

The Management and Outcomes in Blunt Splenic Injury: A Comparison Between a Rural and Urban Trauma Center

Isabella Graham, MD; Meryl Ethridge, MD; Kerry Kole, MD; Sarah Helveston, RN; Courtney Adams, BSc; Jason Valencia, MSc; Susan Szpunar, PhD; Elango Edhayan, MD
Department of General Surgery, Ascension St. John Hospital, Grosse Pointe, Michigan

Introduction: The management of blunt splenic trauma (BST) has evolved over the last 20 years, with nonoperative management in hemodynamically stable patients prevailing as the standard of care. Nonoperative management includes angioembolization of the splenic artery. Although non-operative management has increased in use, there is limited standardization of practices for the management of blunt splenic trauma. The objective was to compare outcomes for BST and the use of angioembolization between a Level 1 urban trauma center, Ascension St. John Hospital, Detroit MI (ASJH) and a Level 2 rural trauma center, Munson Medical Center, Traverse City MI (MMC).

Methods: Our study used registry data comprising all patients from 1/2015-12/2021 who presented to ASJH and MMC with BST. Patients were divided into operative intervention versus non-operative management groups. Data collected included timing of intervention, length of stay, severity scores, blood product requirements and concomitant injuries. The management and outcomes between the two institutions were compared. Data were analyzed using Student's t-test, the χ^2 test, the Mann-Whitney U test and logistic regression.

Results: Data were collected on 93 patients from ASJH and 189 patients from MMC. Splenic injury grade was scored from one to five, with 60.0% of patients scoring grade three or higher and 62.1% of patients having active blush identified on imaging. Eighty-four patients (28.4%) had operative intervention and 24 patients (8.5%) underwent angioembolization. ASJH had an angioembolization rate of 15.1% vs 5.3% at MMC ($p=0.006$). When comparing the two hospitals, patient groups were different in terms of race ($p=0.001$), fresh frozen plasma administered ($p=0.046$) and presenting systolic blood pressure ($p=0.001$). In patients with active blush, after adjusting for hemoglobin on arrival, ASJH patients were 3.8 times more likely to have angioembolization than patients at Munson ($p=0.02$). TRISS and race dropped out of the model.

Conclusions: There is a significant difference in the rate of non-operative management between the hospitals. Higher rates of angioembolization at an urban center may reflect a difference in resource distribution between urban and rural centers.