CPAP Machines Influencing Implant Failure

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INTRODUCTION

Peri–implantitis is theorized to be the primary source of failure for dental implants[1]. It can be defined by bone loss around the implant, influenced by plaque-induced microbial colonization and the host inflammatory response. Moreover, a range of patient and social factors influence the success of osseointegration[2,3]. These factors, in combination with host inflammatory imbalances, lead to inadequate wound healing, impairing bone remodeling around the implant.

This study focuses on two patient-related factors that may impact dental implant health: Obstructive sleep apnea (OSA) and the use of continuous positive airway pressure (CPAP) machines as concurrent therapy. CPAP and OSA have not been evaluated as a factor for peri-implantitis or implant failure at the bone level.

METHODS

A retrospective cohort study was conducted at the Philadelphia Veterans Affairs Medical Center among patients receiving dental implants between 2015 and 2019. Inclusion criteria required ≥5 years of follow-up, complete dental and medical documentation, and confirmed records of OSA diagnosis and/or CPAP use during implant osseointegration and function. The primary predictor variable was a diagnosis of OSA, and the secondary predictor was CPAP use. The outcome was peri-implantitis, defined as radiographic evidence of crestal bone loss with clinical bleeding on probing, analyzed at the implant level using GEE to account for clustering within patients. Bivariate comparisons were performed to evaluate predictors of peri-implantitis, expressed as odds ratios (OR) and 95% confidence intervals (CI). Statistical significance was set at $p < 0.05$.

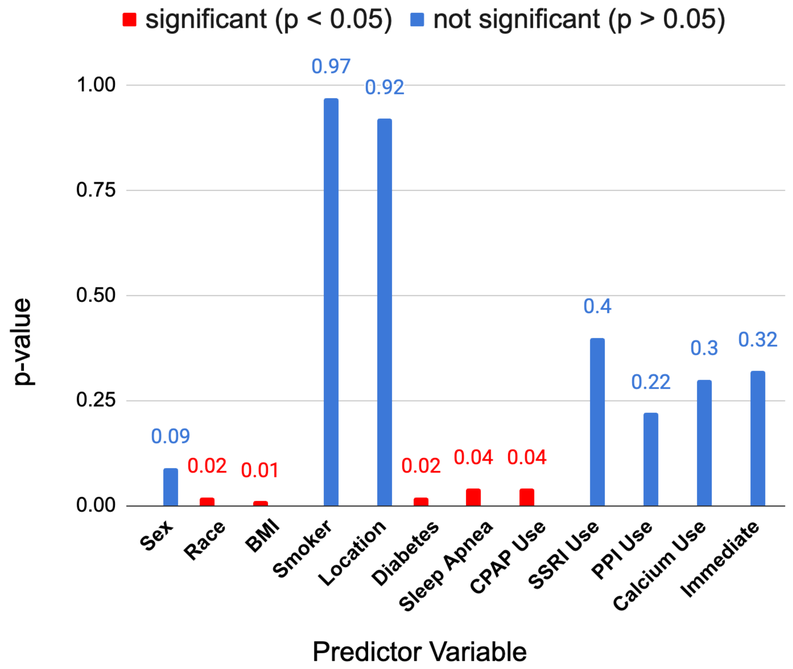
RESULTS

Of 427 implants, peri-implantitis occurred in 28.5% of the cohort. OSA was diagnosed in 43.1% of patients, and 89.1% of OSA patients utilized CPAP devices. Implants in patients with OSA demonstrated a significantly higher prevalence of peri-implantitis compared to non-OSA patients ($p = 0.04$). Among OSA patients, CPAP users exhibited a higher prevalence of peri-implantitis than non-users ($p = 0.04$).

CONCLUSION

The results from our retrospective cohort study revealed that OSA patients are associated with a higher incidence of peri-implantitis. In addition, sleep apnea patients utilizing CPAP machines had a higher association with peri-implantitis. OSA and CPAP use should be recognized as measurable systemic risk factors for peri-implantitis. Integrating sleep-disorder screening and CPAP hygiene counseling into pre-implant assessment may enhance long-term implant success and reduce biologic complications in affected patients.

BIVARIATE COMPARISON OF PREDICTORS AGAINST PERI-IMPLANTITIS P<0.05



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Resources
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