

Risk of Subsequent Fusion after Isolated Decompression of Lumbar Facet Cysts

Vincent Federico¹, James Nie¹, Timothy J Hartman, Alexander Butler, Samy S Gabriel, Gregory Lopez², Howard S An³, Matthew Wesley Colman⁴, Frank M Phillips¹

¹Rush University Medical Center, ²Rush University, ³Rush Univ, ⁴Midwest Orthopaedics At Rush

INTRODUCTION: Lumbar facet cysts represent a potential source of nerve root compression in elderly patients. Isolated decompression without fusion has proven to be a reasonable treatment option in properly indicated patients. However, the risk of lumbar fusion following isolated decompression and facet cyst excision has yet to be elucidated.

METHODS: A large insurance database was reviewed for patients undergoing isolated laminectomy for lumbar facet cyst from January 2015 to December 2018 utilizing Current Procedural Terminology (CPT) coding. Patients undergoing concomitant fusion or additional decompression, as well as those diagnosed with preexisting spondylolisthesis or without a minimum of 5-year follow up, were excluded. Rates of subsequent lumbar fusion and potential risk factors for subsequent fusion were identified. Statistical analysis included descriptive statistics, chi-squared test, multivariate logistic regression. Results were considered significant at $p < 0.05$.

RESULTS: A total of 10,707 patients were ultimately included for analysis. At 5-year follow up, 727 (6.79%) of patients underwent subsequent lumbar fusion after initial isolated decompression. Of these, 301 (2.81% of total patients, 41.4% of fusion patients) underwent fusion within the first year after decompression. Multivariate analysis identified chronic kidney disease, hypertension, and osteoarthritis as risk factors for requiring subsequent lumbar fusion at 5 years following the index decompression procedure ($p < 0.033$; all).

DISCUSSION AND CONCLUSION: Patients undergoing isolated decompression for lumbar facet cysts undergo subsequent lumbar fusion at a 5-year rate of 6.79%. Risk factors for subsequent fusion include chronic kidney disease, hypertension, and osteoarthritis. This study will assist spine surgeons in appropriately counseling patients on expected postoperative course and potential risks of isolated decompression.

Figure 1. Flowchart for inclusion/exclusion criteria and study population formulation

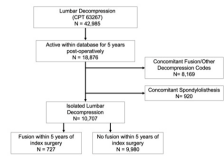


Figure 2. Patients who underwent fusion procedures in each year following index decompression procedure

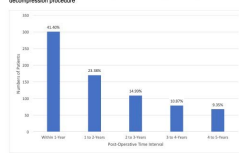


Table 1. Patient demographics (chi square results for cohorts of patients who underwent subsequent decompression vs. those who did not)

Demographic	Decompression with Subsequent Fusion	Decompression without Subsequent Fusion	p-value
Total	275	10,432	0.168
Male gender	152	5,751	0.071
Age			0.271
45-49	39	132	
50-54	40	161	
55-59	37	156	
60-64	111	175	
65-69	125	205	
70-74	130	185	
75-79	42	90	
Asymptomatic	151	1,338	0.001*
CCPD	286	1,474	0.001*
Chronic Kidney Disease	185	2,247	0.002*
Congenitive Heart Failure	58	611	0.148
Coronary Artery Disease	200	1,107	0.138
Dementia	142	1,182	0.001*
Hypertension	192	2,056	<0.001*
Hyperuricemia	224	250	0.117
Ischemic Heart Disease	176	2,295	0.002*
Obesity	208	1,837	<0.001*
Osteoarthritis	176	1,381	0.001*
Pharmaco/Artifacts	61	78	0.179
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Tobacco Use	144	1,467	0.000*

* - Demonstrates statistical significance

Table 2. Multivariate analysis for patient variables associated with fusion procedure at 5 years following index decompression procedure

Demographic	OR	95% CI	p-value
Male Gender	0.93	0.79 - 1.09	0.360
CCPD	1.97	1.81 - 2.10	0.000
Age	0.99	0.98 - 1.00	0.002
Asymptomatic	1.18	0.84 - 1.66	0.140
CCPD	1.12	0.94 - 1.34	0.002
Chronic Kidney Disease	1.28	1.01 - 1.61	0.033*
Congenitive Heart Failure	0.93	0.68 - 1.26	0.608
Coronary Artery Disease	1.17	0.82 - 1.67	0.192
Dementia	1.12	0.95 - 1.33	0.184
Hypertension	1.26	1.06 - 1.51	0.010*
Hypothyroidism	1.06	0.88 - 1.28	0.615
Ischemic Heart Disease	0.79	0.61 - 1.03	0.082
Obesity	1.15	0.98 - 1.35	0.004
Osteoarthritis	1.09	1.02 - 1.17	<0.001*
Pulmonary Heart Disease	0.97	0.75 - 1.24	0.786
Rheumatoid Arthritis	1.26	0.86 - 1.71	0.003
Tobacco Use	1.14	0.97 - 1.34	0.108

* - Demonstrates statistical significance