Demographic and Clinical Profile of Indian Patients Undergoing Valvular Heart Surgery: A Prospective Observational Study from a Tertiary Care Center

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Abstract

Background: India continues to face a high burden of valvular heart disease (VHD), predominantly driven by rheumatic heart disease.

Detailed demographic and clinical profiling of this patient population is essential to guide clinical practice, resource allocation, and future risk model development.

Objective: To describe the demographic characteristics, clinical comorbidities, and preoperative functional status of Indian patients undergoing valvular heart surgery at a tertiary care teaching hospital.

Methods: A prospective observational study was conducted at Sher-i-Kashmir Institute of Medical Sciences, Srinagar, between 2018 and 2021. Fifty-six patients undergoing
elective or urgent valvular heart surgery were included. Data collected included age, gender, ASA physical status, preoperative functional status (NYHA and CCS class),
left ventricular ejection fraction (LVEF), presence of diabetes mellitus, renal function, and pulmonary hypertension.

Results: The mean age of the study cohort was 48.6 ± 12.21 years; 53.6% were female. ASA status distribution was I (14.3%), II (37.5%), III (42.9%), and IV (5.3%).
A critical preoperative state was seen in 48.2% of patients, while 25% had insulin-dependent diabetes. Pulmonary hypertension was observed in 91.1% of patients.
67.8% presented with NYHA Class III/IV, and LVEF dysfunction ranged from mild to severe in 37.5% of patients.

Conclusion: This study provides a comprehensive demographic and clinical profile of Indian valvular heart surgery patients, highlighting a younger population
with high rates of comorbidities and advanced disease presentation, distinct from Western cohorts.

Keywords

Valvular Heart Disease, India, Demographics, Risk Stratification, Rheumatic Heart Disease, Surgery Outcomes

Introduction

Valvular heart disease remains a significant clinical challenge in India, with a heavy burden due to untreated rheumatic fever. Accurate knowledge of the demographic and clinical profile of patients undergoing valvular surgery is essential for improving surgical outcomes, optimizing perioperative care, and developing region-specific risk prediction models.

Although the EuroSCORE II and other global risk stratification systems are used for predicting mortality in cardiac surgery, they were developed using predominantly European datasets and may not reflect the unique disease and patient characteristics in India. This study aims to describe the demographic and clinical profile of patients undergoing valvular heart surgery at a tertiary care center in Northern India.

Materials and Methods

This prospective observational study was conducted at Sher-i-Kashmir Institute of Medical Sciences (SKIMS), Srinagar, from 2018 to 2021. Adult patients (>18 years) undergoing elective or urgent single-valve surgery with ASA physical status I-IV were included. Exclusion criteria included refusal to participate and patients younger than 18 years.

Preoperative data included age, gender, ASA status, NYHA and CCS class, left ventricular ejection fraction (LVEF), insulin-dependent diabetes, critical preoperative state, pulmonary hypertension (mild/moderate), and renal function.

Results

The mean age of patients was 48.6 ± 12.21 years (range 19–70). Female patients constituted 53.6% and males 46.4%. ASA distribution was I (14.3%), II (37.5%), III (42.9%), and IV (5.3%). Nearly half (48.2%) presented in a critical preoperative state, and 25% were insulin-dependent diabetics. Pulmonary hypertension was observed in 91.1% of patients, and 67.8% presented in NYHA Class III/IV.

LVEF distribution: Normal (>50%): 62.5%, Mild dysfunction (40–50%): 25%, Moderate dysfunction (30–40%): 10.7%, Severe dysfunction (<30%): 1.8%.

Discussion

This study provides the first comprehensive profile of Indian patients undergoing valvular heart surgery at a government tertiary care hospital. The mean age was considerably younger compared to Western cohorts, reflecting earlier onset due to rheumatic heart disease. High prevalence of critical preoperative states and comorbidities like diabetes suggests late presentation and poor chronic disease management. Pulmonary hypertension was present in nearly all patients, highlighting advanced disease burden. These features are not adequately accounted for in existing risk models like EuroSCORE II, underlining the need for India-specific risk stratification tools.

Conclusion

Indian patients undergoing valvular heart surgery represent a distinct cohort, characterized by younger age, higher prevalence of comorbidities, and late-stage disease presentation. These findings emphasize the need for region-specific risk models to better predict outcomes and optimize perioperative care.

References

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