

Does Pelvic Arterial Embolization Increase Surgical Site Infection in Trauma Patients Undergoing Pelvic Ring Fixation?

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Purpose: Percutaneous techniques to control arterial bleeding, such as embolization and REBOA, are being used more frequently in acute trauma management. Despite clear mortality benefits, surgical-site infection (SSI), muscle or bowel necrosis, nerve injury, and claudication are reported complications following embolization of the internal iliac vessels and its branches. The primary aim of this study is to determine the risk of SSI following pelvic arterial embolization in trauma patients undergoing pelvic ring fixation.

Methods: This observational cohort study used the American College of Surgeons (ACS) National Trauma Database from 2017 to 2018. Patients over 18 years of age who were transported through emergency health services to an ACS Level I or II trauma hospital and sustained a pelvic ring fracture treated surgically were included. The primary study outcome was SSI. Multivariable logistic regression was performed to estimate treatment effects of angioembolization of pelvic vessels on SSI, adjusting for known risk factors for infection.

Results: Study analysis included 16,598 patients, of whom 1233 (8.0%) underwent pelvic angioembolization. 341 patients (2.1%) had an SSI, with a higher risk (5.8%) in patients undergoing angioembolization (unadjusted odds ratio [OR] 3.4; 95% confidence interval [CI] 2.6-4.5; P<0.001). Controlling for confounding variables, including patient demographics, prehospital vitals, initial hospital vitals, open fracture, ISS, and emergency laparotomy for hemorrhage control (Table 1), pelvic angioembolization was still significantly associated with increased odds for SSI (adjusted OR 1.6; 95% CI 1.1-2.2; P = 0.012).

Conclusion: This study demonstrates that patients who undergo pelvic ring operative fixation have a higher SSI risk with angioembolization. As the use of embolization increases, it is important to remain judicious in patient selection.

	Adjusted Odds Ratio	95% Confidence Interval	p value
Pelvic Embolization	1.56	1.10 – 2.22	0.012
Laparotomy	2.76	1.98 – 3.83	<0.001
Open Pelvis Fracture	1.11	0.69 – 1.77	0.668
Pelvis Fracture Fixation Technique			
Percutaneous	Ref	Ref	
Open	1.32	1.01 – 1.74	0.041
Associated Acetabulum Fracture			
None	Ref	Ref	
Closed Fracture	1.46	1.11 – 1.92	0.007
Open Fracture	3.45	1.19 – 9.99	0.023
EMS Vitals			
Systolic Blood Pressure <90	1.24	0.90 – 1.73	0.191
Pulse >110	1.32	0.55 – 1.05	0.096
Emergency Department Vitals			
Systolic Blood Pressure <90	1.25	0.89 – 1.73	0.193
Pulse >110	1.45	1.04 – 2.02	0.027

Table 1. Adjusted Odds Ratio for Selected Variables Associated with SSI using a Logistic Regression Model

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