



Introduction

Lumbar discectomy is one of the most common procedures performed by neurosurgeons, and technological developments have transformed surgical technique, in particular the use of the operating microscope. We wished to analyze the impact of the microscope on the efficiency, cost, and complication rates in lumbar discectomy.

Methods

The American College of Surgeons National Surgical Quality Improvement Project (ACS-NSQIP) was reviewed for patients undergoing lumbar discectomy based on current procedural terminology (CPT) code with stratification of cases where the use of operating microscope was also coded. Cost data was obtained from the Healthcare Cost and Utilization Project (HCUP).

Results

A total of 3998 patients undergoing lumbar discectomy from 2006-2010 were identified. The rate of operative microscope use was 6.7%. Lumbar discectomy with microscope use coded did not have a significantly different operative time or incidence of post-operative complications. However, the length of stay was significantly decreased. Mean hospital costs (based on length of stay) were \$6340.45 for cases with microscope coded compared to \$8280.05 for the discectomies without microscope use coded, which was statistically significant (p <0.001).

Table 1				
	With Adjuncts	Without Adjuncts	Total	p Value
Mean Operative Time in min (SD)	89.89 (36.42)	95.55 (57.86)	95.16 (56.64)	.477
Mean Total Length of Stay in days (SD)	0.98 (1.07)	1.33 (3.07)	1.31 (2.98)	.005
Comparison of Operative Time and Length of Stay				
Table 3				
	With Adjuncts	Without Adjuncts		p Value
Mean Hospital Charges in \$ (SD)	6632.36 (4450.51)	8264.85 (15305.26)		<0.001
Mean Total Cost in \$ (SD)	8040.97 (4476.83)	9407.52 (15307.04)		<0.001
Mean Physician Compensation in \$(SD)	1408.62 (170.33)	1142.68 (113.53)		<0.001

Learning Objectives

- 1)Outline the history of lumbar discectomy techniques
- 2)Highlight the importance of operating microscope use in lumbar discectomy
- 3)Examine the impact of the operating microscope on outcomes and cost in lumbar discectomy

References

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Table 2							
Complication	Odds Ratio	95% CI	P value	Fisher's Exact Test	Sequence Position	Adjusted Alpha	Significant
Any Complication	0.472	0.192-1.161	0.094	N	1	0.0125	N
Wound Complication	0.660	0.206-2.119	0.624	Y	2	0.0167	N
Degenerative	1.643	0.513-5.261	0.628	Y	3	0.025	N
Infectious	0.615	0.148-2.551	0.768	Y	4	0.05	N
Comparison of Operative Time and Length of Stay							

Conclusions

In lumbar discectomy cases for which operating microscope use was coded, there were shorter hospital stays without decreased post-operative complications or operative times. Based on our findings, the additional indirect cost of this technology may be justified and offset by earlier patient discharges and subsequent reduced total direct costs.