

Impact of Congestive Heart Failure on Spinal Fusion (4+ levels) Postoperative Outcomes for Patients with Adult Spinal Deformity

Introduction: There is limited literature evaluating the impact of Congestive Heart Failure (CHF) on long-term outcomes of spinal fusion surgery in adult spinal deformity patients.

This study compares complication rates in patients with or without CHF undergoing spinal fusion (4+ levels) surgery.

Methods: Adult spinal deformity patients admitted from 2009-2011 with CHF who underwent spinal fusion (4+ levels) were retrospectively reviewed using New York State's Statewide Planning and Research Cooperation System. Only patients with a minimum 2-year follow-up were included. 1:1 propensity score-match (PSM) by age, sex, and obesity status was performed before analysis. Univariate analyses evaluated demographics, complications, and subsequent revision. Multivariate binary logistic regression models were conducted to identify correlations between CHF and postoperative outcomes.

Results: A total of 768 propensity score-matched patients with adult spinal deformity were identified (CHF: n=384; non-CHF: n=384). Cohorts were statistically matched by age (CHF: 68.7 years, non-CHF: 68.8 years, $p=0.967$), sex (CHF: 52.3% female, non-CHF: 52.3% female, $p=1.000$), and obesity (CHF: 22.4%, non-CHF: 22.1%, $p = 0.931$). Compared to the non-CHF cohort, CHF patients had significantly higher rates of overall surgical and medical complications (all, $p<0.05$). Notably, post-operative wound complications, acute myocardial infarction, sepsis, and acute renal failure were elevated in CHF patients (all, $p<0.05$).

Conclusion: Adult spinal deformity patients with CHF experienced higher surgical and medical complication rates than a propensity score-matched patient cohort without CHF from the general population undergoing spinal fusion (4+ levels) surgery. These results could inform management of postoperative expectations in future patients.