



## Outcomes and Complications in Patients with Controlled Diabetes undergoing Cervical Spine Surgery

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### Introduction

DM is a highly prevalent systemic disease that has been shown to increase morbidity and mortality after spine surgery. A few studies have demonstrated negative effects on DM patients who undergo cervical spine procedures, but whether controlled DM influences surgical outcome is still unknown.

### Methods

The National Inpatient Sample was queried from 2002 to 2011. Patients who underwent cervical spine surgery for degenerative conditions were identified using the ICD-9-CM codes. Multivariable analysis was done to see if controlled diabetes was an independent risk factor for inpatient mortality

### Results

A total of 213,345 patients with controlled DM underwent cervical spine surgery from 2002-2011. Patients with controlled DM were more likely to be older (59.5 vs. 52.4 years for no DM,  $p < .0001$ ) and of male gender (54.3% vs 48.8%,  $p < .0001$ ). There was a significant increase in the prevalence of postoperative cardiac (0.64% vs. .4%,  $p < .0001$ ), respiratory (.7% vs. .4%,  $p < .0001$ ) and genitourinary (.6% vs. .4%,  $p < .0001$ ) complications in controlled DM patients. Also, significantly higher prevalence of deep venous thrombosis (2.3-fold), pulmonary embolism (1.7-fold), postoperative infection (1.8-fold) and acute postoperative hemorrhagic anemia (1.2-fold) were observed. Mean LOS was extended by approximately one day (3.2 days vs. 2.3 days,  $p < .0001$ ) and hospital costs increased by approximately 17.4% (\$16,622 for controlled DM vs. \$14,162 for no DM,  $p < .0001$ ). Mortality rate was higher as well (0.32% for controlled DM vs. 0.17% with no DM,  $p < .0001$ ). When controlling for age, race, gender, insurance, procedure types and hospital characteristics (e.g. bed size, location, teaching vs. nonteaching) in multivariable analysis, controlled DM, however, was not found to significantly increase the likelihood of inpatient mortality (odds ratio=1.12, 95% confidence interval=.9-1.37,  $p = 0.377$ ).

### Learning Objectives

Identify DM as a risk factor for complications in cervical spine surgery

### References

The Nationwide Inpatient Sample 2002-2011

### Conclusions

Patients undergoing degenerative cervical spine procedures with controlled DM had significantly increased rates of major acute perioperative complications. Controlled DM was found to significantly increase costs and LOS. Additionally, there was a 1.9-fold increase in mortality rates in those patients with controlled DM when compared to non-diabetic population.