



Prognostic factors associated with unplanned reoperations after spine surgery

**Alejandro Reyes-Sánchez, Barón Zárate-Kálfopulos,
Carla García-Ramos, Luis López-Ulloa,
Fernando Reyes-Tarrago**

Spine Surgery, National Institute of Rehabilitation, México

Introduction

- After primary spine surgery, some patients develop surgical complications, such as implant failure, infection, nerve root injury

(Dhall SS et al. *J Neurosurg Spine* 2014)

Introduction (Cont.)

- The causes of reoperation are
 - disseminates cancer
 - bleeding disorders
 - ASA score of 3
 - Obesity
 - Multilevel fusion

(Durand WM, Global Spine J 2018)

- However, the risk factors associated with unplanned reoperations after spine surgery in our hospital have not been reported

Objective

- To determine the prognostic factors associated with unplanned surgical intervention after lumbar spine surgery

Methods

- Retrospective cohort study
- From January 2005 to December 2015
- Minimal follow-up of 24 months
- 1273 patients

Outcome Measures

- Logistic regression analysis was carried out to identify operative forecast variables of reoperation
 - age
 - comorbidities
 - classification of ASA
 - surgical time
 - bleeding
 - laboratory results (glucose and hematocrit)

Results

Variable	Patients	Percentage	Reoperated	Percentage
N	1273	100	94	7.4
Cervical	422	33.1	28	6.6
Lumbar	851	66.8	66	0.77

- The mean time of reoperation was 137.17 (± 186.9) days after the first surgery
- Greater bleeding ($>1000\text{ml}$) was associated with greater risk of reoperation ($p = 0.048$)
- 43.6% are reoperated in the first month after the index operation

Cervical surgery

Variable	Patients	Percentage	p=
N	28	100	
Diagnosis			
Cervical spine stenosis	17	60.7	
Fracture	6	21.4	0.084
Atlantoaxial instability	3	10.7	
Tumor	2	7.1	
Operated levels			
C4-C5-C6	4	14.3	
C5-C6	3	10.7	0.003
C4-C5-C6-C7	2	7.1	
C1-C2	2	7.1	
ASA II	19	67.8	0.54
ASA, American Society of Anesthesiologists			

Lumbar surgery

Variable	Patients	Percentage	<i>p</i> =
N	66	100	
Diagnosis			
Lumbar spine stenosis	17	27.8	0.001
Degenerative spondylolisthesis	17	27.8	
Disc herniation	14	21.2	
Fracture	14	21.2	
Operated levels			
L4-L5	17	24	0.003
L5-S1	13	20	
L4-L5-S1	13	20	
T12-L1-L2	6	9.1	
L3-L4	3	4.5	
ASA II	31	41	0.76
Posterior approach	140	92.4	0.001
ASA, American Society of Anesthesiologist			

Results

Factors	Unplanned reoperations		p=	OR (95% IC)
	Yes (n=94)	No (n=1179)		
Age, years, M (SD)	50.7 (±16.3)	51.7 (±17.2)	0.57	1.0 (0.9-1.01)
Female, M (%)	50 (52.3)	541 (45.9)	0.17	1.3 (0.8-2.0)
L4-L5-S1 Levels (%)	14 (14.9)	72 (6.1)	0.001*	2.6 (1.4-4.9)
Emergency surgery (%)	8 (8.5)	66 (5.7)	0.26	1.5 (0.7-3.3)
Surgical time >4h (%)	12 (12.9)	105 (9.5)	0.27	1.4 (0.7-2.6)
3 or more segments (%)	41 (43.6)	315 (26.7)	0.0001*	2.1 (1.3-3.2)
ASA II (%)	50 (53.2)	544 (47.6)	0.29	1.2 (0.8-1.9)

OR, odds ratio; CI, confidence interval; M, mean; SD, standard deviation; *p<0.05; h, hours; ASA, American Society of Anesthesiologists

Conclusions

- The most frequent causes of reintervention were **infection, implant misplacement, neurological deficit**
- Patients that require multilevel surgery should be counseled on elevated risk of reintervention associated with spine surgery

Disclosure

- Declaration of Prior Submission or Presentation: None
- Conflict of Interest: The authors declare that they have no conflict of interest