

# Effect of Complications Within 90-days on Cost-utility Following Elective Surgery for Degenerative Lumbar Spine Disease

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## Introduction

Current health-care systems is rapidly transitioning from the “fee-for-service” to the “pay-for performance” model. With this paradigm shift, the providers and payers are constantly thriving to determine tools to provide cost-effective and high quality of patient-care. Therefore, it is vital to account for the complications and its effect on the cost and quality of life. We set forth to determine the cost-utility associated with complications after lumbar spine surgery

## Methods

Total 407 patients undergoing elective surgery for degenerative lumbar pathology enrolled into prospective longitudinal registry were included in the study. PROs:ODI, numeric rating scale-Back and leg pain(BP,LP), general health(SF-12) and quality of life scores EQ-5D were recorded at baseline, and 2-year after surgery. Two-year back-related medical resource utilization, missed work, and health state values (quality-adjusted life years[QALYs], calculated from the EQ-5D with US valuation using time weighted area under the curve approach) were assessed. Mean 2-year cost per QALY gained after surgery was assessed. The patients were divided into groups with and without complications to compare the QALYs gained and the cost-utility in these groups

## Results

Fourteen percent(n=58) of patients developed complications within 90-days after surgery. Most frequent surgical complication was surgical site infection(4.2%,n=17),1.5%(n=6) had deep SSI. There was a significant improvement in pain(BP,LP), disability(ODI) and general health scores(EQ-5D and SF-12) in both groups at postoperative 2-year( $P<0.0001$ ).Patients with complications had lower mean cumulative 2-year QALY gained compared to those without complications(0.49 vs.0.57, $p=0.36$ ). Cost-per-QALYs gained in patients with and without complication was \$70,822 vs \$45,831( $P=0.03$ ).

## Conclusions

Lumbar surgery provided a significant improvement in outcomes and gain in health state utility regardless of occurrence of complications within 90-days global period. The cost-utility was higher in patients with complications was \$70,822, which is within the range of commonly accepted threshold of willingness to pay. Clearly, measures focused on prevention of complications reduce the cost and increase cost-utility.

## Learning Objectives

The occurrence of complication creates frustration, inconvenience for patients, providers and administrators. Furthermore, it results in lower cost-utility, however, the patient with complications achieve improvement similar to those without complication at postoperative 2-years.

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