

Multifactorial Analysis Of Dental Implant Success In Irradiated Fibular Free Flaps: 7-years Head And Neck Cancer Cohort Study.

Moreen W. Njoroge, BA; Fahad Alkahtani, MD, MPH; Thalia Liu, BA; Abby Liu, BA; Allison S. Karwoski, BS; Eric Resnick, BS; Alina Galaria; Deo Darius Balumuka, MD; Richard J. Redett, MD; Robin Yang, MD, DDS

1. Department of Plastic and Reconstructive Surgery, Johns Hopkins University School of Medicine, Baltimore, MD

Purpose: How radiation modality, peri-implant disease, bone density, and comorbidities influence implant survival and functionality in Head and Neck Cancer (HNC) patients treated with Free-Fibular Flap.

Methods: Retrospective analysis was conducted on patients who received dental implants after FFF reconstruction between 2016–2022. Data encompassed patient demographics, comorbidities (e.g., diabetes, hypertension), smoking/alcohol use, ASA classification, bone density, peri-implant disease, and radiation type (Intensity-modulated radiation therapy (IMRT) vs. conventional Radiation). The Composite Oral Functionality Score (COFS) was used to assess chewing and speech. Patients were followed for a median of 24 months (range: 12–48 months).

Results: In 32 patients (94 implants; mean age 58.5), the implant survival (no implant failure) rate was 76.2%. Peri-implantitis was the significant predictor for failure (OR = 2.00, 95% CI: 1.50–2.66, $p < 0.01$). Bleeding on probing (OR = 1.50, 95% CI: 1.20–1.88, $p = 0.01$) and suppuration (OR = 1.80, 95% CI: 1.40–2.30, $p < 0.01$) increased the failure risk. Low bone density (OR = 1.25, 95% CI: 1.02–1.54, $p = 0.04$) and ASA scores ≥ 3 (OR = 1.30, 95% CI: 1.10–1.54, $p = 0.03$) were associated with higher failure rates. Chewing was impaired in patients with peri-implantitis (OR = 2.00, 95% CI: 1.50–2.66, $p < 0.01$) and bleeding on probing (OR = 1.50, 95% CI: 1.20–1.88, $p = 0.01$). Peri-implantitis increased speech impairment (OR = 1.75, 95% CI: 1.30–2.35, $p < 0.01$).

Conclusion: Peri-implant disease, bone density, and ASA classification are key factors in dental implant survival and functionality. Peri-implantitis is associated with a high risk of functional impairment and implant failure.



JOHNS HOPKINS
M E D I C I N E