Total Knee Arthroplasty as a Catalyst for Sustained Smoking Cessation: Outperforming WHO Protocols in Preventing Relapse and Reducing Infection Risk

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Total knee arthroplasty (TKA) is a life-changing event not only for mobility but also as an unexpected tool in public health, particularly in smoking cessation. While many patients voluntarily cease smoking as part of their preoperative optimization, the long-term success of these efforts—specifically in comparison to established World Health Organization (WHO) smoking cessation protocols—remains poorly understood. This study sought to investigate the incidence of smoking relapse post-TKA and its subsequent impact on periprosthetic joint infection (PJI), providing insights into the potential of TKA as a catalyst for sustained smoking cessation.

METHODS:

We conducted a multicenter study and retrospectively identified patients who underwent primary TKA between 2010 and 2022. Patients were stratified into four groups: current smokers (A), former smokers (B), ceased smoking for the procedure (C), and nonsmokers (D). Patients were followed for at least two years and the relapsed cases were identified. The association between smoking status and PJI was investigated using multivariate regression analysis. RESULTS:

16,322 patients were identified who underwent 19,986 total knee arthroplasties during the study period. Of these patients, 1,352(8.2%) were current smokers, 4,522(27.7%) were former smokers, 3,575(21.9%) ceased smoking for their procedure, and 6,873(42.1%) were nonsmokers. Current smokers were significantly more likely than nonsmokers to undergo reoperation for infection (OR:2.12[95%CI:1.42-3.25];p=0.04), and former smokers were at no increased risk (OR,1.12[95%CI,0.63-1.45];p=0.71). Of group C patients only 1,258(35.1%) had relapse within two years after surgery. The rate of infection was significantly higher in patients who returned to smoking compared to those who didn't (5.0% vs. 0.4%; OR:2.1[95% CI, 1.53-2.44]).

DISCUSSION AND CONCLUSION:

Based on the findings of this study, the majority of patients who ceased smoking in anticipation of total knee arthroplasty (TKA) sustained their non-smoking status for at least two years post-surgery, underscoring TKA's role as a significant milestone in long-term smoking cessation. This study demonstrates that TKA not only enhances physical functionality but also serves as a powerful intervention for preventing the resumption of smoking. It is important to note that patients who resumed smoking post-operatively had a higher risk of periprosthetic joint infection (PJI), emphasizing the critical need for sustained smoking cessation measures beyond 90 days postoperatively and that cessation solely for the procedure is not sufficient to decrease the risk of PJI. Moreover, these findings suggest that TKA may be even more effective than traditional WHO smoking cessation protocols in maintaining long-term cessation among patients.