

Heart valves made from tissue rather than metal may be better for middle-aged patients

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Patients between the ages of 40 and 70 who undergo aortic valve replacement (AVR) may fare better with tissue-based valves rather than metal-based valves, according to a review article posted online today by *The Annals of Thoracic Surgery*.

Key Points:

- Middle-age [patients](#) (aged 40 to 70 years) undergoing [aortic valve replacement](#) should strongly consider tissue-based valves over metal-based valves.
- Patients with both valve types tend to have similar risks for survival and certain complications at 15-years post-surgery.
- Bioprosthetic valves wear out more quickly, but patients receiving mechanical valves need lifelong treatment with blood thinners.

Mechanical (metal) valves and bioprosthetic (tissue) valves have different benefits and risks, leading to sometimes difficult choices for patients. Mechanical valves have the potential to last longer because they don't wear out, but blood clots tend to form on them so patients must take [blood thinners](#) (anticoagulants) for the rest of their lives. Bioprosthetic valves are less likely to cause [blood clots](#), but are less durable and may need to be replaced in the future.

"We combined the best available evidence comparing mechanical valves versus bioprosthetic valves to determine the risks and benefits to patients following surgery, depending on the type of valve they received," said James J. Wu, BMusStudies, from The University of Sydney in Australia. "We hope that our results can give future patients needing AVR more information to help them choose the appropriate replacement valve for their condition."

Wu, Paul G. Bannon, MBBS, PhD, and other colleagues in Australia evaluated 13 studies comparing mechanical valves and bioprosthetic valves in middle-age patients (age 40 to 70 years) undergoing AVR.

At 15-years post-surgery, the researchers found no difference in survival, stroke rate, or rate of endocarditis (infection of the heart lining) among patients with either valve; however, each patient group showed different complications. Patients with bioprosthetic valves were twice as likely as mechanical valve patients to need re-operation because of worn-out valves, while patients with mechanical valves were twice as likely to experience a major bleeding event or a blood clot.

Because patients with major bleeding had a significant increase of death compared to those needing reoperation, the researchers said bioprosthetic valves should strongly be considered for patients in this age group, though valve choice should be individualized for each patient.

"This is a complex decision that requires up-to-date evidence. There are options to reduce the bleeding risk of mechanical valves, so, ideally, a discussion with both the surgeon and cardiologist is warranted to take into account an individual's circumstances," said Dr. Bannon.

More information: Wu J, Seco M, Edelman J, Eslick G, Wilson M, Vallely M, Byrom M, Bannon P. Mechanical Versus Bioprosthetic Aortic Valve Replacement in Patients Age 40 to 70 Years: A Systematic Review and Meta-analysis. *Ann Thoracic Surg* 2015; DOI: doi.org/10.1016/j.athoracsur.2015.10.092 , dx.doi.org/10.1016/j.athoracsur.2015.10.092

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