

Perioperative Risk Factors Predicting Hardware Exposure after Mandibulectomy and Reconstruction

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Background and Hypothesis:

Mandibulectomy is often required in the management of tumors, infection, or trauma of the head and neck. Reconstruction of the defect is accomplished via osteocutaneous free flaps and the use of titanium plates for fixation of the bone segments. Postoperative exposure of the mandibular hardware is an unfortunate outcome which results in significant quality of life detriment and often requires substantial revision surgery and reconstruction. We hypothesize that individuals with vasculopathic conditions and other circumstances that contribute to poor wound healing are more likely to experience hardware plate exposure following mandibular reconstruction.

Methods:

A single-institution, retrospective cohort study was performed on all adults undergoing mandibulectomy and osteocutaneous free flap reconstruction from 2010-2020. Demographics, patient history, surgical parameters, and follow-up data were collected. Comparisons and logistic regression were used to determine factors associated with postoperative hardware exposure.

Results:

The cohort consisted of 134 predominantly white (92.5%) male (65.7%) patients with mean age 58.4 ± 13.0 years, 32 (23.9%) of whom had postoperative plate exposure. Between patients with and without exposure, there were no differences observed in demographics, substance use, surgical indications, or reconstructive techniques, neoadjuvant or adjuvant chemoradiation, nor 30-day major surgical site infection. The comorbidities of peripheral vascular disease, hypothyroidism, and immunosuppression were significantly more common in the plate exposure group. In multivariate logistic regression, peripheral vascular disease (OR [95%CI] = 18.8 [1.8-196.3]), hypothyroidism (OR [95%CI] = 3.5 [1.1-10.6]), and immunosuppression (OR [95%CI] = 11.3 [2.4-54.1]) remained significant predictors of post-mandibulectomy hardware exposure.

Conclusion and Potential Impact:

Patients with pre-existing peripheral vascular disease, hypothyroidism, and/or immunosuppression have an increased risk of post-mandibulectomy hardware exposure. Understanding these risk factors can improve shared patient-surgeon decision making and counseling, as well as guide practitioners to focus on mitigating these comorbidities prior to surgery.