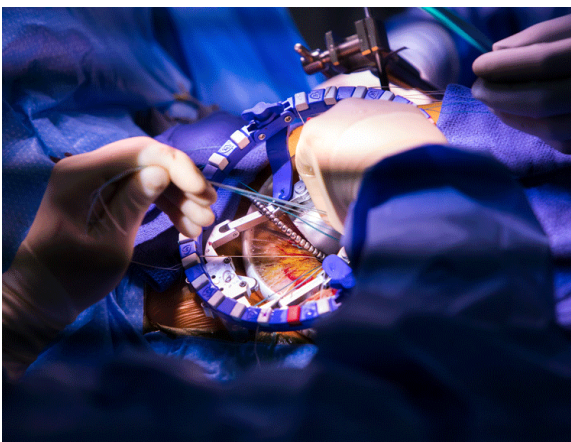


# Minimally Invasive Aortic Valve Replacement Risks Are Overestimated, Miller School Study Finds

Minimally invasive aortic valve replacement surgery is a safer procedure than indicated by current surgical risk scores, according to Joseph Lamelas, M.D., chief and program director of cardiothoracic surgery at the University of Miami Health System.

“Surgical risk scores are designed to help physicians and patients evaluate their options,” said Dr. Lamelas. “However, they overestimate the risk for minimally invasive aortic valve replacement (mini-AVR) procedures through a mini thoracotomy, which can provide better outcomes and faster recoveries than open-heart surgeries through the sternum.”



Minimally invasive aortic valve replacement surgery.

After analyzing 1,018 low-risk patients undergoing surgery for aortic stenosis, Dr. Lamelas and his collaborative research team looked at the four available risk scoring systems: Society of Thoracic Surgeons Predicted Risk of Mortality (STS-PROM), European System for Cardiac Operative Risk Evaluation (EuroSCORE) II, TAVR Risk Score (TAVR-RS), and age, creatinine, and ejection fraction score (ACEF).

They compared each score's accuracy by computing the observed-to-expected 30-day mortality ratio, and found each of the scoring systems over-predicted mortality by two or three times, said Dr. Lamelas.

Dr. Lamelas was the head of the research group, senior author, and the surgeon performing all the operations included in the study, "Current Surgical Risk Scores Overestimate Risk in Minimally Invasive Aortic Valve Replacement," [published in December in \*Innovations\*](#), the journal of the International Society for Minimally Invasive Cardiothoracic Surgery.

"I think physicians can reassure people that their risk scores are over predicting their outcomes. The risk score by itself doesn't matter as long as patients receive appropriate care by experienced teams," said Ahmed Alnajjar, M.D., co-researcher and quality management analyst at the Miller School of Medicine Department of Surgery.

For more than a decade, cardiac surgeons have performed mini-AVR procedures to replace a diseased aortic valve that becomes obstructed or leaks blood from the heart. Patients are typically evaluated for surgical risk, based on factors that include age, physical condition, and chronic problems such as hypertension, kidney or lung disease.

“Mini-AVR has significant advantages over conventional, sternotomy-based surgery for many patients, including shorter length of stay and recovery time, greater satisfaction, less renal failure, and better postoperative respiratory function,” said Dr. Lamelas. “That can lead to faster recovery and better survival, as well as less operative blood loss and fewer transfusions. Increasingly, patients themselves are requesting minimally invasive procedures because of these potential benefits.”

Dr. Lamelas added that risk scores for AVR procedures may change as more cardiac surgeons adapt the minimally invasive approach. “Currently, only about 20 percent of AVR cases in the U.S. are done with the minimally invasive approach,” he said. For more than a decade, Dr. Lamelas has trained other cardiac surgeons in minimally invasive techniques, including virtual sessions in the past year.

“Once surgeons get past the learning curve, they find there are clear benefits for their patients,” he said. “Meanwhile, we need to develop alternative dedicated scoring systems for mini-AVR to help our patients make more accurate outcome assessments.”

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