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A comparison of the haemodynamic performance of five different prosthetic aortic valves implanted at a single cardiothoracic centre in the UK

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Available postoperative echocardiogram parameters within 2.5 years of operation date were compared between valves (N=350: Trifecta 42, Stjude 163, CE 92, Mosaic 32 and Hancock 21). Multivariate analysis which took into account patient age and valve size showed a significant difference between valves in postoperative peak/mean gradient (PG/MG), aortic valve area (AVA) and Indexed effective orifice area (IEOA) (N=350). The most significant difference was Trifecta versus each of Mosaic (P=0.000 (PG), 0.001 (AVA), 0.001 (IEOA)), St Jude epic (P=0.000 (PG), 0.000 (AVA), 0.000 (IEOA)), CE (P=0.026 (PG), 0.001 (AVA), 0.001 (IEOA)) and Hancock (P=0.008 (PG), 0.130 (AVA), 0.158 (IEOA)). Mosaic had a higher PG compared to all the other valves (P=0.000). For the most common valve size used (23 mm, n=121), the valves ranked in the following order of increasing pressure gradients: Trifecta (PG=17±3.39, MG=8±2.26, IEOA=1.03 ±0.1, AVA=1.97±0.19, n=12), Hancock (PG=19±4.57, MG=11 ±3.27, IEOA=0.79±0.1, AVA=1.47±0.16, n=9), CE (PG=24±3.52, MG=12±1.06, IEOA=0.82±0.07, AVA=1.59±0.12, n=31), Epic (PG=31±3.06, MG=16±1.79, IEOA=0.7±0.06, AVA=1.29±0.09, n=59) and Mosaic (PG=40±9.92, MG=20±3.1, IEOA=0.7±0.19, AVA=1.18±0.2, n=10). This comparison of a unique combination of valves shows that the new Trifecta valve has consistently low peak gradients.

Biography

Ahmed Abdel Maksoud has completed his Medical degree at Warwick Medical School in 2013. He has completed his BSc in Biochemistry and Masters in Biological Sciences of Research at University of Manchester. After completing Medical school, he has worked at several hospitals in the UK, initially in the West Midlands. It is during this time, he investigated the outcome of aortic valve replacements by analysing echocardiograms results postoperatively at a single centre. He is currently working in Orthopaedics at Weston General hospital in Devon, UK.

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