Medical and Surgical Issues requiring return to ED within 90 Days: An Analysis of 816 Patients

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INTRODUCTION: An influential measurement for patient care, well-being, and satisfaction is a return to the hospital following surgery. This study aims to determine the causes and risk factors for ED visits within 90 days of spinal deformity surgery.

METHODS:

816 pediatric patients with spinal deformity who underwent a posterior spinal fusion (PSF) from 2011-2023 were included. Radiographic, surgical, and hospital stay information was collected and presented as medians and interquartile ranges (IQR) for continuous data, and frequencies for categorical data. Chi-squared was utilized to analyze categorical data, whereas Kruskal-Wallis tests were utilized to examine continuous metrics. Patients who returned to the ED within 90 days for any reason were analyzed. ED appointments were classified as either medical or surgical. Medical visits included but not limited to fever, pain, and seizures. Surgical visits included wound and surgical site infections but were not limited to these conditions.

RESULTS:

100 patients returned to the ED within 90 days and 716 did not. Of the returns to the ED, 74 (74.0%) returned for medical reasons while 26 (26.0%) returned for surgical reasons. Those that returned to the ED had greater total hospital stay morphine consumption (3.61mg/kg vs 2.86 mg/kg, $p=0.015$) and greater initial length of stay (5.0 vs 4.0, $p=0.001$). Patients who experienced hospital stay complications, spent three or more days in the ICU, or had neuromuscular disorders were more likely to return the ED ($p<0.001$, $p=0.004$, and $p=0.03$, respectively).

Logistic regression showed that patients with neuromuscular scoliosis were more likely to visit the ED within 90 days (OR: 2.58, 95% CI:1.09-6.15, $p=0.032$) as well as those who experienced hospital stay complications (OR: 3.42, CI: 1.74-6.73, $p<0.001$).

DISCUSSION AND CONCLUSION: Within 90 days, 12.3% of patients returned to the ED, primarily with medical complaints. Patients were more likely to return to the ED if they had longer LOS and had greater morphine consumption. Neuromuscular scoliosis and hospital stay complications were identified as independent risk factors, increasingly the within 90-day likelihood of returning to the emergency department.