

Non-Tobacco Nicotine Dependence Is Associated with Increased Post-Operative Risk for Intramedullary Nailing of Intertrochanteric Fractures: A Propensity-Matched Analysis

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TITLE:

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AUTHOR DISCLOSURES

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INTRODUCTION: Recent studies show that the general population believes non-tobacco nicotine is a safer option compared to smoking and smokeless tobacco. Nicotine is a modifiable risk factor shown to significantly increase postoperative complications. It has been illustrated to adversely affect the heart, reproductive system, lungs, kidneys, and is a highly addictive substance.

PURPOSE: The purpose of this study is to evaluate the complications postoperatively between non-tobacco nicotine dependence and non-nicotine dependent patients for intramedullary nailing in intertrochanteric femur fractures.

METHODS:

Design: In this retrospective cohort study, the global health research network database, TriNetx, was used to evaluate de-identified patient information from 40 healthcare organizations (HCOs) and over 93 million patients on the network in the United States.

Participants: Two cohorts of patients ages 40 to 90 were evaluated for this study. Cohort A was defined as patients that underwent intramedullary nailing for an intertrochanteric femur fracture and had a dependence to nicotine, but not cigarettes, tobacco use, or chewing tobacco. Cohort B was defined as patients that underwent intramedullary nailing for an intertrochanteric femur fracture and did not have a dependence to any form of nicotine. Cohorts were propensity matched for body mass index (BMI), type 2 diabetes mellitus, alcohol related disorders and demographic factors, such as, age at event, ethnicity, race, and sex.

Setting: Data was gathered from HCOs from May 18th, 2003, to May 18th, 2023. The outcomes evaluated were: deceased, sepsis, deep vein thrombosis, pneumonia, muscle atrophy, cutaneous infection, acute postoperative pain, revision, wound disruption, pulmonary embolism, and nonunion. All postoperative complications were analyzed between 1 day and 6 months after the treatment.

RESULTS SECTION: A total of 1,834 non-tobacco, nicotine dependent patients were matched with 20,123 non-nicotine dependent patients. Nicotine dependent patients that underwent intramedullary nailing for intertrochanteric femoral fractures experienced higher associated risk for numerous postoperative complications. When compared to non-dependent patients, nicotine dependent patients had increased risk for death within 6 months post-surgically (RR 1.41, 11.3% vs 8.0%, $p = 0.0008$), sepsis (RR 1.34, 5.8% vs 4.3%, $p = 0.0416$), and pneumonia (RR 1.65, 10.1% vs 6.1%, $p < 0.0001$).

DISCUSSION: In the last 20 years (2003 to 2023), non-tobacco, nicotine dependent patients that underwent intramedullary nailing for treatment of intertrochanteric fractures were associated with a significantly higher risk for postoperative complications than their non-nicotine dependent counterpart.

SIGNIFICANCE/CLINICAL RELEVANCE: Non-tobacco nicotine dependence is an epidemic in the United States. Recent studies revealed patients believe these products to be a safer alternative to tobacco-based nicotine. This study highlights significant post-operative complications of non-tobacco nicotine dependence on intramedullary nailing of intertrochanteric fractures. Due to the life-threatening nature of these fractures, it is important to identify any potential risk factors for post-operative complications.

IMAGES AND TABLES:

