

WORLD CONGRESS ON RHEUMATIC HEART DISEASE

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Title: DURABILITY AND SAFETY OF PROSTHETIC HEART VALVES IN PATIENTS WITH RHEUMATIC HEART DISEASE: A RETROSPECTIVE COHORT STUDY

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Background & Aims: Some of the highest documented rates of RHD (rheumatic heart disease) have been in the Māori and Pasifika Peoples in New Zealand. BVD (bioprosthetic valve dysfunction) and re-intervention rates are known to be high for young people undergoing cardiac valve replacement surgery. However, the majority of these studies are based in countries with low rates of RHD. There is evidence that in populations with high rates of RHD the rate of valve loss is higher, however there are no studies investigating the rate of BVD in RHD. We aim to research the safety and durability of bioprosthetic valves in RHD.

Methods: We performed a retrospective, single centre cohort study assessing the clinical and ECHO (echocardiographic) outcomes of consecutive patients undergoing aortic and/or mitral valve replacement during the years 2015-2020 under the age of 60. Patients were identified as having rheumatic heart disease by either a diagnosis by a cardiologist or pre-operative ECHO findings in keeping with the World Heart Federation guidelines on the diagnosis of RHD. The outcome we assessed was valve safety, a composite outcome according to the Valve Academic Research Consortium 3 in 2021. Valve safety, a composite outcome, is depicted as freedom from structural valve deterioration grade 3, valve re-intervention, prosthetic valve infective endocarditis or thrombosis, thrombotic event and valve related death as defined by VARC-3. Results were analysed with the Chi Square test or Fishers Exact Test to test for significance.

Results: 218 patients under 60 years old underwent an aortic and/or mitral valve operation between 2015 and 2020. 100 of these patients had RHD. Average was 45. Females made up 66% of the RHD population, and 28% of the population with other pathology. Māori made up 64% of the population with RHD and 26% of the population with other pathology, Pasifika Peoples made up 11% of the population with RHD. There was significantly higher rates of BVD in patients with RHD (58%) as compared to patients with other pathology (25%) ($p < 0.001$). In patients with BVD, those with RHD tended to have a higher grade of dysfunction with 54% having grade 3 dysfunction compared to 7% in the patients with other pathology. In patients who had bioprosthetic valves placed, patients with RHD had a worse valve safety profile with 44% having freedom from events, compared to 74% in those with other pathology ($p = 0.0003$). In patients with RHD, those with bioprosthetic valves placed tended to have more thrombotic events than those with mechanical valves placed 19% vs 5% respectively ($p = 0.05$). In patients with RHD there was no significant difference in bleeding events between those that received bioprosthetic valves vs mechanical valves 15% vs 22% respectively ($p = 0.84$). In patients with RHD, when comparing valves safety (excluding BVD) in patients with bioprosthetic vs mechanical valves, those with bioprosthetic valves tended to have lower rates of valve safety 56% vs 73% respectively ($p = 0.09$).

Conclusions: From our results, valves implanted in rheumatic patients tend to have a higher incidence of deterioration. Valve durability and safety studies in populations with low incidence of RHD may have limitations when applying those findings to populations with high rates of RHD. Two of the major considerations when deciding valve choice for young people is the thrombosis and bleeding risk with mechanical valves and the necessity of warfarin. However, we have found that the thrombosis risk is higher in those with bioprosthetic valves, and the bleeding risk is equivalent, so this may need to be considered before making that choice.