well.



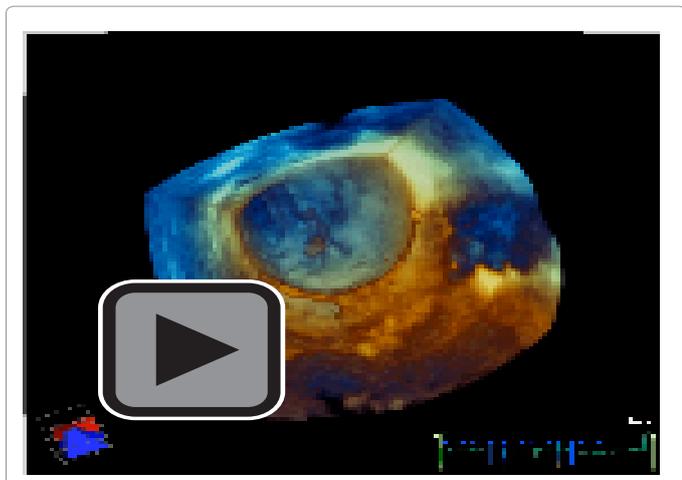
**Figure 1:** A-CT scan of the brain demonstrating subarachnoid hematoma (arrows head); B-CT angiography demonstrating the obstruction of the distal aorta, proximal to the bifurcation to the iliac arteries; C-LA thrombus visualized by 3-dimensional transesophageal echocardiography; D-F-The mobile LA thrombus is bounced of the mechanical mitral valve.

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**Video 2:** 3D – Three dimensional reconstruction of the mobile thrombus.

This case highlights the conflict of restarting vitamin K anticoagulation (VKA) following brain hemorrhage. The European Stroke Initiative Writing Committee suggest reinstating VKA not earlier than 14 days following intracranial bleeding in patients at a high thromboembolic risk [1] while the AHA guidelines do not provide a specific time frame [2]. Moreover, none of the guidelines discussed the dilemma of restarting VKA simultaneously with heparin or low molecular weight heparin as the literature is limited. In a patient such as the one presented, with a high risk for thromboembolic events (presence of mechanical prosthetic mitral valve with paroxysmal atrial fibrillation) and small subarachnoid hematoma that is well controlled, we might consider earlier initiation of VKA. Administration of heparin or low molecular weight heparin until the INR is in the therapeutic range should also be considered.

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