

**The Impact of Atrial Septal Defect on Outcomes and Complications Following Adult Spinal Fusion: A Propensity Score-Match Analysis**

**Introduction:** Due to limited existing literature, this case-control study aims to compare outcomes and complication rates between patients with and without atrial septal defect (ASD) undergoing surgery for spinal fusion.

**Methods:** Using the National Inpatient Sample, patients admitted from 2005 to 2012 with ASD who underwent spinal fusion were identified. A 1:1 propensity score-match by age, gender, and obesity status was performed to identify patients without ASD.

Univariate analyses evaluated demographics, complications, and mortality. Multivariate binary logistic regression models were conducted to identify correlations between ASD and postoperative outcomes, controlling for age, sex, and obesity status.

**Results:** A total of 358 propensity score-matched patients were identified (ASD: n=358; non-ASD: n=358). The ASD cohort, compared to the non-ASD cohort, had greater length of stay (7.4 days vs. 3.7 days,  $p<0.001$ ), Deyo score (1.08 vs. 0.75,  $p=0.003$ ), and total hospital charge (\$132,381 vs. \$79,806,  $p<0.001$ ). Patients with ASD, compared to non-ASD patients, had higher rates for a surgical complication, blood transfusion, medical complication, altered mental status, pneumonia, acute renal failure, sepsis, deep venous thrombosis, and cerebrovascular event (all,  $p<0.05$ .) The average incidence rate between 2005 and 2012 for patients with ASD undergoing spinal fusion increased by 23.3%.

**Conclusion:** When undergoing spinal fusion, patients with ASD, compared to non-ASD patients, had greater length of stay, Deyo scores, and total surgical charge. Patients with ASD had higher risks for surgical and medical complications compared to non-ASD patients. These results can support management of postoperative expectations and concerns in this growing patient cohort.