

STENTLESS RAPID-DEPLOYMENT AORTIC VALVE REPLACEMENT IN A SMALL CALCIFIED AORTIC ROOT: A CASE REPORT

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Introduction. Prosthesis-patient mismatch (PPM) remains a significant concern in aortic valve replacement (AVR), particularly in patients with a small, calcified aortic root. Traditional mechanical and stented bioprosthetic valves may contribute to residual obstruction due to their sewing rings and stents, leading to increased transvalvular gradients. Stentless rapid-deployment bioprosthetic valves provide a larger effective orifice area (EOA) and offer an alternative in complex cases.

Aim of the study. This case study highlights the advantages of using a seamless biological prosthesis with rapid deployment in the setting of mechanical valve replacement failure in a patient with a small, calcified aortic root and annulus.

Materials and methods. Patient data were collected from the Cardiac Surgery Department of the Regional Clinical Cardiology Center in Grodno, while ensuring confidentiality. The patient underwent diagnostic evaluation and surgical intervention due to severe aortic stenosis and failed prior mechanical valve implantation.

Results and discussion. Echocardiographic findings revealed a ring diameter of 18-20 mm with extensive calcification involving the aortic valve, annulus, and left ventricular outflow tract (LVOT), as well as the posterior and lateral walls of the aorta. Initial surgical intervention included two coronary artery bypass grafts (CABG), with a distal autovenous vein anastomosis performed in the right coronary artery (RCA) at segment 3 and a distal left internal mammary artery (LIMA) anastomosis to the left anterior descending (LAD) artery at segment 2.

Following valve excision, the measured aortic ring diameter ranged from 19 to 21 mm. Given the patient's body surface area (BSA) and the indexed effective orifice area (iEOA), a 21 mm mechanical prosthesis (Planix-I, s/n 2524) was initially implanted using an 18 U-shaped supraannular suture technique with Cor-Knot fixation. However, valve mobility was compromised due to the small ring diameter, necessitating removal of the mechanical prosthesis and re-evaluation of the surgical approach.

A seamless, rapid-deployment bioprosthesis (Perceval Plus M, size PF5965A) was subsequently implanted, followed by aortic wall suturing using a sandwich technique at the site of lateral wall calcification. The final surgical outcome demonstrated improved hemodynamic parameters and successful implantation without residual obstruction.

Conclusion. In cases where mechanical valve replacement is dysfunctional due to a small, calcified aortic annulus, stentless rapid-deployment bioprosthetic valves offer an effective solution. They provide excellent hemodynamic performance, while eliminating the need for aortic root enlargement procedures. Additional benefits include reduced cardiopulmonary bypass (CPB) and cross-clamp times, decreased risk of paravalvular leak (PVL), and avoidance of long-term anticoagulation therapy. These findings support the use of seamless biological prostheses as a viable alternative in challenging AVR cases.

REPRESENTATION OF THE CATEGORY OF SPACE IN ANATOMICAL TERMINOLOGY

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Introduction. Anatomical terminology is essential for clear medical communication, standardizing the description of the human body's structure and spatial relationships. Derived largely from Latin and Greek, terms like *anterior*, *posterior*, *medial*, and *lateral* provide precise localization, while compound terms (e.g., *sternocleidomastoid*) illustrate complex spatial relationships. This report examines how space is represented in anatomical language, integrating insights from gross anatomy, organ construction, and histology.

Aim of the study.

The study aims to:

- Identify semantic patterns in anatomical spatial terms.
- Examine word formation methods, including affixation, compounding, and borrowing.
- Analyze spatial features based on four properties: locative, metric, kinetic, and formative.
- Investigate how geometric constructs (points, lines, planes, axes, and volumes) are employed in anatomical descriptions.

Materials and methods.

A corpus of anatomical terms was compiled from *Terminologia Anatomica*, Gray's Anatomy, histological atlases, and medical dictionaries. A semantic analysis categorized terms into:

- **Locative Features:** Indicating position (e.g., *superior*, *inferior*, *anterior*, *posterior*, *medial*, *lateral*).
- **Metric Features:** Describing measurable aspects (e.g., *proximal*, *distal*, *intercostal*).
- **Kinetic Features:** Relating to movement (e.g., *flexion*, *extension*, *rotation*).
- **Formative Features:** Denoting shape and structure (e.g., *fossa*, *sulcus*, *tubercle*).