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## **THE IMPACT OF SMOKING ON ORTHOPAEDIC PATIENTS**

### **AKADEMISK AVHANDLING**

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av

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## ABSTRACT

Smoking has devastating effects on general health, including the outcome after surgery. There were three main objectives in this thesis. Firstly, to investigate the effect of smoking on complications after orthopaedic surgery. Secondly, to evaluate whether the negative effect of smoking on the complication rate after acute orthopaedic surgery was reversible after smoking cessation therapy and thirdly, to evaluate whether the administered smoking cessation therapy had any long-lasting effect on the smoking abstinence rate.

Study I included 906 patients with surgically treated ankle fractures. Background data were collected from patient charts and the outcome regarding postoperative complications was recorded prospectively in a clinical audit. Studies II and III were based on the same population from a single-blinded, randomized, controlled, clinical, multicenter trial at three hospitals in Stockholm, Sweden. We randomized 105 daily smokers with an acute fracture of a lower or upper extremity requiring acute surgical procedures into an intervention group (smoking cessation therapy) or into a control group. The primary outcome in Study II was any complication occurring, as predefined in the study protocol, within 6–12 weeks. The outcome in Study III was medium- and long-term successful smoking cessation. In Study IV the background data were taken from the SALT cohort in the Swedish Twin Registry. The SALT data were then linked to the Swedish Inpatient Registry, identifying 8773 individuals who had had orthopaedic surgery and who also had had a complication from that surgery.

In Study I it was shown that 30.1% of the smokers had a postoperative complication compared to 20.3% of the non-smokers (OR 1.9, CI: 1.3–2.8,  $p=0.005$ ). In study II the administered smoking cessation therapy significantly reduced the number of postoperative complications ( $p=0.048$ ). Study III showed that the administered smoking cessation therapy had a significant effect during the first 6–12 weeks, but not after one year. Study IV demonstrated that smokers had a significantly increased risk of developing complications requiring inpatient care; among the smokers, 14.9%, compared to 11.4% of the non-smokers, had such a complication (HR 1.27, CI: 1.10–1.48,  $p=0.002$ ).

Smoking is a strong and significant factor associated with development of postoperative complications. Smoking cessation intervention program during the first six weeks after acute fracture surgery decreases the risk of postoperative complications. Smoking patients in need of both acute and elective orthopaedic surgery should be offered an intensive smoking cessation programme.