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Case Report

# Management of a Left Atrial Appendage Thrombus Due to Atrial Fibrillation Complicating Québec Platelet Disorder

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**Québec platelet disorder (QPD) is an autosomal-dominant bleeding disorder with a platelet-dependent gain-of-function defect in fibrinolysis.[1] QPD results in a 100-fold increase of urokinase plasminogen activator in megakaryocytes and platelets, which accelerates clot lysis and increases bleeding.[2] The estimated prevalence is 1 per 655,000 across Canada, with cases emerging in other countries as well.[1] Fibrinolytic inhibitors are the only effective treatment.[3] Concurrent anticoagulant and tranexamic acid (TXA) have been used for short durations, but long-term safety is unknown. We describe a multidisciplinary approach to the management of a patient with QPD, atrial fibrillation (AF) and cardioembolic strokes from a left atrial appendage (LAA) thrombus.**

An 80-year-old man with QPD and hypertension presented with heart failure, left ventricular dysfunction (left ventricular ejection fraction 30%-35%) and new AF. His QPD was diagnosed in 2010, based on molecular tests and a history of delayed bleeding after trauma and dental extractions, spontaneous hemarthroses and episodic hematuria. Metoprolol, ramipril, digoxin, and furosemide were initiated. Risks and benefits of anticoagulation were extensively discussed over multiple clinic appointments with his hematologist and cardiologist. His $CHA_2DS_2$-VASc score was 4, but his actual stroke risk was unclear given that QPD accelerates clot lysis. He was experiencing episodic hematuria and was also informed of a fatal intracranial bleed in a patient with QPD managed elsewhere who was receiving anticoagulation for AF. He decided not to proceed with anticoagulation and was referred for possible percutaneous LAA occlusion, recognising that this would necessitate up to 6 months of antithrombotic therapy. At this point it was unclear whether he could tolerate antithrombotic therapy, and should it be interrupted for bleeding complications, he would be at risk of device-associated thrombus.

Weeks later he developed slurred speech and a left facial droop. Computed tomography (CT) showed 2 dense masses with surrounding edema, suspicious for metastases; brain magnetic resonance imaging identified these as hemorrhagic lesions (Fig. 1). CT scans of his chest, abdomen, and pelvis, abdomen and breast ultrasounds, and a bone scan were negative for malignancy. Transesophageal echocardiography revealed a large LAA thrombus (Fig. 2). He was concluded to have suffered cardioembolic strokes with hemorrhagic evolution, with an atypical appearance due to QPD.

The consensus opinion of cardiology, hematology, neurology, neurosurgery, and cardiac surgery was that his risk of further embolic events was unacceptable without intervention. Percutaneous LAA occlusion was contraindicated given the thrombus. After deliberation, a surgical approach was pursued, which would allow for removal of the LAA thrombus and eliminate future thrombus formation by removing the appendage. This option also would not necessitate anticoagulation if it was not tolerated. Preoperatively, he received a heparin infusion (target activated partial thromboplastin time 50-70 seconds) along with 1 g oral TXA every 8 hours. Baseline laboratory tests showed: hemoglobin 138 g/L, platelets 161 $\times$ $10^9$/L, international normalized ratio 1.3 (normal: 0.8-1.2), prothrombin time 15.3 seconds (normal 11-15 seconds), activated partial thromboplastin time 36

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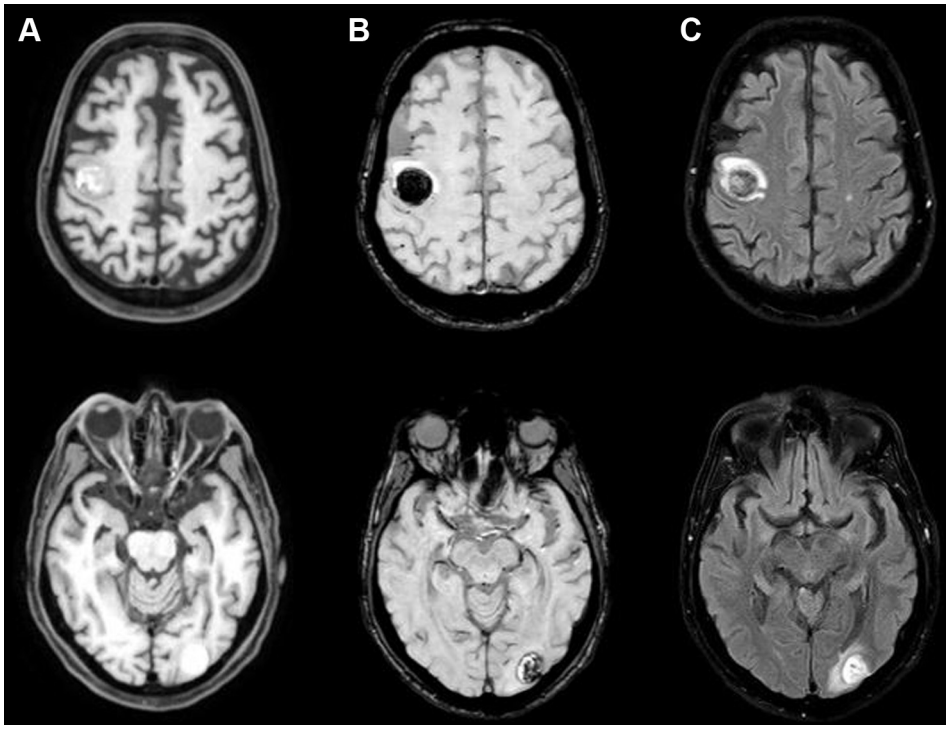


**Figure 1.** (**A**) Bilateral mass lesions within the (**top**) right frontal lobe (18 mm × 18 mm) and (**bottom**) left parietal occipital region (17 mm × 15 mm) on T1-weighted magnetic resonance images. Both lesions demonstrate evidence of (**B**) hemosiderin on susceptibility-weighted pulse sequences and (**C**) edema on fluid-attenuated inversion recovery (FLAIR) pulse sequence.

(normal: 22-35 seconds), fibrinogen 2.6 g/L (normal 1.6-4.2 g/L), creatinine 104 μmol/L (estimated glomerular filtration rate 57 mL/min/1.73 $m^2$).

Under femoral artery and femoral venous cannulation for cardiopulmonary bypass, a right anterior minithoracotomy and left atriotomy through Sondergaard's groove was performed. The thrombus was removed, and the LAA was occluded with a double-layer linear closure. Appendectomy is not feasible from a limited right thoracotomy, which is preferred for thrombus removal; therefore, LAA occlusion was used in this case. The patient was systemically heparinised, and TXA was dosed throughout the procedure, followed by 1500 mg TXA every 6 hours after surgery. Dalteparin (5000 U/day) was started the next day and continued for 2 weeks until apixaban (2.5 mg twice daily) was initiated. His postoperative course was uncomplicated. TXA was tapered to 1000 mg every 8 hours and apixaban was increased to 5 mg twice daily. He later underwent catheter ablation of AF and has remained in sinus rhythm. During 14 months of follow-up, he had 1 recurrence of hematuria and apixaban was decreased to 2.5 mg twice daily. Repeated brain imaging showed no new lesions. His long-term management requires ongoing balancing of bleeding and thrombotic risks.

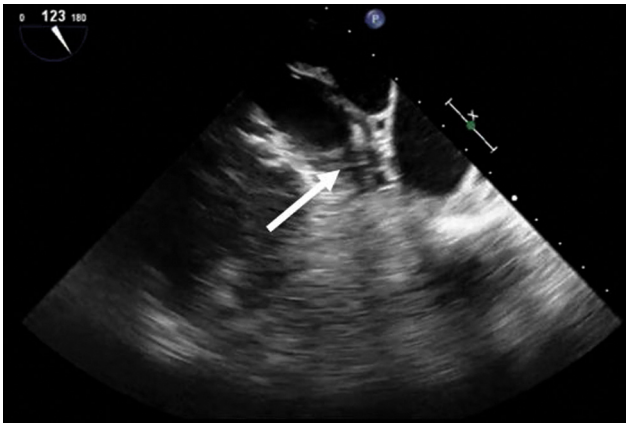


**Figure 2.** Transesophageal echocardiogram (left atrial appendage—focused view) showing thrombus in the left atrial appendage (**arrow**).

## Discussion

The fibrinolytic defect of QPD accelerates clot lysis, resulting in unstable clots that may increase risk of embolic events and hemorrhagic stroke. While persons with QPD have been given TXA concurrently with anticoagulation to prevent thrombosis during high-risk periods (eg, orthopaedic surgery),[4] this is the first report of using the combination for a person with QPD with a known thrombus and embolic strokes. Surgical LAA occlusion reduces ischemic stroke in patients with AF undergoing cardiac surgery, both with and without anticoagulation.[5] This is the first patient with QPD treated with surgical LAA occlusion, along with anticoagulation with TXA postoperatively.

The novel teaching point is that the management of stroke risk in patients with AF and bleeding disorders can benefit

from combined surgical and medical approaches and shared decision making when there is a paucity of evidence.

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## Disclosures

The authors have no conflicts of interest to disclose.

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