

The Impact of Ventricular Septal Defect on Outcomes and Complications Following Total Hip Arthroplasty: A Propensity Scored-Match Analysis

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INTRODUCTION: There is limited literature evaluating the impact of VSD on long-term outcomes after THA surgery. Therefore, we aimed to compare outcomes and complication rates between patients with and without ventricular septal defect (VSD) undergoing surgery for total hip arthroplasty (THA).

METHODS: Using the National Inpatient Sample (NIS), patients admitted from 2005 to 2012 with an ICD9 code of VSD (7454) who underwent THA were retrospectively reviewed. A 1:1 propensity score-match (PSM) by age, gender, and obesity status was performed before analyzing data. Univariate analyses evaluated demographics, complications, subsequent revision, and mortality. Multivariate binary logistic regression models were also conducted to identify correlations between VSD and postoperative THA outcomes, controlling for age, sex, and obesity status.

RESULTS: A total of 82 propensity score-matched patients were identified (VSD: n=41; non-VSD: n=41). Both cohorts were nearly identical in age (VSD: 60.71 years, non-VSD: 59.51 years p=0.718), gender (VSD: 70.7% female, non-VSD: 61.0% female p=0.352), and obesity status (VSD: 12.2%, non-VSD: 22.0% p=0.240). Both cohorts had comparable length of stay (p=0.644), deyo score (p=0.939), and total hospital charge (p=0.548). The average incidence rate between 2005 and 2012 for patients with VSD undergoing THA is 0.16 [0.12– 0.20] per 1,000,000 person-years (Figure 1). This incidence rate increased by 0.44% during this time period (Figure 1). With a 1:1 PSM, patients with VSD, compared to non-VSD patients, had comparable rates for surgical complication (p=0.078), medical complication (p=1.000), and blood transfusion (p=0.131) (Table 1). VSD was not an independent risk factor of a surgical complication (p=0.100), blood transfusion (p=0.137), or medical complication (p=0.932) (Table 2).

DISCUSSION AND CONCLUSION: In the general population undergoing total hip arthroplasty, patients with VSD, compared to non-VSD patients, had comparable Deyo scores, surgical charges and length of stay. Both cohorts had comparable risk for surgical and medical complications. These results can support management of postoperative expectations and concerns in this patient cohort.

Postoperative Outcome	No VSD N (%)	Yes VSD N (%)	P-Value
Surgical Complications	10 (24.4%)	4 (9.8%)	0.078
Wound	1 (2.4%)	0 (0.0%)	0.314
CNS	0 (0.0%)	0 (0.0%)	-
Malunion Of Fracture	1 (2.4%)	0 (0.0%)	0.314
Prosthetic Implant Joint	0 (0.0%)	0 (0.0%)	-
Transfusion Of Blood	9 (22.0%)	4 (9.8%)	0.131
Medical Complications	2 (4.9%)	2 (4.9%)	1.000
Altered Mental Status	0 (0.0%)	0 (0.0%)	-
Acute Myocardial Infarction	0 (0.0%)	0 (0.0%)	-
Pulmonary	0 (0.0%)	0 (0.0%)	-
Pneumonia	0 (0.0%)	0 (0.0%)	-
Gastrointestinal	0 (0.0%)	0 (0.0%)	-
Urinary Tract Infection	0 (0.0%)	0 (0.0%)	-
Acute Renal Failure	1 (2.4%)	1 (2.4%)	1.000
Sepsis	0 (0.0%)	1 (2.4%)	0.314
Pulmonary Embolism	0 (0.0%)	0 (0.0%)	-
Deep Vein Thrombosis	0 (0.0%)	0 (0.0%)	-
Cardiovascular Event	1 (2.4%)	2 (4.9%)	0.556
Revisions	0 (0.0%)	0 (0.0%)	-
Mortality (Hospitalization)	0 (0.0%)	1 (2.4%)	0.314

Postoperative Outcome	OR (95%CI) (Univariate)	P-Value	OR (95%CI) (Multivariate)	P-Value
Surgical Complications	0.335 (0.096 – 1.174)	0.087	0.339 (0.093 – 1.230)	0.100
Wound	-	-	-	-
CNS	-	-	-	-
Malunion Of Fracture	-	-	-	-
Prosthetic Implant Joint	-	-	-	-
Transfusion Of Blood	0.384 (0.108 – 1.368)	0.140	0.361 (0.094 – 1.384)	0.137
Medical Complications	1.000 (0.134 – 7.460)	1.000	1.094 (0.139 – 8.605)	0.932
Altered Mental Status	-	-	-	-

