

Evaluating the Preoperative Healthcare Costs and Healthcare Utilizations for Patients Undergoing Hip Arthroscopy

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INTRODUCTION: Hip arthroscopy has become an increasingly common surgical intervention for addressing various intra-articular hip pathologies including femoroacetabular impingement (FAI) syndrome, labral pathology, and chondral injury, particularly in young and middle-aged adults. With growing healthcare expenditures in musculoskeletal care, there has been a greater emphasis on understanding and controlling costs throughout the continuum of care, both nonoperatively and operatively. While previous studies have explored the costs of hip arthroscopy in the postoperative period associated with complications, the finances and healthcare utilizations preoperatively remain underexplored. This study aimed to quantify and compare the preoperative healthcare costs incurred by patients undergoing hip arthroscopy, focusing on differences between patients with Medicare and those with commercial insurance. Furthermore, we sought to compare these preoperative costs to the direct cost of surgery over a 90-day postoperative period to better contextualize overall spending and potential areas for cost containment.

METHODS:

A cohort of 75,577 patients undergoing primary hip arthroscopy was analyzed using a nationwide database from 2010–2021. Preoperative healthcare utilization encompassed the 12 months preceding surgery and was examined across service categories including Imaging (Computed tomography (CT) scans, magnetic resonance imaging (MRI), and X-rays), therapy (Physical therapy (PT) sessions), Pharmaceuticals (Opioids and nonsteroidal anti-inflammatory drugs (NSAIDs)), Interventions and Visits (Steroid injections and office consultations). Costs were actual reimbursements to the service provider made by the insurance company. A sub-analysis compared Medicare Beneficiaries to Commercial Insurance plans to control for value differences in reimbursements. All reimbursements were adjusted for inflation to 2021 U.S. Dollars (USD). A 90-day postoperative period was used to assess surgical costs and healthcare utilizations to provide a comparative reference for preoperative spending as a ratio of the total cost of care. Continuous variables were analyzed using independent-sample T-tests and categorical variables by Chi-square analyses. Cost distributions were summarized as means. Significance threshold was set at $P < 0.05$.

RESULTS:

The majority of patients were between the ages of 35 and 54, with the highest proportions in the 40–44 (13.4%) and 45–49 (13.3%) age groups (Table 1). Females made up 69.0% of the study group, and the most common comorbidities were depression (43.0%), hypertension (36.3%), and obesity (28.0%). Tobacco use (29.6%) and chronic obstructive pulmonary disease (25.2%) were also prevalent. The mean total preoperative healthcare expenditure per patient in the year prior to hip arthroscopy was \$13,503. The largest contributors to these costs were physical therapy (\$4,483, 33%), followed by steroid injections (\$3,255, 24%) and MRI studies (\$1,678, 12%). When stratified by insurance type, total preoperative costs were significantly lower for Medicare patients compared to those with commercial insurance (\$9,456 vs. \$15,076, $P < 0.0001$). Cost patterns were consistent across several categories of individual healthcare services. For CT scans, costs were significantly lower in Medicare patients compared to commercially insured patients (\$554 vs. \$857, $P = 0.013$). Office visit costs were also lower in the Medicare group (\$468 vs. \$833, $P = 0.002$), as were steroid injection costs (\$1,617 vs. \$3,393, $P = 0.003$), MRI studies (\$537 vs. \$1,731, $P = 0.002$), X-rays (\$413 vs. \$726, $P = 0.021$), and NSAID prescriptions (\$572 vs. \$2,996, $P < 0.0001$). Conversely, physical therapy costs were slightly higher for Medicare patients compared to those with commercial insurance (\$4,970 vs. \$4,422, $P = 0.064$), though this difference did not reach statistical significance. Opioid prescription costs were significantly higher among Medicare patients as well (\$325 vs. \$118, $P = 0.034$). In contrast to preoperative costs, the mean cost of surgery and associated care within the 90-day postoperative surveillance period was substantially lower, totaling \$3,146 per patient ($P < 0.001$).

DISCUSSION AND CONCLUSION:

Preoperative healthcare utilization for hip arthroscopy is a significant cost, with physical therapy and steroid injections accounting for the highest proportion. Optimizing nonoperative treatments and tailoring preoperative care may help reduce costs and improve resource allocation.

Demographics	N	%
Age (Years)		
< 20	1,677	4.4
20 to 24	4,487	11.6
25 to 29	6,148	16.0
30 to 34	7,454	19.4
35 to 39	9,318	24.2
40 to 44	10,105	26.4
45 to 49	13,021	34.0
50 to 54	7,493	19.5
55 to 59	4,892	12.7
60 to 64	3,719	9.6
65 +	4,181	10.9
Sex		
Female	23,132	59.9
Male	15,465	40.1
Region		
Midwest	13,709	35.6
Northwest	13,726	35.6
South	15,552	40.2
West	12,611	32.7
Unknown	337	0.9
Comorbidities		
Alcohol Use Disorder	2,371	6.1
COVID-19	19,018	49.2
Coronary Atherosclerosis	13,495	34.9
Cardiovascular Disease	16,615	43.0
Chronic Kidney Disease	3,143	8.1
Diabetes	7,964	20.6
Chronic Heart Failure	3,373	8.7

Coronary Artery Disease	6,487	16.8
Dyslipidemia	13,746	35.6
Hypertension	13,120	34.2
Drug Abuse	2,493	6.4
Fatigue & Exercise Intolerance	14,092	36.5
Depression	17,414	45.1
Disorder/Anxiety	12,115	31.5
Iron Deficiency Anemia	2,155	5.6
Low Back Pain	7,706	20.0
Obesity	21,133	54.8
Peripheral Vascular Disease	1,843	4.8
Tobacco Use	22,653	58.8

Table 1. Patient demographics of those undergoing hip arthroscopy

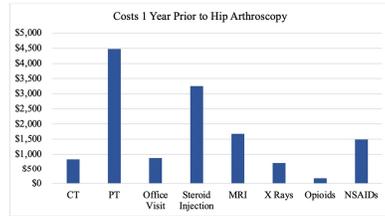


Figure 1. Costs in the Year prior to hip arthroscopy for all patients.

CT – Computed Tomography
 MRI – Magnetic Resonance Imaging
 PT – Physical Therapy
 NSAIDs – Nonsteroidal Anti-Inflammatory Drugs

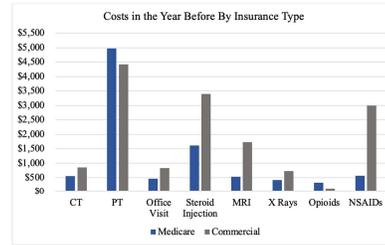


Figure 2. Costs in the Year prior to hip arthroscopy for patients stratified by insurance carrier.

CT – Computed Tomography
 MRI – Magnetic Resonance Imaging
 PT – Physical Therapy
 NSAIDs – Nonsteroidal Anti-Inflammatory Drugs