

Learning Objective

This work seeks to leverage the National Inpatient Sample (NIS) and National Surgical Quality Improvement Program (NSQIP) databases to catalogue and describe the prevalence of sacroiliac (SI) joint fusion, potential heterogeneity in surgical approaches, and prognostic factors associated with short- and longterm positive outcomes.

Background

- Low back pain (LBP) is a leading cause of disability worldwide and affects the quality of life and mechanical function of millions globally^{1,2}
- Individuals whose SI pain is refractory to conservative management or percutaneous interventions may be candidates for surgical fusion of the SI joint.³
- The national prevalence of SI joint fusion surgeries and specific demographic and comorbid indications for the procedure are largely unknown
- Large state and national multi-payer databases may yield important information about the epidemiology of SI joint fusions

Methods

- Adult patients who underwent SI fusion were identified from NSQIP participant files from 2015 to 2018 using ICD-9 and ICD-10 codes (27280; 27279)
- Primary indication for SI fusion was categorized primary postoperative International using Classification of Disease, 10th Revision (ICD-10) diagnostic codes.
- NSQIP was queried for patient characteristics including sex, age, height, weight, tobacco use, wound contamination, operative time, and surgical approach. Medical comorbidities including chronic obstructive pulmonary disease (COPD), congestive heart failure (CHF), hypertension (HTN), diabetes, liver disease, bleeding disorders, chronic steroid use, and dialysis dependent kidney disease.
- Patient functional status was assessed using activities of daily living (ADLs) assessed as either fully, partially, or completely dependent within 30 days prior to surgery

Describing the Epidemiology and Outcomes of Sacroiliac Joint Fusion Surgeries Using a Large National Dataset

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Results

- 341 patients were identified using these search criteria (Table 1)
- All surgeries were performed using an open approach
- 68/341 (19.9%) of surgeries were performed as outpatient procedures (Figure 1)
- The probability of intra- or post-operative complications from SI joint fusion is roughly correlated with case time (Figure 2)
- Smoking, diabetes, and hypertension (HTN) are common comorbidities in this population (Table 2)

TABLE 1: DEMOGRAPHIC CHARACTERISTICS OF INDIVIDUALS UNDERGOING SI JOINT FUSION

N = 341	Inpatient	Outpatient	P-val	
	n=273	n=68		
Sex, Female	71.8% (196)	69.1% (47)	0.77	
AGE				
0-50	37.4% (102)	29.4% (20)	0.13	
50-65	31.5% (86)	41.1% (28)		
65-80	26.7% (73)	29.4% (20)		
80+	4.4% (12)	0% (0)		
RACE				
White	78.4% (214)	91.2% (62)	0.16	
Hispanic	10.3% (28)	2.9% (2)		
Black	3.7% (10)	1.5% (1)		
Other	1.5% (4)	0% (0)		
Missing	6.2% (17)	4.4% (3)		
	30.4 (6.5)	30.2 (6.7)	0.8	







TABLE 2: DISCHARGE DESTINATION AND COMMON COMORBIDITIES ASSOCIATED WITH SI JOINT FUSION

N = 341	Inpatient n =273	Outpatient n = 68	P-Val	
DISCHARGE DESTINATION				
Facility	6.6% (18)	0% (0)	0.06	
Home	93.4% (255)	100% (68)		
MEDICAL COMORBIDITIES				
Smoker	21.2% (58)	25% (17)	0.61	
Diabetes	14.3% (39)	11.8% (8)	0.73	
HTN	50.9% (139)	42.6% (29)	0.28	
COPD	5.9% (16)	1.5% (1)	0.24	
CHF	1.1% (3)	0% (0)	0.89	
Dialysis	0% (0)	0% (0)	NA	
Steroids	6.2% (17)	4.4% (3)	0.78	



Discussion

- SI Joint fusion remains a relatively uncommon surgery in proportion to lumbar, thoracic, and cervical fusions
- The proportion of SI joint fusions performed as outpatient procedures remained relatively stable in the sample time for which data were analyzed
- The lack of minimally invasive surgical (MIS) approaches to SI joint fusion may represent an opportunity for further research into MIS fusions of the SI joint for the treatment of pain
- SI joint pain may benefit from a standardized, algorithmic approach to medical management.

Limitations

- CPT for SI fusion must be listed as primary CPT code (i.e. not secondary as part of another procedure)
- Data cannot account for differing surgical and fusion materials across hospital systems, which may alter outcomes and relevant comorbidities.

Conclusion

- SI joint fusion is an uncommon procedure that may benefit carefully selected patients whose pain is appropriately localized to the SI joint and who have failed more conservative treatment options.
- More detailed analyses of surgical outcome data are needed to ascertain the relative effectiveness of SI joint fusion versus more conservative approaches to treating pain localized to the SI joint

References

1. Wu A, March L, Zheng X, et al. Global low back pain prevalence and years lived with disability from 1990 to 2017: estimates from the Global Burden of Disease Study 2017. Ann Transl Med. 2020;8(6):299.

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3. Dengler JD, Kools D, Pflugmacher R, et al. 1-Year Results of a Randomized Controlled Trial of Conservative Management vs. Minimally Invasive Surgical Treatment for Sacroiliac Joint Pain. *Pain Physician.* 2017;20(6):537-550.