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Predictors for surgical sacroiliac joint fusion. Is real culprit failed spine surgery?

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Abstract

Introduction

Sacroiliac joint (SI) joint pain is a cause of chronic low back pain increasingly treated with SI-fusion. However, risk factors associated with surgical fusion of non-traumatic SI joint have not been identified. This study uses a large national database to describe patient related risk factors, especially previous lumbar spine surgery.

Methods

Using PearlDiver database, adult patients who underwent SI-fusion from 2010-2020 were identified using CPT codes (27280 and 27279). Patients with pelvis fractures predating SI-fusion were excluded. Control cohort was generated from PearlDiver random patient generator of 200,000 patients without history of SI-fusion and filtered for age > 18. Extracted independent variables including age, gender, tobacco use, obesity, fibromyalgia, history of prior spinal surgery and history of spinal fusion were compared between SI-fusion patients and controls using univariate analysis. Spine surgery was further interrogated by propensity matching SI-fusion patients to controls for all other variables (obesity, fibromyalgia, age, gender, and tobacco use).

Results

17,216 patients with history of SI-fusion were compared to 161,506 controls. SI-fusion patients were older (58.41 ± 12.9 vs 50.71 ± 16.23). Univariate analysis showed SI-fusions were associated fibromyalgia (OR 3.71), obesity (OR 2.43) and tobacco use (OR 2.01) ($P < 0.0001$ for all). The greatest risk of SI-fusion was previous spine surgery (OR 25.09; $P < 0.0001$), especially spine fusion (OR 43.13; $P < 0.0001$). After propensity matching, we found patients with prior spinal fusion were 18X more likely to undergo SI-fusion (RR 17.99; 95% CI= [15.38 - 20.83]) and those with any prior spinal surgery were 11X more likely to undergo SI-fusion (RR 11; 95% CI= [9.99 - 12.14]). Only 22 SI-fusion patients had previous spine hardware failure.

Conclusion

This study demonstrates obesity, fibromyalgia, and smoking increases likelihood of patients having SI-fusion. However, failed lumbar surgery appears to be the most significant risk factor.