Surgical Versus Transcatheter Aortic Valve Replacement: Impact of Patient-Prosthesis Mismatch on Outcomes

Ahmed Alnajar[1], Naser Hamad[1], Muhammad Z. Azhar[2], Yaseen Mousa[3], Yingyot Arora[1], and Joseph Lamelas[1]

[1]University of Miami School of Medicine
[2]University of Kansas School of Medicine Wichita
[3]Florida Atlantic University

August 25, 2022

Abstract

Background: The hemodynamics of most prosthetic valves are often inferior to that of the normal native valve, and a significant proportion of patients undergoing surgical (SAVR) or transcatheter aortic valve replacement (TAVR) have high residual transaortic pressure gradients due to prosthesis–patient mismatch (PPM). Since the experience with TAVR has increased and long-term outcomes are reported, a close look at the PPM literature is required in light of new evidence. **Methods:** For this review, we searched the Embase, Medline, and Cochrane databases from 2000 to 2022. Articles reporting PPM as an outcome following aortic valve replacements were identified and reviewed. **Results:** The impact of PPM on clinical outcomes aortic valve replacement has not been clear since multiple studies failed to report PPM incidence. However, the PPM after SAVR vary greater than after TAVR, ranging from 8% to almost 80% in SAVR and from 24%-35% in TAVR. Incidence of severe PPM following redo SAVR is ranging from 2 to 9% and following valve-in-valve TAVR is from 14 to 33%, however, while PPM is higher in valve-in-valve TAVR, patients had better survival rates. **Conclusions:** The gap between valve performance and clinical outcomes in TAVR and SAVR could be reduced by carefully selecting patients for either treatment option. Understanding predictors of PPM can add to the safety, effectiveness, and increased survival benefit of both TAVR and SAVR.

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LVOT

OA

EOA

Higher
transvavlular gradient

Prosthetic valve
of teh same size

Normal
transvavlular gradient