

Hemodynamic impact of different aortic valve prosthesis in the aortic valve position

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Established surgical treatment of aortic stenosis, especially nowadays using a minimally invasive approach through ministernotomy, is still the gold standard in the treatment of the calcifying degenerative disease of aortic stenosis. Considering of the choice of artificial aortic valves, regarding the size and type of prosthesis, available today, it is crucial to monitoring their impact on hemodynamics, to avoid the prosthesis patient mismatch (PPT). Prosthesis patient mismatch occurs when the effective orifice area (EOA) of the inserted prosthetic valve is too small in relation to body size. It is necessary the calculate the patient's body surface area (BSA) from weight and height and determined of the minimal valve EOA required to ensure an indexed EOA $>0.85 \text{ cm}^2/\text{m}^2$, select the type and size of prosthesis that has reference values for EOA greater or equal to the minimal EOA value.^{1,2} **Aim:** To present hemodynamic impact of different aortic valve prosthesis in a cohort of patients treated with surgical aortic valve repair in our institution, to avoid prosthesis-patient mismatch, which may have a significant impact on the long-term results of valve surgery.

Study included 115 patients (75 male, 40 female) who underwent isolated aortic valve replacement surgery in our center in the period of January 2022 until January 2023. Patient's ages ranged from 32 to 81 (M=67.7), average BSA 1.96 m². Average EuroScore logistic was 6.15%. Biological prosthesis was implanted at 108 patients, while a mechanical prosthesis was used in 7 patients. Biological prosthesis that are used are Carpentier-Edwards Magna Ease, Edwards Inspiris Resilia, Medtronic Avalus, in range of 19-29 mm, and mechanical prosthesis St Jude Mechanical, CarboMedics Mechanical TopHat, On-X valves in range of 21-27 mm. The average velocity V max was 2.57 m/s \pm 0.39, and average PPG was 26.92 mmHg \pm 8.34. 17 patients (15.6%) who underwent surgical replacement had postprocedural velocity over the valve $>3\text{m/s}$.

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LITERATURE

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