

The effect of smoking on post- spine surgery rehabilitation outcomes

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Introduction

It is well established that smoking is associated with poorer outcomes for individuals with chronic low back pain (CLBP)¹. Smoking has also been shown to have a negative overall effect on satisfaction levels for patients undergoing spine surgery².

The specific impact that smoking has on pain, function and work status for patients undergoing surgery and post operative rehabilitation remains uncertain

Aim.

The purpose of this study was to compare clinical outcomes for smokers versus non smokers in a group of LBP patients (n=1017) completing post spine surgery rehabilitation.

Methods.

This retrospective study was a collaborative effort of two rehabilitation companies based in New Zealand and Canada. 12 Physiotherapy and rehabilitation clinics were involved in the project (6 in NZ, 6 in Canada).

Over a four year period (2008 to 2012), outcome data was recorded for all patients referred for post spine surgery rehabilitation. Smoking status (smoker vs non smoker) , pain level (Numeric Pain Scale: NPS), function (Modified Low Back Outcome Scale: m-LBOS) and work status (working vs not working) was recorded at assessment and discharge check points.

All patients completed a rehabilitation programme of 6-12 weeks duration. The programme was standardised across all 12 clinics and included components of education, functional reactivation and work simulation.

Sample group

Over the four year period, 1017 patients were entered into the study (395 NZ and 622 Canada). Of the total group, 518 (51%) were classified as smokers.

References

¹Jamison RN, Stetson BA, Parris WC. (1991). The relationship between cigarette smoking and chronic low back pain. *Addict Behav.* 1991;16(3-4):103-10.

²Andersen T, Christensen FB, Laursen M, Høy K, Hansen ES, Bünger C. (2001). Smoking as a predictor of negative outcome in lumbar spinal fusion. *Spine.* Dec 1;26(23):2623-8.

Results.

Baseline Outcome Scores at assessment

	Smoker group	Non-smoker group	SSD
mean pain rating (NPS)	5.6 /10 (SD=2.3)	4.8 /10 (SD=2.2)	p<0.01
mean function (m-LBOS)	46.9/70 (SD=12.1)	52.2/70 (SD=11.6)	p<0.01
% Working	46.0%	54.0%	p<0.01

Outcome Scores after rehabilitation

	Smoker group	Non-smoker group	SSD
mean pain rating: (NPS)	3.3/10 (SD=2.7)	2.9/10 (SD=2.4)	p<0.01
mean function (m-LBOS):	47.1 (SD=12.3)	56.9. (SD=11.0)	p<0.01
Return to work rate (%)	57.4%	79.7%	p<0.01

Summary of results.

At assessment, post surgical patients that were smokers had higher pain levels (5.6 vs 4.8) and lower baseline function (46.7 vs 52.2) compared to non smokers. Smokers were more likely to be off work because of their back pain (54% vs 46%).

Smokers and non-smokers made similar proportional improvements in their pain and functional levels after rehabilitation. Importantly, the eventual pain score (3.3 vs 2.9) and functional levels (47.1 vs 56.9) achieved by smokers were worse than the levels achieved by non-smokers.

Return to work rates were significantly worse for patients that smoked (57.4 vs 79.7%).

Conclusion.

Post-surgical LBP patients that are smokers experience significantly higher levels of pain, and lower levels of function, when compared to smokers (both before and after rehabilitation).

Smoking cessation programmes may therefore be an important adjunct for rehabilitation programmes designed for post surgical LBP patients, particularly for those who require a high level of function post-operatively.