Valvular cardiac surgery

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Inflammatory biomarkers for predicting postoperative atrial fibrillation in cardiac surgery

Mié, 07/02/2025 - 10:00

J Med Life. 2025 May;18(5):494-508. doi: 10.25122/jml-2025-0085.

ABSTRACT

Postoperative atrial fibrillation (POAF) is a frequent complication of cardiac surgery associated with adverse outcomes. Systemic inflammation is implicated in POAF pathogenesis, suggesting inflammatory biomarkers may have predictive value. This study investigated the predictive capacity of readily accessible inflammatory markers for POAF during the early postoperative period in the cardiac intensive care unit, particularly within the 48-72-hour window when POAF most commonly occurs. In this prospective, single-center study, we enrolled 70 patients undergoing elective cardiac surgery with cardiopulmonary bypass. We measured preoperative and postoperative (24h, 48h) levels of neutrophil-to-lymphocyte ratio (NLR), systemic immune-inflammation index (SII), systemic inflammatory response index (SIRI), C-reactive protein (CRP), interleukin-6 (IL-6), and interleukin-17A (IL-17A). POAF was systematically monitored. We assessed the predictive value of these markers using ROC curve analysis and logistic regression, adjusting for clinical risk factors. The coronary cohort showed that the NLR at both 24 hours and 48 hours were the most discriminative markers for predicting POAF, with PCR at 48 hours achieving a moderate AUC of 0.66. In multivariate regression models, PCR at 48 hours ($P = 0.009$) and age ($P = 0.046$) emerged as significant predictors, while NLR and CPB duration were moderately correlated with the occurrence of POAF. In contrast, within the valvular patient subgroup, the NLR again exhibited promising predictive value, along with increased markers of tissue injury such as CK, LDH, and creatinine. Readily accessible postoperative inflammatory markers, particularly NLR at 24 hours and CRP at 48 hours, demonstrated moderate predictive value for POAF in patients undergoing elective cardiac surgery. These markers, especially NLR and CRP, may potentially contribute to improved POAF risk stratification in clinical practice when combined with clinical risk factors. Furthermore, our analysis also indicates that preoperative IL-17A levels may influence the occurrence of POAF. Therefore, alongside CRP and NLR, preoperative IL-17A can be considered a potentially significant marker for atrial fibrillation following cardiac surgery. However, these findings are preliminary and require validation in larger, multi-center studies to confirm their clinical utility and inform preventative strategies.

PMID:40599146 | PMC:PMC12207702 | DOI:10.25122/jml-2025-0085

Categorías: Cirugía valvular

Early single center experience with cerebral embolic protection in high-risk cardiac surgery

Mié, 07/02/2025 - 10:00

Sci Rep. 2025 Jul 2;15(1):22770. doi: 10.1038/s41598-025-98828-w.

ABSTRACT

Cerebral embolic protection (CEP) devices may be a tool to mitigate the perioperative stroke risk in cardiac surgery. However, studies are limited. The aim of this study was to analyze the feasibility, safety, and efficacy of CEP use in high-risk cardiac surgery. Ten high-risk surgical candidates with native valvular heart disease (mainly mitral with severe MAC) or failed bioprosthesis were consecutively enrolled between March 2023 and April 2024. All participants underwent open-heart surgery with use of Sentinel CEP. The CEP device was successfully deployed and recaptured in all cases without any Sentinel-related complications reported. Clearly visible, large deposits of calcium debris were captured. No significant neurological deficits (above mild neurological dysfunction; NIHSS > 5) were reported in any of the patients. Nine patients suffered postprocedural complications ranging from new-onset left bundle branch block to cardiogenic shock. One individual gradually deteriorated and ultimately died. Importantly, her neurological status remained intact throughout the course of the hospitalization. All other patients were discharged in good standing. The current study extends the early experience demonstrating the feasibility and safety of Sentinel CEP in high-risk cardiac surgery. Particularly in the highest-risk patient sub-sets CEP devices may offer advantages reducing the risk of periprocedural episodes and improving outcomes.

PMID:40596683 | PMC:PMC12215302 | DOI:10.1038/s41598-025-98828-w

Categorías: Cirugía valvular

Improving Repair Durability in Severe Ischemic Mitral Regurgitation: Revisiting Patient Selection and Adjunctive Repair Techniques

Dom, 06/29/2025 - 10:00

Semin Thorac Cardiovasc Surg. 2025 Jun 27:S1043-0679(25)00092-9. doi: 10.1053/j.semtcvs.2025.04.009. Online ahead of print.

ABSTRACT

Ischemic mitral regurgitation (IMR) is a complex heterogeneous complication following myocardial infarction, characterized by left ventricular (LV) remodeling and subsequent valvular distortion. The primary mechanisms include papillary muscle displacement, mitral leaflet tethering, and impaired coaptation following annular dilatation. IMR is associated with poor prognosis and an increased incidence of heart failure. We reviewed studies on the surgical management of IMR published over the past two decades. While mitral valve repair has been favored for its advantages of low perioperative mortality and LV function preservation, high rates of mitral regurgitation recurrence limit its long-term durability. Regarding repair strategy, apart from restrictive mitral annuloplasty, the adjunctive techniques of papillary muscle relocation, papillary muscle approximation, and leaflet augmentation have been proposed. These approaches aim to address LV remodeling and improve leaflet coaptation by mitigating subvalvular tethering. Moreover, the application of true-size annuloplasty and "functional repair" strategies in IMR patients with enlarged LV emphasizes the need to tailor interventions to patients' LV dimensions and dynamic changes. Accumulating clinical evidence highlights the importance of meticulous patient selection and functional mitral valve repair, which remains a promising approach contingent on enhanced understanding of IMR's pathophysiology and its interplay with LV remodeling. The current review summarizes our patient selection criteria and indications for surgical repair (including the use of adjunctive techniques of subvalvular intervention) or mitral valve replacement.

PMID:40582431 | DOI:10.1053/j.semtcvs.2025.04.009

Categorías: Cirugía valvular

Long-lasting rivaroxaban use is associated with lower aortic valve leaflet

calcification in severe aortic stenosis

Dom, 06/29/2025 - 10:00

Can J Cardiol. 2025 Jun 27:S0828-282X(25)00525-2. doi: 10.1016/j.cjca.2025.06.068. Online ahead of print.

ABSTRACT

BACKGROUND: In vitro studies demonstrated that direct oral anticoagulants (DOACs) down-regulate expression of proteins involved in calcification and inflammation. This hypothesis-testing study evaluates whether DOAC therapy is associated with decreased valvular calcification in patients with aortic stenosis (AS), anticoagulated due to concomitant atrial fibrillation (AF).

METHODS: In this case-control study 72 Caucasian patients with isolated severe AS were compared with 53 individuals with AF concomitant to severe AS, treated with DOACs for 28.7±13.8 months. Sixteen valves from AS patients on rivaroxaban (20 mg/day, AS-RIVA) and 20 valves from age-, sex-matched non-anticoagulated individuals with AS were subjected to micro-computed tomography (micro-CT), to estimate valvular calcification ex vivo. Calcium volume (CV), surface volume (SV), CV/SV ratio and trabecular thickness (TbTh) were assessed. Valvular expression of osteopontin, NF-κB, and IL-6 was evaluated by immunostaining.

RESULTS: Micro-CT showed that AS-RIVA patients had lower CV (-62.7%), SV (-46.2%), CV/SV ratio (-35.6%), and maximal TbTh (-21.1%), compared to patients not taking rivaroxaban (all $p<0.05$). Duration of rivaroxaban use correlated inversely with micro-CT parameters, peak transvalvular velocity, and maximal transvalvular pressure gradient. Decreased valvular expression of osteopontin (-20.4%), NF-κB (-26%), and two-fold lower IL-6 fluorescence intensity were observed in the AS-RIVA group compared to the remainder (all $p<0.05$). Moreover, osteopontin expression was inversely associated with the duration of rivaroxaban use and positively with micro-CT parameters.

CONCLUSIONS: Long-lasting rivaroxaban use in AS patients was associated with lower aortic valve leaflet calcification, reflected by micro-CT parameters, and osteopontin expression, suggesting a potential impact of rivaroxaban on valvular calcification.

PMID:40582401 | DOI:10.1016/j.cjca.2025.06.068

Categorías: Cirugía valvular

Long-term Outcomes of Semirigid Ring and Band Annuloplasty in Functional Mitral Regurgitation Patients without Advanced Left Ventricular Dilation

Sáb, 06/28/2025 - 10:00

J Thorac Cardiovasc Surg. 2025 Jun 26:S0022-5223(25)00543-4. doi: 10.1016/j.jtcvs.2025.06.023. Online ahead of print.

ABSTRACT

OBJECTIVE: Our study aims to compare long-term survival and clinical outcomes of ring and band prostheses for annuloplasty repair of functional mitral regurgitation (FMR).

METHODS: From 3/2005 to 11/2017, 160 patients with moderate to severe FMR underwent undersized annuloplasty using semirigid complete ring (CR, N=69) or partial band (PB, N=91) prostheses of the same material and manufacturer. Primary outcomes were long-term survival and clinical outcomes, while secondary outcomes included comparison of postoperative echocardiography data.

RESULTS: Both groups had comparable baseline characteristics, cardiac function, FMR severity, and

perioperative complications. CR and PB experienced equivalent 10-year freedom from CV mortality(65.2% vs 68.3%, P=.39), and FMR recurrence (78.5% vs 71.4%, P=.27).At mean follow-up of 58±46 months, both groups had parallel increase in ejection fraction (+7±16 vs +5±15%, P=.35) and reduction of left ventricle internal diameter end-diastole (-0.5±0.8 vs -0.4±0.9 cm, P=.61). CR had greater reduction in left ventricle internal diameter end-systole (-0.6±0.9 vs -0.2±0.9 cm, P=.007) but higher mean (5.6±3.4 vs 5.0±7 mmHg, P=.025) and peak (16.7±19.4 vs 12.9±10.7 mmHg, P=.048) transvalvular pressure gradients (TPG). Mean TPG predicted postoperative mortality at 10-years (HR 1.19[CI 95% (1.0037-1.357)], P=.013).

CONCLUSION: CR and PB annuloplasty for FMR confer equivalent 10-year survival and MR recurrence. CR repair was associated with increased LV reverse remodeling yet higher long-term valvular gradients.

PMID:40581290 | DOI:10.1016/j.jtcvs.2025.06.023

Categorías: Cirugía valvular

Embolic Stroke Due to a Large Noncoronary Sinus of Valsalva Aneurysm: A Multimodality Imaging Diagnosis

Vie, 06/27/2025 - 10:00

JACC Case Rep. 2025 Jun 25;30(16):103761. doi: 10.1016/j.jaccas.2025.103761.

ABSTRACT

BACKGROUND: A sinus of Valsalva aneurysm (SoVA) is a rare cardiac condition caused by the dilation of a coronary sinus. If untreated, it can commonly lead to valvular dysfunction, arrhythmias, or rupture.

CASE SUMMARY: A 71-year-old patient with hypertension and hyperlipidemia presented with an embolic stroke. Multimodality imaging revealed a large, 7.0 cm × 5.6 cm SoVA originating from the noncoronary sinus and causing nearly complete obstruction of the left atrium. The aneurysm was surgically repaired, and the patient made a full recovery.

DISCUSSION: In rare cases, a stroke may be the initial presentation of a SoVA. The probable cause of the patient's stroke was attributed to thrombus formation within the SoVA that embolized.

TAKE-HOME MESSAGES: This case emphasizes the importance of multimodality imaging for the diagnosis of a SoVA and for planning surgical repair. Additionally, clinicians should consider a SoVA in the differential diagnosis for a patient presenting with a stroke.

PMID:40579110 | DOI:10.1016/j.jaccas.2025.103761

Categorías: Cirugía valvular

Aortic Valve Replacement in Women: A Pooled Analysis of the RHEIA and PARTNER 3 Trials

Mié, 06/25/2025 - 10:00

JACC Cardiovasc Interv. 2025 Jun 23;18(12):1540-1553. doi: 10.1016/j.jcin.2025.03.036.

ABSTRACT

BACKGROUND: In women with severe aortic stenosis, there are limited data regarding outcome differences following transcatheter (TAVR) vs surgical aortic valve replacement (SAVR).

OBJECTIVES: The authors sought to examine outcomes of TAVR vs SAVR in a patient-level pooled analysis of women in the RHEIA and PARTNER 3 trials.

METHODS: Patients in both trials were randomly allocated to a balloon-expandable SAPIEN 3/Ultra valve or to surgical bioprostheses. Individual patient data of female participants in the 2 trials were pooled. The primary endpoint was all-cause mortality, all stroke, or rehospitalization at 1 year.

RESULTS: A total of 376 women were randomized to TAVR and 336 to SAVR. The mean age was ~73 years, and the mean Society of Thoracic Surgeons (STS) score was 2.1%. Kaplan-Meier estimates of event rates at 1 year with TAVR vs SAVR were 8.5% vs 16.8% for the composite of all-cause mortality, all stroke, or rehospitalization (absolute difference -8.2%; 95% CI: -13.1% to -3.3%; P < 0.001), 1.1% vs 2.1% (P = 0.27) for all-cause mortality, 2.7% vs 3.9% (P = 0.35) for all stroke, and 5.4% vs 11.9% (P = 0.002) for rehospitalization. The composite endpoint of all-cause death or stroke was similar between the 2 treatment groups: 3.5% vs 5.4% (absolute difference -1.9%; 95% CI: -5.0% to 1.1%; P = 0.21).

CONCLUSIONS: Among women with symptomatic severe aortic stenosis, TAVR led to a reduction in the rate of the combined endpoint of all-cause mortality, stroke, or rehospitalization at 1-year follow-up, largely due to a significant reduction in the rate of rehospitalization.

PMID:40562469 | DOI:10.1016/j.jcin.2025.03.036

Categorías: Cirugía valvular

Development of Cardiac Computed Tomography for Evaluation of Aortic Valve Stenosis

Mié, 06/25/2025 - 10:00

Tomography. 2025 May 28;11(6):62. doi: 10.3390/tomography11060062.

ABSTRACT

Aortic valve stenosis (AS) is a valvular heart disease that imposes a high afterload on the left ventricle (LV) due to restricted opening of the aortic valve, resulting in LV hypertrophy. Severe AS can lead to syncope, angina pectoris, and heart failure. The number of patients with AS has been increasing due to aging populations, the growing prevalence of lifestyle-related diseases, and advances in diagnostic technologies. Therefore, accurate diagnosis and appropriate treatment of AS are essential. In recent years, transcatheter aortic valve implantation (TAVI) has become feasible, and the number of procedures has rapidly increased, particularly among elderly patients. As treatment options for AS expand and diversify, detailed pre-procedural evaluation has become increasingly important. In particular, diagnostic imaging modalities such as computed tomography (CT) have advanced significantly, with notable improvements in image quality. With recent advancements in CT technology-such as increased detector rows, faster gantry rotation speeds, new image reconstruction methods, and the introduction of dual-energy imaging-the scope of cardiac assessment has expanded beyond the coronary arteries to include valves, myocardium, and the entire heart. This includes evaluating restricted AV opening and cardiac function using four-dimensional imaging, assessing AV annulus diameter and AS severity via calcium scoring with a novel motion correction algorithm, and detecting myocardial damage through late-phase contrast imaging using new reconstruction techniques. In cases of pre-TAVI evaluation or congenital bicuspid valves, CT is also valuable for assessing extracardiac structures, such as access routes and associated congenital heart anomalies. In addition, recent advancements in CT technology have made it possible to significantly reduce radiation exposure during cardiac imaging. CT has become an extremely useful tool for comprehensive cardiac evaluation in patients with aortic stenosis, especially those being considered for surgical treatment.

PMID:40560008 | PMC:PMC12196544 | DOI:10.3390/tomography11060062

Categorías: Cirugía valvular

Retinal Imaging as a Window into Cardiovascular Health: Towards Harnessing Retinal Analytics for Precision Cardiovascular Medicine

Mié, 06/25/2025 - 10:00

J Cardiovasc Dev Dis. 2025 Jun 17;12(6):230. doi: 10.3390/jcdd12060230.

ABSTRACT

Rising morbidity and mortality from cardiovascular disease (CVD) have increased interest in precision and preventive management to reduce long-term sequelae. While retinal imaging has traditionally been recognized for identifying vascular changes in systemic conditions such as hypertension and type 2 diabetes mellitus, a new ophthalmologic field, cardiac-oculomics, has associated retinal biomarker changes with other cardiovascular diseases with retinal manifestations. Several imaging modalities visualize the retina, including color fundus photography (CFP), optical coherence tomography (OCT), and OCT angiography (OCTA), which visualize the retinal surface, the individual retinal layers, and the microvasculature within those layers, respectively. In these modalities, imaging-derived biomarkers can present due to CVD and have been linked to the presence, progression, or risk of developing a range of CVD, including hypertension, carotid artery disease, valvular heart disease, cerebral infarction, atrial fibrillation, and heart failure. Promising artificial intelligence (AI) models have been developed to complement existing risk-prediction tools, but standardization and clinical trials are needed for clinical adoption. Beyond risk estimation, there is growing interest in assessing real-time cardiovascular status to track vascular changes following pharmacotherapy, surgery, or acute decompensation. This review offers an up-to-date assessment of the cardiac-oculomics literature and aims to raise awareness among cardiologists and encourage interdepartmental collaboration.

PMID:40558665 | PMC:PMC12194434 | DOI:10.3390/jcdd12060230

Categorías: Cirugía valvular

Valvular Endothelial Cell Heterogeneity Reflects Different Pathogenesis of Tricuspid and Bicuspid Aortic Valve Stenosis in Humans

Mié, 06/25/2025 - 10:00

J Am Heart Assoc. 2025 Jul;14(13):e040556. doi: 10.1161/JAHA.124.040556. Epub 2025 Jun 25.

NO ABSTRACT

PMID:40557791 | DOI:10.1161/JAHA.124.040556

Categorías: Cirugía valvular

A 17-Year Experience of Valvular Heart Surgery in Rwanda

Lun, 06/23/2025 - 10:00

Ann Thorac Surg. 2025 Jun 21:S0003-4975(25)00545-4. doi: 10.1016/j.athoracsur.2025.06.008. Online ahead of print.

ABSTRACT

BACKGROUND: The advanced presentation of rheumatic heart disease in Rwanda often necessitates

surgical intervention. We summarize the outcomes of valvular heart surgeries in Rwanda between 2006 and 2023.

METHODS: 366 patients in the Rwandan cardiac surgery registry who underwent valvular surgery were included in this study. We examined surgical details, perioperative outcomes, and long-term outcomes. Cox multivariable analyses were conducted to assess factors predictive of survival outcomes. Additionally, subgroup analyses compared outcomes between mechanical valve replacement and bioprosthetic valve replacement.

RESULTS: The average age at surgery was 25.0±10.2 years, with the majority being female (63.9%). Mitral valve surgery, either alone (45.9%) or in conjunction with tricuspid valve surgery (20.8%), was the most common procedure (66.7%). The 30-day postoperative mortality rate was 2.2%. Over an average follow-up of 7.8±4.5 years, the all-cause mortality rate was 18.2%. Patients who received a bioprosthetic valve replacement had a higher all-cause mortality rate than those who received a mechanical valve replacement (32.7% vs. 15.6%, P=0.008). The most common long-term complications for mechanical valve patients were embolism and bleeding (13.0%), compared to structural valve deterioration (26.5%) in bioprosthetic valve patients.

CONCLUSIONS: The low 30-day mortality rate reflects success in careful patient selection, meticulous surgery, and dedicated perioperative care. Mechanical valve replacement demonstrated superior long-term survival over bioprosthetic valve replacement mainly due to valve degeneration and need for reoperation in bioprosthetic patients. Key areas of improvement include strengthening postoperative follow-up and capacity for increased surgical complexity.

PMID:40550320 | DOI:10.1016/j.athoracsur.2025.06.008

Categorías: Cirugía valvular

COVID-19 as Potential Cause of Aortic Valvulitis

Lun, 06/23/2025 - 10:00

Methodist Debakey Cardiovasc J. 2025 Jun 18;21(1):68-73. doi: 10.14797/mdcvj.1499. eCollection 2025.

ABSTRACT

About 25% of patients diagnosed with coronavirus disease 19 (COVID-19) experience cardiovascular complications, contributing to 40% of related deaths. Here we discuss a 69-year-old male with a history of congestive heart failure and preserved ejection fraction at New York Heart Association (NYHA) class II who presented with new dyspnea, cough, and paroxysmal nocturnal dyspnea. He was subsequently diagnosed with COVID-19 pneumonia, and while he initially recovered, he later showed worsening symptoms with progression to NYHA class IV. Follow-up echocardiogram revealed a decline in ejection fraction to 40% and severe aortic insufficiency. He underwent surgical aortic valve replacement, resolving his symptoms. This case highlights COVID-19's potential to cause rapid progression of valvular disease.

PMID:40547044 | PMC:PMC12180435 | DOI:10.14797/mdcvj.1499

Categorías: Cirugía valvular

Long-Term Outcomes of Valve Replacement With Mechanical Prosthesis in Patients With Valvular Heart Disease: A Single-Center Retrospective Study

Lun, 06/23/2025 - 10:00

Cureus. 2025 May 22;17(5):e84655. doi: 10.7759/cureus.84655. eCollection 2025 May.

ABSTRACT

Background Significant valve disease requires surgical intervention, either valve repair or valve replacement. For minor disease, balloon dilation is a possibility. The choice between mechanical and bioprosthetic valves requires a judgment regarding the benefits and risks of each procedure. A mechanical prosthetic valve requires lifelong anticoagulation, whereas a bioprosthetic valve tends to degenerate over a few years, with faster degeneration observed in younger patients. Objective To assess the survival outcomes, postoperative complications, and reoperation rates in patients who underwent prosthetic mechanical valve replacement with acenocoumarol and low-dose aspirin (75 mg), with adequate International Normalized Ratio (INR) monitoring. Methods and materials This was a retrospective study involving data from patients who underwent mechanical cardiac valve replacement between 1971 and 2022. This study adhered to the principles outlined in the Declaration of Helsinki and received approval from the institutional ethics review board of Bombay Hospital (Regn. No: ECR/296/Inst/MH/2013; Date: 08/12/2021). Results A total of 768 patients were included. The mean overall survival rate was 35.2%, and it was higher in men than in women. The majority of patients belonged to a younger age group (≤18 years: 6.3%, 19-40 years: 47.7%, 41-60 years: 42.2%, >60 years: 3.9%). The mean overall survival rate was higher in men (37.4%) than in women (28.4%). In the first year post-surgery, females experienced Major Adverse Cardiac and Cerebrovascular Events (MACCE) at a rate of 11.1 person-years, while males had none. Among patients classified as New York Heart Association (NYHA) class III, the incidence rate of MACCE was 2.7 person-years, whereas for NYHA class IV patients, it was 8.3 person-years. These trends persisted to some extent at the fifth year post-surgery. Conclusion Survival outcomes were influenced by factors such as age, sex, type of valve replacement, and NYHA class, with certain subgroups showing better survival rates. The first year post-surgery presented a higher incidence of MACCE, which declined over time. Mechanical valve replacement with appropriate anticoagulation can offer favorable long-term outcomes, particularly in younger patients. However, early postoperative risks, especially in women and those with advanced heart failure, highlight the need for individualized care and close monitoring. Future research should aim to refine patient selection, explore sex-based outcome disparities, and optimize anticoagulation strategies to further improve survival and quality of life in this population.

PMID:40546510 | PMC:PMC12182600 | DOI:10.7759/cureus.84655

Categorías: Cirugía valvular

Isolated pulmonary valve endocarditis in a 7-year-old Nigerian girl: a case report

Mié, 06/18/2025 - 10:00

J Med Case Rep. 2025 Jun 18;19(1):280. doi: 10.1186/s13256-025-05241-y.

ABSTRACT

BACKGROUND: Right-sided infective endocarditis is a rare clinical entity, with isolated pulmonary valve infective endocarditis being extremely uncommon. Infective endocarditis carries a high mortality rate and significant complications, making early identification and prompt management crucial in improving outcomes. This case highlights an unusual presentation of right-sided infective endocarditis isolated to the pulmonic valve in a pediatric patient with no apparent preexisting heart disease.

CASE PRESENTATION: A 7-year-old girl of Yoruba ethnicity presented with septicemic illness, congestive heart failure, and no evidence of congenital cardiac lesion, underlying valvular disease, or identifiable predisposing factors. She had underweight malnutrition, cachexia, and severe respiratory distress. Echocardiography, which was delayed due to resource limitations, ultimately revealed isolated myxomatous vegetation on the pulmonary valve, dilated right cardiac chambers, and pulmonary hypertension. Blood cultures grew Pseudomonas aeruginosa. The patient was managed with antimicrobial agents, an anticardiac failure regimen, antiplatelets, and supportive therapy.

Management was complicated by financial constraints, which delayed optimal intervention.

CONCLUSION: Although isolated pulmonary valve infective endocarditis is rare in the pediatric population, particularly in the absence of identifiable heart disease, a high index of suspicion is essential. Early diagnosis via echocardiography and prompt, adequate treatment are crucial for favorable outcomes. Awareness of potential diagnostic delays and financial barriers can aid in optimizing timely intervention and improving prognosis.

PMID:40533870 | PMC:PMC12178004 | DOI:10.1186/s13256-025-05241-y

Categorías: Cirugía valvular

Benefits of heart valve clinics for patients: a systematic review

Mié, 06/18/2025 - 10:00

BMJ Open. 2025 Jun 18;15(6):e096538. doi: 10.1136/bmjopen-2024-096538.

ABSTRACT

OBJECTIVE: To evaluate the impact of heart valve clinics (HVCs) versus standard of care (SOC) on disease detection, timing of intervention and clinical outcomes in patients with valvular heart disease (VHD).

DESIGN: A systematic review was conducted following Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines and registered in PROSPERO (CRD42024518787).

DATA SOURCES: PubMed, Embase, Web of Science, Scopus and the Cochrane Library from inception to 1 May 2025.

ELIGIBILITY CRITERIA: Randomised controlled trials or cohort studies comparing patients managed in HVCs with those receiving SOC, and reporting on outcomes such as mortality, cardiac events, time to symptom reporting or symptom severity. Studies were excluded if they lacked detailed HVC protocols, single-arm designs or were published as abstracts only.

DATA EXTRACTION AND SYNTHESIS: Two reviewers independently screened titles, abstracts and full texts, with discrepancies resolved by a senior adjudicator. The Newcastle-Ottawa Scale (NOS) was used to assess the risk of bias. Meta-analysis was not conducted due to heterogeneity among studies.

RESULTS: Three high-quality prospective cohort studies (N=1082) were included. Two studies reported mortality and cardiac events: one, a before-and-after controlled trial (n=382), recorded 11 deaths in the HVC group; the other reported 4 deaths in the HVC group (n=156) versus 17 deaths in the SOC group (n=156) ($p<0.05$). Additionally, two studies found that HVCs significantly reduced the interval between symptom onset and reporting ($p<0.05$), as well as the proportion of patients presenting with severe symptoms (defined as New York Heart Association (NYHA) class or Canadian Cardiovascular Society (CCS) class ≥III).

CONCLUSION: HVCs facilitate stratified and precise management of the whole-life cycle of patients with VHD, enhancing early detection and referral, and leading to reduced mortality and major cardiac events compared with SOC.

PMID:40533205 | PMC:PMC12182144 | DOI:10.1136/bmjopen-2024-096538

Categorías: Cirugía valvular

The impact of perceval sutureless aortic valve in multiple valve surgery:

implications of short- and mid-term outcomes-a propensity score matched study

Mié, 06/18/2025 - 10:00

J Thorac Dis. 2025 May 30;17(5):3073-3084. doi: 10.21037/jtd-24-1667. Epub 2025 May 28.

ABSTRACT

BACKGROUND: Sutureless aortic valve replacement (S-AVR) is a surgical alternative to conventional aortic valve replacement (C-AVR), recognized for its efficacy and clinical superiority in the treatment of valvular disease. Its use is gradually increasing not only in single-valve procedures but also in multiple valve surgeries. This study aimed to evaluate our experience with the Perceval S-AVR combined with mitral and tricuspid valve surgery such as multiple valve surgery, focusing on the clinical outcomes and operative time.

METHODS: Between January 2017 and December 2022, 141 patients underwent surgical aortic valve replacement (AVR) using the bioprosthetic aortic valve at our institution. Of them, 42 patients (29.8%) underwent S-AVR with multivalve surgery. After 1:1 propensity score matching, 42 patients were selected as study subjects in each group. The primary endpoints were 30-day and follow-up mortality and major valve-related adverse events, such as structural valve dysfunction, valve thrombus, endocarditis, stroke, re-intervention, and pacemaker implantation.

RESULTS: In matched cohort, the mean age 74.3±4.2 and 74.2±6.2 years in C-AVR and S-AVR groups, respectively. The in-hospital mortality rates were 2.4% and 0% (P>0.999), and follow-up mortality rates were 4.8% and 7.1% (P>0.99) in C-AVR and S-AVR groups, respectively. Paravalvular leakage and abnormal pressure acceleration were absent in both the groups, and the incidence of postoperative valve-related adverse events did not vary between the groups. The operation time, including for the mitral valve, tricuspid valve, and arrhythmia surgeries, was significantly shorter in the S-AVR group after matching (mean cardiopulmonary bypass time: 132.52±39.20 *vs.* 115.50±25.70 minutes, P=0.001; mean aortic cross clamp time: 100.90±32.12 *vs.* 80.38±18.81 minutes, P<0.001).

CONCLUSIONS: S-AVR may be considered a viable option in cases requiring multiple valve surgery, as it can reduce operation time without compromising clinical outcomes.

PMID:40529743 | PMC:PMC12169998 | DOI:10.21037/jtd-24-1667

Categorías: Cirugía valvular

Sex differences and risk factors for postoperative complications following catheter ablation for pulmonary vein isolation in non-valvular atrial fibrillation: A retrospective cohort study

Mar, 06/17/2025 - 10:00

Medicine (Baltimore). 2025 Jun 13;104(24):e42753. doi: 10.1097/MD.0000000000042753.

ABSTRACT

Atrial fibrillation (AF) is the most common arrhythmia, significantly increasing the risk of adverse events such as stroke, heart failure, and cognitive impairment. catheter ablation is a first-line treatment for AF, with pulmonary vein isolation (PVI) as a common procedure. Although studies have reported sex-based differences in complication rates following PVI, these findings remain controversial. This study aimed to explore sex differences and identify independent risk factors associated with complications after PVI in non-valvular AF patients. This retrospective cohort study included 1092 patients with non-valvular AF who underwent PVI at the First Affiliated Hospital of Xinjiang Medical University between January 2018 and December 2021. The patients were divided into male and female groups, with propensity score matching used to reduce baseline differences.

Data on clinical characteristics, intraoperative variables, and postoperative complications were collected. The primary outcome was the occurrence of complications after PVI, categorized into overall, mild, and major complications. Multivariate logistic regression analysis was performed to identify independent risk factors for complications. The study found that female patients experienced a higher incidence of postoperative complications compared to male patients (30.38% vs 19.89%, P = .001). The female group had significantly higher rates of pericardial effusion (20.17% vs 12.71%, P = .007) and mild complications, such as vagal hyperactivity (3.87% vs 1.38%, P = .036). Multivariate logistic regression revealed that female sex, obesity, New York Heart Association functional class ≥ II, and ablation of non-pulmonary veins were significantly associated with overall and mild complications. Sex differences significantly influence the occurrence of postoperative complications after PVI in non-valvular AF patients, with female patients at a higher risk. Targeted interventions considering these risk factors may improve patient outcomes. Further research is required to explore the underlying mechanisms driving these differences.

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Categorías: Cirugía valvular

Association between Charlson Comorbidity Index and in-hospital outcomes among aortic stenosis patients undergoing aortic valve replacement: an observational study at the National Clinical Research Center for Cardiovascular Diseases

Mar, 06/17/2025 - 10:00

BMJ Open. 2025 Jun 17;15(6):e083677. doi: 10.1136/bmjopen-2023-083677.

ABSTRACT

OBJECTIVES: This study aimed to evaluate the impact of the Charlson Comorbidity Index (CCI) on in-hospital outcomes in patients with aortic stenosis (AS) undergoing aortic valve replacement (AVR) and to compare the efficacy of transcatheter aortic valve replacement (TAVR) and surgical aortic valve replacement (SAVR) in patients with different comorbidity burdens.

SETTING: The National Clinical Research Center for Cardiovascular Diseases.

PARTICIPANTS: A retrospective analysis was conducted on 3380 AS patients who underwent AVR in Beijing Anzhen Hospital from January 2015 to October 2021.

INTERVENTIONS: Patients were stratified into low (0-1) and high (≥2) CCI groups.

PRIMARY AND SECONDARY OUTCOME MEASURES: The primary outcome was Valve Academic Research Consortium-2 (VARC-2) composite early safety endpoints.

RESULTS: Patients with high CCI scores exhibited significantly higher rates of VARC-2 composite adverse outcomes compared with those with low scores (50.3% vs 44.2%, p=0.001). After adjusting for confounding factors, high CCI scores were independently associated with the VARC-2 composite adverse outcomes (OR=1.36, 95% CI 1.17 to 1.58, p<0.001). In patients aged ≥65 years, TAVR demonstrated lower composite event rates compared with SAVR, regardless of CCI score (low CCI: 17.6% vs 54.3%, p<0.001; high CCI: 33.7% vs 62.8%, p<0.001).

CONCLUSIONS: CCI is a significant predictor of in-hospital composite adverse events in AS patients undergoing AVR. TAVR may be preferred over SAVR for patients aged ≥65 years, irrespective of comorbidity burden, to minimise composite events risk. These findings underscore the importance of considering comorbidity burden in treatment decision-making for AS patients.

TRIAL REGISTRATION NUMBER: NCT05797402.

PMID:40527568 | PMC:PMC12182039 | DOI:10.1136/bmjopen-2023-083677

Categorías: Cirugía valvular

Predicting reverse remodeling following valve replacement in patients with valvular heart disease: a longitudinal (99m)Tc-FAPI SPECT/CT imaging study

Mar, 06/17/2025 - 10:00

Eur J Nucl Med Mol Imaging. 2025 Jun 17. doi: 10.1007/s00259-025-07406-9. Online ahead of print.

ABSTRACT

PURPOSE: In patients with valvular heart disease (VHD), fibroblast activation induced by pressure or volume overload can be identified by molecular imaging with fibroblast activation protein inhibitor (FAPI). The study sought to explore the potential of serial FAPI imaging for monitoring the reverse myocardial remodeling triggered by valve replacement.

METHODS: A cohort of 31 VHD patients scheduled for transcatheter or surgical valve replacement underwent 99mTc-FAPI SPECT/CT imaging and echocardiography. All patients repeated echocardiography and 22 of them completed repeat FAPI scans at 3-month follow-up. Cardiac FAPI uptake was quantified as maximum standardized uptake value (SUVmax), maximum of myocardial-to-blood ratio (TBRmax), and fibroblast activation volume (FAV). Myocardial remodeling patterns were evaluated through a comprehensive analysis of left ventricular geometric parameters derived from echocardiography.

RESULTS: Myocardial FAPI uptake showed heterogeneous among VHD patients (range: SUVmax 0.67-8.33; TBRmax 1.13-7.50; FAV 0-597 mL). FAPI uptake significantly correlated with levels of circulating N-terminal prohormone of brain natriuretic peptide and left ventricle mass index before valve replacement. Following relief of overload, 22 patients who underwent repeat FAPI imaging demonstrated significant reductions in TBRmax (3.31 [1.73-4.87] vs. 2.43 [1.63-4.23], p = 0.029) and FAV (31.5 [0-227] vs. 12.0 [0-144] mL, p = 0.004). Follow-up echocardiography revealed that 9 out of 31 patients transitioned to normal geometry from concentric or eccentric hypertrophy, achieving complete reverse remodeling. Multivariable regression suggested baseline FAPI uptake intensity TBRmax significantly associated with complete reverse remodeling post-intervention after adjustment (OR: 0.288 [0.097-0.852], p = 0.024).

CONCLUSION: 99mTc-FAPI SPECT/CT imaging is feasible to quantitatively track dynamics of fibroblast activation following valve replacement. Patients with lower preprocedural fibrotic activity identified by FAPI imaging may have greater potential for complete reverse remodeling.

PMID:40526127 | DOI:10.1007/s00259-025-07406-9

Categorías: Cirugía valvular

Three Dimensional Speckle Tracking Echocardiography in Hemodialysis Patients

Mar, 06/17/2025 - 10:00

Hemodial Int. 2025 Jun 16. doi: 10.1111/hdi.13272. Online ahead of print.

ABSTRACT

BACKGROUND: It has been suggested that ventricular strain measurements may be impaired in chronic hemodialysis patients despite having no history of heart disease. The aim of this study is to investigate whether ventricular strain parameters can be used to detect subclinical cardiac dysfunction in hemodialysis patients.

METHODS: In our study, 47 patients under the age of 65 years with no known history of cardiac or valvular disease and receiving chronic hemodialysis treatment for at least 1 year were compared with an age- and sex-matched control group of 29 healthy individuals. Transthoracic echocardiography was used to evaluate parameters such as global longitudinal strain, right ventricular global longitudinal strain, and left ventricular diastolic diameter. Differences between groups were analyzed by Student's t-test and Mann-Whitney U test.

RESULTS: The global longitudinal strain values of the hemodialysis group were significantly lower than those of the control group (-13.2 ± 3.91 vs. -22.1 ± 1.59, $p < 0.001$). Right ventricular global longitudinal strain (RV GLS) and left ventricular diastolic diameter were also significantly impaired in the hemodialysis group ($p < 0.05$). These results indicate the presence of subclinical cardiac dysfunction in hemodialysis patients.

CONCLUSIONS: Ventricular strain measurements may be impaired in chronic hemodialysis patients without a history of cardiovascular disease. Therefore, it is considered that ventricular strain measurements can be a useful method for the early detection of cardiac dysfunction in hemodialysis patients.

PMID:40524351 | DOI:10.1111/hdi.13272

Categorías: Cirugía valvular

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