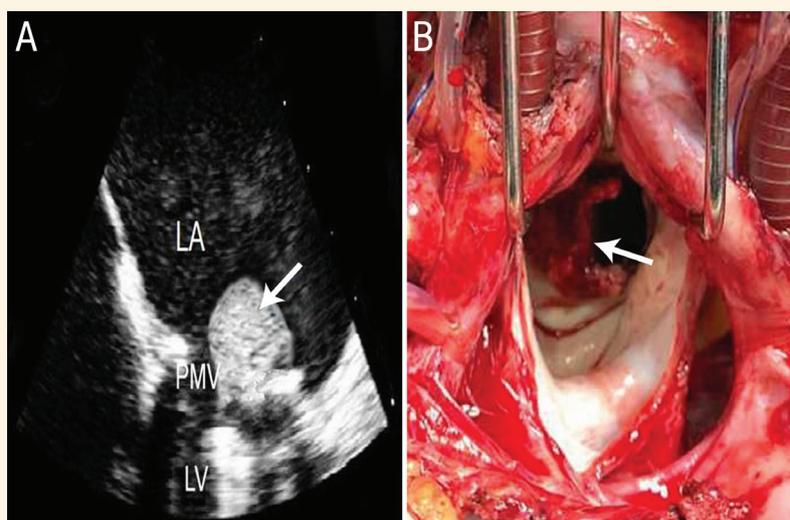


## Large *Thrombus* on a Prosthetic Mitral Valve During Early Pregnancy

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خثرة كبيرة في الصمام التاجي الصناعي أثناء الحمل المبكر

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**Figure 1:** A: Transoesophageal echocardiograph of a 28-year-old *primigravida* female patient showing a *thrombus* on the left atrial aspect of a prosthetic mitral valve (arrow). B: Perioperative photo showing left atriotomy with a *thrombus* on the prosthetic mitral valve (arrow).

LA = left atrium; PMV = prosthetic mitral valve; LV = left ventricle.

A 28-YEAR-OLD *PRIMIGRAVIDA* FEMALE PRESENTED at 12 gestational weeks to the Emergency Department of Minia University Hospital, El-Minia, Egypt, in 2017 with severe dyspnoea upon exertion. Five years earlier, she had undergone mitral valve replacement with a mechanical prosthesis. After her pregnancy had been confirmed, she had discontinued anticoagulant warfarin therapy before taking low-molecular-weight heparin. There was no significant history of medical diseases or prescription of any other medications. Transoesophageal echocardiography (TEE) revealed a large *thrombus* of approximately 4 cm<sup>2</sup> on the mitral prosthesis, with near total obstruction of the prosthetic mitral valve [Figure 1A]. An abdominal ultrasound revealed that the fetus was non-viable.

Three days after admission, the patient underwent surgery. This revealed a large *thrombus* on the atrial aspect of the mitral prosthesis projected away from

the valve disc [Figure 1B]. Both the prosthetic valve and the entire *thrombus* were removed surgically and another valve was inserted [Figure 2]. An obstetrician performed a dilation and evacuation procedure on the fifth day after the open-heart surgery. At a six-month follow-up, the patient had recovered well and was healthy.

### Comment

Prosthetic valve thrombosis (PVT) during pregnancy is a rare but life-threatening complication following mechanical heart valve replacement.<sup>1,2</sup> Most cases occur during the second or third trimester. The underlying mechanisms of PVT during pregnancy include a hypercoagulable state and poor anticoagulation when warfarin is replaced with heparin injections to avoid its harmful effects during the first trimester and last two weeks of



**Figure 2:** Postoperative photo of a *thrombus* on the resected mechanical valve of a 28-year-old *primigravida* female patient.

pregnancy.<sup>1,2</sup> In order to prevent thromboembolic complications during pregnancy, patients with mechanical valves should undergo continuous anticoagulation therapy and monitoring. According to the American College of Cardiology and American Heart Association, warfarin should be replaced with heparin between six and 12 gestational weeks to avoid the risk of fetal defects; however, heparin increases maternal risks of PVT, systemic embolisation, infection, osteoporosis and heparin-induced thrombocytopenia.<sup>3</sup>

The management of PVT during pregnancy is challenging and no specific guidelines are currently available.<sup>1</sup> Acute symptoms, particularly dyspnoea and embolic events, should increase the index of suspicion for PVT. Emergency surgery may be necessary for patients with left-sided PVT and New York Heart Association (NYHA) functional class III–IV symptoms or a large clot burden, while thrombolysis is the first line of therapy for patients with NYHA class I–II symptoms and a small clot burden.<sup>3</sup> Fluoroscopy or TEE is indicated to assess valve motion and clot burden and to differentiate the formation of a *thrombus* from that of a *pannus*.<sup>3,4</sup>

The current case increases awareness of the need for detailed discussion before and after pregnancy for childbearing women with prosthetic heart valves. For such patients, preconception counselling—involving

an obstetrician, cardiologist and, possibly, a haematologist—is crucial in minimising the risk of PVT. Such counselling should include pregnancy planning, pregnancy-related complications, prematurity and the possibility of discontinuing and replacing teratogenic medications.<sup>5</sup> Bioprosthesis is also a reliable option for women who wish to become pregnant as anticoagulation therapy is generally not required; however, re-operation may be undesirable as the associated mortality rate ranges from 4–9%.<sup>3,6</sup> Regular and careful monitoring of prosthetic heart valves is crucial during the first trimester of pregnancy to avoid life-threatening complications.

## References

1. Biteker M, Ozkan M. Treatment of obstructive prosthetic heart valve thrombosis in pregnancy. *J Card Surg* 2010; 25:206. doi: 10.1111/j.1540-8191.2009.00822.x.
2. Choi C, Midwall S, Chaille P, Conti CR. Treatment of mechanical valve thrombosis during pregnancy. *Clin Cardiol* 2007; 30:271–6. doi: 10.1002/clc.20054.
3. Bonow RO, Carabello BA, Chatterjee K, de Leon AC Jr, Faxon DP, Freed MD, et al. 2008 focused update incorporated into the ACC/AHA 2006 guidelines 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 (Writing Committee to revise the 1998 guidelines for the management of patients with valvular heart disease). *J Am Coll Cardiol* 2008; 52:e1–142. doi: 10.1016/j.jacc.2008.05.007.
4. Dogan V, Basaran O, Altun I, Biteker M. Transesophageal echocardiography guidance is essential in the management of prosthetic valve thrombosis. *Int J Cardiol* 2014; 177:1103–4. doi: 10.1016/j.ijcard.2014.09.193.
5. Nanna M, Stergiopoulos K. Pregnancy complicated by valvular heart disease: An update. *J Am Heart Assoc* 2014; 3:e000712. doi: 10.1161/JAHA.113.000712.
6. Pieper PG, Balci A, Van Dijk AP. Pregnancy in women with prosthetic heart valves. *Neth Heart J* 2008; 16:406–11. doi: 10.1007/BF03086187.