

Socioeconomic Disparities in Postoperative Outcomes of Osteocutaneous Fibula Free Flaps for Head and Neck Reconstruction

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ABSTRACT

Background: Osteocutaneous fibula free flaps (FFFs) are a fundamental component of reconstructive surgery in the head and neck region, particularly following traumatic injuries or oncologic resections. Despite their utility, FFFs are associated with various postoperative complications, such as infection, flap failure, and donor site morbidity, impacting up to 54% of cases. This study aims to investigate the influence of socioeconomic variables, with a particular focus on median household income (MHI), on the incidence of postoperative complications in FFF reconstruction for HNC.

Methods: A retrospective analysis of 80 patients who underwent FFF reconstruction for head & neck cancer (HNC) at a single center from 2016 to 2022 was conducted. Demographic and patient characteristics, including race, MHI, insurance type, history of radiation therapy, and TNM (tumor, node, metastasis) cancer stage, were evaluated. Logistic regression, controlling for comorbidities, was utilized to assess the impact of MHI on 30-, 90-, and 180-day postoperative complications.

Results: The patient population was predominantly male (n= 51, 63.8%) and White (n= 63, 78.8%), with the majority falling within the \$55k-\$100k range of median household income (n= 51, 63.8%). Nearly half of the patients had received neoadjuvant radiation treatment (n= 39, 48.75%), and 36.25% (n= 29) presented with osteoradionecrosis. Logistic regression analysis revealed that the \$55k-\$100k MHI group had significantly lower odds of developing complications in the 0–30-day postoperative period when compared to those in the <\$55k group (OR: 0.440, 95% CI: [0.205, 0.943], p = 0.035). This trend persisted in the 31–90-day period (OR: 0.136, 95% CI: [0.050, 0.368], p < 0.001), and was also observed in the likelihood of flap takeback. Additionally, the \$100k-\$150k group had significantly lower odds of developing complications in the 31–90-day period (OR: 0.182, 95% CI: [0.035, 0.940], p = 0.042). No significant difference was found in the >\$150k group.

Conclusion: MHI is a significant determinant and potentially a more influential factor than neoadjuvant radiation in predicting postoperative complications following FFF reconstruction. Disparities in postoperative outcomes based on income highlight the need for substantial healthcare policy shifts and the development of targeted support strategies for patients with lower MHI. Future research should focus on strategic healthcare interventions that enhance accessibility and treatment outcomes, especially for socioeconomically disadvantaged groups.

Keywords: Osteocutaneous Free Fibula Flap (FFF), Head and Neck Reconstruction, Socioeconomic Status (SES), Median Household Income (MHI), Postoperative Complications, Neoadjuvant Radiation, Osteoradionecrosis, Healthcare Disparities, Surgical Outcomes