Assessing the Risk Factors for Surgical Site and Deep Wound Infections Following Hip Arthroscopy: A Nationwide Study of 75,577 Patients

Patrick Nian¹, Adam Mark Gordon², Joydeep Baidya, Andrew Ryan Horn, Francis Rosato ¹Department of Orthopaedic Surgery, SUNY Downstate, ²Maimonides Medical Center INTRODUCTION:

The indications and utilization of hip arthroscopic surgery have increased over the last decade owing to advances in surgical technique. Although generally rare, surgical site infections (SSIs) are among the most common postoperative complications following this procedure. In addition to its association with reduced quality of life and increased healthcare costs, SSIs have been shown as the most common reason for unplanned admission within 30 days of index hip arthroscopy, suggesting a disproportionate negative impact despite being uncommon in absolute percentages. Therefore, the aims of this study were to utilize a nationwide sample to evaluate the incidence and associated risk factors for SSIs within 90 days following hip arthroscopy.

METHODS: A nationwide administrative database was retrospectively queried for adult patients (>18 years of age) undergoing primary hip arthroscopy from 2010 to 2021. Pediatric patients were excluded from the study. Patients and complications were identified using International Classification of Disease, Ninth Revision (ICD-9) and Current Procedural Terminology (CPT) codes. Patients undergoing hip arthroscopy were first defined using CPT codes used in previously published studies, which included CPT-29860, CPT-29861, CPT-29862, CPT-29863, CPT-29914, CPT-29915, CPT-29916. Patients were subsequently categorized into two groups based on whether they did (N = 235) or did not (N = 75,342) develop an SSI within 90 days of surgery. SSIs encompassed superficial and deep incisional infections of the surgical site. Multivariable logistic regression models were used to calculate odds (OR) of developing SSIs within 90-days following hip arthroscopy, adjusting for age, sex, and comorbidities comprising the Elixhauser-Comorbidity-Index (ECI). A P-value less than 0.05 was considered statistically significant.

RESULTS: The overall incidence of SSIs following hip arthroscopy was 0.31%, with no significant change over the study period (P=0.697). The two cohorts were similar in age (P=0.0716), sex (P=0.2959), and geographic location (p=0.5995). Overall comorbidity burden was significantly higher among patients who did (ECI=4.1) versus those who did not (ECI=2.2) develop SSIs (P<0.0001). Risk factors for SSIs following hip arthroscopy included depression (OR:2.02, P<0.0001), history of drug abuse (OR:1.74, P=0.00098), preoperative fluid and electrolyte abnormalities (OR:1.81, P=0.0001) and coagulopathy (OR:1.58, P=0.0312). Sub-stratification demonstrated morbidly obese patients (\geq 35.00 kg/m2) were more likely to develop SSIs (OR: 4.52, P<0.0001) compared to patients of normal body mass index.

DISCUSSION AND CONCLUSION: The overall rate of SSIs is low following hip arthroscopy. Certain patient specific factors may be associated with SSIs and warrant further understanding to prevent these occurrences. This study may guide careful and intentional patient selection and optimization prior to hip arthroscopy, in efforts to reduce the rate of this event.

Demographics	Surgical Site Infections		Complication Free Cohort		
	N	~ %	N	5	P-value
Age (Years)		-	-		0.0716
< 20	•	NA	3.641	4.8	
20 1a 24	20	8.5	6.667	8.8	
25 to 29	26	11.1	6.122	8.1	
30 to 34	29	12.3	7,427	9,9	
35 to 39	41	17.4	9,269	12.3	
40 12 44	26	11.1	10.077	13.4	
45 12 49	34	14.5	9.997	13.3	
50 1a 54	19	8.1	8,474	11.2	
55 to 59	17	7.2	5.875	7.8	
60 1a 64	12	5.1	3,783	4.9	
65 ta 69	•	NA	2.141	2.8	
70 1a 74	•	NA	1.369	1.8	
≥75	•	NA	599	0.8	
Sex		-	-		0.2959
Female	170	72.3	51,962	69.0	
Male	65	27.7	23,380	31.0	
Region					_
Midwest	77	32.8	22,721	30.2	0.5995
Northeast	39	16.6	14,240	18.9	
South	76	32.3	25,476	33.8	
West	-45	18.3	12,568	16.7	
Conorbidities					_
Alcohel Use Diserder	24	10.2	4,219	5.6	0.00331
COPD	83	35.3	18,927	25.1	0.0004
Cardiac Arrhythmias	53	22.6	10,442	13.9	0.6092
Cerebowaerular Disease	20	12.3	6,682	6.6	0.0647
Chronic Kidney Disease	20	8.5	3,149	4.2	0.0017
Ceagalopathy	29	12.3	3,955	5.2	<0.000
Cangestive Heart Failure	13	5.5	1,364	1.8	0.0091
Caronary Artery Disease	-40	17.0	6,947	9.2	0.0001





Figure 1. Forest Plot of Patient Factors associated with developing a Surgical Site Infection within 90 Days of Hip Arthroscopy.