

# CASE REPORT

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## GIANT PROSTHETIC VALVE THROMBUS

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**INTRODUCTION:** Mechanical prosthetic valves are predisposed to bleeding, thrombosis & thromboembolic complications. Overall incidence of thromboembolic complications is 1% per year who are on oral anticoagulants, whereas bleeding complications incidence is 0.5% to 6.6% per year.<sup>1,2</sup> Minimization of Scylla of thromboembolic & Charybdis of bleeding complication needs a balancing act of optimal antithrombotic therapy.

We are reporting a case of middle aged male patient with prosthetic mitral valve presenting in heart failure. Patient had discontinued anticoagulants, as he had subdural hematoma in the past. He presented to our institute with a giant prosthetic valve thrombus.

**KEYWORDS:** Mitral valve, Prosthetic valve, Rheumatic heart disease, Thrombus.

**CASE REPORT:** A 50 year old gentleman was a diagnosed case of Rheumatic heart disease, mitral valve prolapse with severe mitral regurgitation. Patient underwent Mitral valve replacement one year ago. (St Jude Medical, St Paul, Minn, 27mm valve).

Patient had subdural hematoma few months back and was asked to stop anticoagulants and was given only Aspirin. Patient presented to us with NYHA IV symptoms with Congestive heart failure in cardiogenic shock.

Transthoracic echocardiography revealed a mass measuring 2.6X3.0 cm (7.8 cm<sup>2</sup>) obstructing the flow across the prosthetic valve. Color flow demonstrated minimal flow with turbulence across one of the leaflets of bileaflet St Jude valve with obstruction of the other leaflet. Doppler imaging revealed increased gradient of 24/14 mmHg across the prosthetic valve. M-mode across the mass suggesting layered appearance which is pathognomonic of thrombus. 2D echo showed a giant thrombus with mobile components.

Emergency surgery with thrombectomy was planned but patient was hemodynamically unstable and succumbed to the illness before the procedure could be done.

**DISCUSSION:** Pathophysiology of any thrombus in the body underlies defects in the factors included in the Virchow's Triad. Triad includes endothelial injury, alteration in the normal blood flow and alteration in the consistency of blood.<sup>3</sup> endothelial factor being the prosthetic valve itself and the prosthesis suture interaction. Altered hemodynamics due to prosthesis and cardiac failure accounted for the stasis of blood flow. Finally, inadequacy of anticoagulants, rather the absence of anticoagulation in the case, lead to the changes in the consistency of blood.<sup>4</sup> These factors account for the dramatic appearance and presentation of giant prosthetic valve thrombus. Thrombogenicity of the mechanical prosthetic valve varies according to various factors. The factors include the type of prosthesis, valve involved, patient prosthesis mismatch, previous thromboembolism, arrhythmias like atrial fibrillation and various systemic factors.<sup>5</sup>

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Ball and cage prosthesis (Starr Edwards) have the highest risk of thrombus formation followed by tilting disc valve (Medtronic – Hall Valve, ATS Valve). Least risk is seen with bileaflet valves like St Jude valve and bio prosthetic valve.<sup>5</sup>

Tricuspid valve and mitral valve replacement are associated with high risk of thrombogenesis compared to aortic and pulmonary valves. Low flow gradient and increased contact with blood in diastole being the contributory factors.<sup>6</sup>

Prosthetic valve thrombosis can present with varied manifestations ranging from asymptomatic to overt heart failure symptoms. Non obstructive prosthetic valve thrombus is asymptomatic or with minimal symptoms and obstructive valve thrombus presenting with heart failure. Both conditions can present with embolic manifestation.

Echocardiography aids in the detection and quantification of thrombus and is helpful in triage of the management of the patient with prosthetic valve thrombus. Although transesophageal echocardiography is gold standard for the evaluation of thrombus in this setting, one cannot always rely on this investigation in cases of emergency and when patient is hemodynamically unstable. Obvious evidence of prosthetic valve thrombus on echocardiography include reduced valve mobility, fuzzy echoes suggestive of thrombus, increased turbulence and gradient across the valve, reduced prosthetic valve area and central prosthetic regurgitation. Other markers observed in this clinical setting which can aid in the detection are spontaneous echo contrast (SEC) in chamber proximal to the valve and vanishing of the usual physiological regurgitation.<sup>7,8</sup>

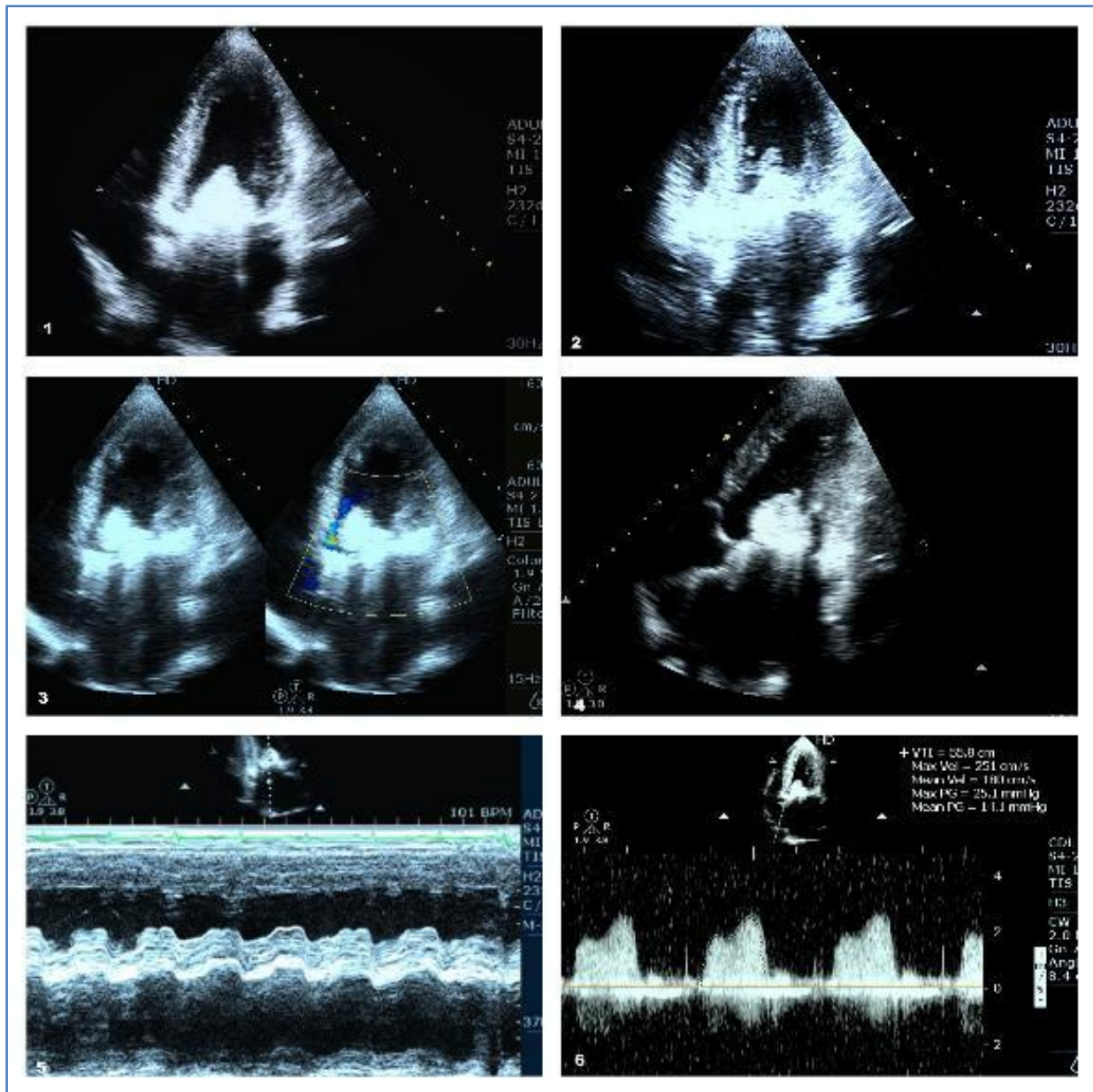
Management of prosthetic valve thrombus involves the decision regarding whether to manage medically with thrombolysis or surgery.

Surgery is preferred in patients with NYHA IV symptoms, left sided prosthetic valve thrombus and obstructive large thrombus ( $>0.8 \text{ cm}^2$ ).<sup>9</sup> the latter two conditions, if subjected to thrombolysis will have high risk of systemic embolism. Fibrinolysis is the preferred modality in situations with NYHA I-III symptoms, right sided mechanical valves and non-obstructive thrombus ( $<0.8 \text{ cm}^2$ ). Hence in our case decision was to take the patient for emergency surgery.<sup>9</sup> as the patient was hemodynamically unstable at presentation, he succumbed to the illness before the surgery could be done.

The story of ship of Theseus is apt in our patient as he had subdural hematoma in the past and had discontinued anticoagulants. Ideal management of patients with cerebral bleed involves early reinstatement of anti-thrombotic therapy. In case of cranial bleed, the anticoagulants should be restarted within 2-3 days of extracranial bleeding like subdural hematoma and 7-14 days of the intracranial bleeding.<sup>10</sup>

**CONCLUSION:** The prosthetic valve itself being a disease, management of its complications requires expertise. Appropriate anticoagulation, management of bleeding complications of therapy and early reinstatement of antithrombotic is very important. This is one of the largest prosthetic valve thrombus reported in literature on prosthetic mitral valve to our knowledge. It was unfortunate that, patient had not received anticoagulants before clinical presentation. This case not only highlights rarity but also stimulates the reader to go through the literature to find when to restart the anticoagulants after a cerebral bleed.

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**Figures 1 - 6**

**Fig. 1, 2, and 4:** Apical 4 chamber view demonstrating the morphology of giant thrombus with mobile components on the prosthetic valve.

**Fig. 3:** Color flow imaging demonstrating minimal flow across one of the leaflet of St Jude mechanical mitral valve prosthesis.

**Fig. 5:** M Mode across the thrombus reveals the characteristic features of Thrombus.

**Fig. 6:** Continuous wave Doppler showing increased gradient across the mitral prosthesis/Thrombus.

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## BIBLIOGRAPHY:

1. Stein, P.D., et al., Antithrombotic therapy in patients with mechanical and biological prosthetic heart valves. *Chest*, 2001. 119(1 Suppl): p. 220S-227S.
2. Cannegieter, S.C., F.R. Rosendaal, and E. Briet, Thromboembolic and bleeding complications in patients with mechanical heart valve prostheses. *Circulation*, 1994. 89(2): p. 635-41.
3. Gencbay, M., et al., High prevalence of hypercoagulable states in patients with recurrent thrombosis of mechanical heart valves. *J Heart Valve Dis*, 1998. 7(6): p. 601-9.
4. Iung, B., et al., Small abnormal echos after mitral valve replacement with bileaflet mechanical prostheses: predisposing factors and effect on thromboembolism. *J Heart Valve Dis*, 1993. 2(3): p. 259-66.
5. Goldsmith, I., A.G. Turpie, and G.Y. Lip, Valvar heart disease and prosthetic heart valves. *BMJ*, 2002. 325(7374): p. 1228-31.
6. Akbarian, M., et al., Thromboembolic complications of prosthetic cardiac valves. *Circulation*, 1968. 37(5): p. 826-31.
7. Habib, G., et al., Diagnosis of prosthetic heart valve thrombosis. The respective values of transthoracic and transoesophageal Doppler echocardiography. *Eur Heart J*, 1993. 14(4): p. 447-55.
8. Roudaut, R., K. Serri, and S. Lafitte, Thrombosis of prosthetic heart valves: diagnosis and therapeutic considerations. *Heart*, 2007. 93(1): p. 137-42.
9. Nishimura, R.A., et al., 2014 AHA/ACC guideline for the management of patients with valvular heart disease: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. *J Thorac Cardiovasc Surg*, 2014. 148(1): p. e1-e132.
10. Panduranga, P., et al., Management dilemmas in patients with mechanical heart valves and warfarin-induced major bleeding. *World J Cardiol*, 2012. 4(3): p. 54-9.

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