The Impact of Visual Disturbance on Total Hip Arthroplasty Outcomes and Postoperative Fractures

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INTRODUCTION: Visual disturbances (VD) represent a well-studied detriment to overall balance and stability. However, few studies have investigated whether visual deformities are associated with a complicated postoperative course for common orthopedic interventions. We sought to investigate whether VDs were associated with postoperative fracture and overall medical and surgical complications in patients undergoing elective total hip arthroplasty (THA).

METHODS: Patients undergoing primary elective THA between 2009 and 2011 with unilateral and bilateral visual deficiencies, visual field deficiencies, diabetic retinopathy, and macular degeneration with a central scotoma were identified from the New York State Statewide Planning and Research Cooperative System (SPARCS) database using ICD-9 codes. The elective basis of the THA was determined by the absence of concomitant ICD-9 CM diagnostic codes for pathologic, traumatic, or neoplastic conditions of the hip and pelvis. All postoperative fractures were identified. Univariate analysis was employed to compare demographic data and medical/surgical complications between patients with and without VDs. Multivariate binary logistic regression was used to characterize the association between VDs and medical complications, surgical complications, total postoperative fractures, and postoperative hip fractures.

RESULTS: A total of 83,591 patients undergoing THA were identified, of whom 313 had VDs. Patients with VDs were significantly older (68.1 vs. 64.7 years, $p<0.001$) with a higher proportion enrolled in Medicare (67.1% vs. 47.1%, $p<0.001$). Patients did not vary significantly with respect to sex or race. Patients with VDs had a longer length of stay (4 vs. 3.7 days, $p=0.037$) and had a significantly higher Deyo-Charlson comorbidity index score (1.42 vs. 0.54, $p<0.001$); however, there were no significant differences with respect to total charges. Patients with VDs were more likely to develop postoperative wound infections (7.7% vs. 3.7%, $p<0.001$), total surgical complications (12.5% vs. 6.4%, $p<0.001$), sepsis (7.0% vs. 2.6%, $p<0.001$), pneumonia (7.7% vs. 4.3%, $p=0.003$), anemia (33.9% vs. 27.9%, $p=0.019$), and total medical <br bcx0="">complications (15.7% vs. 10.1%, $p=0.001$) (Table 1). Postoperative fracture rates did not vary between groups (2.2% vs. 3.5%, $p=0.132$). Logistic regression revealed that VDs were not associated with medical complications, total postoperative fractures, or postoperative hip fractures when age, race, sex, and Deyo-Charlson index were held constant. However, VDs were independently associated with the occurrence of surgical complications (OR=1.6; 95% CI [1.1 – 2.2]), $p=0.011$.

DISCUSSION AND CONCLUSION: There is a lack of literature concerning the impact of VDs on the recovery from common orthopedic events. Although it may seem logical that VDs are associated with increased rates of postoperative instability and falls leading to postoperative medical and surgical complications, this has not been investigated in prior studies. This study reports no association between VDs and the occurrence of postoperative fractures or postoperative medical complications.

	No Visual Disturbance	Visual Disturbance	p-Value
Post-op Hemorrhage	0.30%	0.40%	0.728
Wound Disruption	0.40%	0.30%	0.757
Wound Infection	**3.70%**	**7.70%**	**p < 0.001**
Implant Infection	2.90%	1.20%	0.008
Post-op Hip Dislocation	1.40%	1.60%	0.762
Any Surgical Complication	**6.40%**	**12.50%**	**p < 0.001**
Nervous System Complications	0.30%	0.30%	0.824
Sepsis	**2.60%**	**7.00%**	**p < 0.001**
Deep Vein Thrombosis	2.20%	2.10%	0.880
Pulmonary Embolism	0.40%	0.30%	0.848
Pneumonia	**4.30%**	**7.70%**	**0.003**
Anemia	**27.90%**	**33.90%**	**0.019**
ARDS	0.30%	0.00%	0.311
Urinary Comps	1.00%	1.00%	0.98
Cardiac Defects	1.60%	1.00%	0.384
Total Post-op Fractures	2.20%	3.50%	0.132
Any Medical Complication	**10.10%**	**15.70%**	**0.001**

Table 1. Univariate Analysis of Medical and Surgical Complication Rates in Patients with and without Visual Disturbance.