

Intraoperative finding of immobile leaflet(s) following freshly implanted bioprosthetic valves: clinical characteristics and impact on outcomes

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BACKGROUND: Detection of immobile leaflets immediately following bioprosthetic valve implantation is a rare but important intraoperative finding. Restriction of leaflet movement can occur in the closed or open position, leading to abnormal prosthesis function. We sought to determine the clinical implications of immobile leaflets seen on intraoperative echocardiography.

METHODS: Patients with immobile leaflets identified on intra-operative/procedure echocardiography immediately post implantation between 2009-2020 were identified from an institutional database. All echocardiograms were reviewed de-novo to confirm immobile leaflets in the immediate post-implantation period. Identified cases were matched 1:2 to controls for age; sex; prosthesis position, model and size; and implantation approach (surgical vs. transcatheter). Nominal logistic regression and proportional hazards were used to analyze outcomes.

RESULTS: Thirty patients with immobile leaflets immediately post-bioprosthetic implantation were included. Clinical characteristics are summarized in the Table. Immobile leaflets were documented in procedural reports in only 18 (60%) patients. Moderate stenosis was present intraoperatively in 1 patient, none demonstrated \geq moderate regurgitation, and none resulted in immediate corrective action. In 3 (10%), valve re-intervention was required within 30 days due to symptomatic prosthesis dysfunction. Presence of restricted leaflet motion was associated with higher need for post-operative extracorporeal membrane oxygenation use (odds-ratio 7.3, $p = 0.02$) and composite end-point of death, valve re-replacement, prosthesis thrombosis, or cardiac hospitalizations (risk ratio 2.1, $p = 0.03$, Figure).

CONCLUSION: Immobile leaflet(s) immediately post-bioprosthetic valve implantation is an uncommon, under-reported, and under-treated phenomenon. Even in the absence of significant prosthetic valve dysfunction, it can be associated with worse post-operative course as well as worse outcomes.

Baseline characteristics

Age	76 (67-84)
Sex, male	10 (33%)
Surgical approach	25 (83%)
Aortic	5 (17%)
Mitral	12 (40%)
Tricuspid	12 (40%)
Pulmonary	1 (3%)
Re-intervention within 10 days	3 (10%)

Numbers are presented as median (interquartile range) or number (percentage).

Abstract Figure. Clinical outcome of stuck leaflets

