

Association between Deep Neck Infection and Prophylactic antibiotic Regimes in Patients Undergoing Free Flap Reconstruction of The Head and Neck Region

Rakan Saadoun, MD^{1,2,3}; David Guerrero, BS¹; Fuat Baris Bengur, MD¹; Yusuf Surucu MD¹; Stephen A. Esper, MD, MBA⁴, Eva-Maria Risse MD⁵; Mark Kubik, MD^{1,6}; Shaum Sridharan, MD^{1,6}; Mario G. Solari, MD^{1,6}.

¹Department of Plastic Surgery, University of Pittsburgh, Pittsburgh, Pennsylvania, USA.
²Ruprecht Karls University Heidelberg, Faculty of Medicine Mannheim, Mannheim, Germany.
³Department of Otorhinolaryngology, Head and Neck Surgery, University Medical Centre Mannheim, Mannheim, Germany.
⁴Department of Anesthesiology and perioperative medicine, University of Pittsburgh Medical Center, Pittsburgh, PA, USA
⁵Ruprecht Karls University Heidelberg, Faculty of Medicine Heidelberg, Heidelberg, Germany
⁶Department of Otolaryngology, University of Pittsburgh Medical Center, Pittsburgh, PA, USA

PURPOSE: Infections can lead to flap failure, increased mortality, postoperative complications, and increased length of hospitalization. This study explores the association between Abscess formation within 30 days of microsurgical free tissue transfer surgery to the head and neck and the perioperative antibiotic prophylactic regimen.

METHODS: This retrospective cohort study included all patients who underwent head and neck reconstruction with free tissue transfer from January 2012 through August 2023. Patients received antibiotic prophylaxis perioperative with one of the following regimens: Ampicillin/Sulbactam (AMP), Cefazolin with metronidazole (CZ-MTZ), Clindamycin, or Levofloxacin with Metronidazole (LEV-MTZ). Patients with other antibiotics prophylaxis were excluded. The main study outcome was a neck infection requiring returning to the operating room for washing out. Statistical analysis was performed using univariate and multivariate regression analysis.

RESULTS: 1046 patients were included. The rate of infection was (n=53, 5.1%). The distribution of comorbidities measured by Charlson Comorbidity Index in those who developed infection was similar to those who did not (p=0.896). There was no statistically significant difference between the means of BMI between those who developed infection compared to the rest of the cohort (26.4 ± 6.2 vs. 25.2 ± 6.0 p=0.221). In univariate analysis, AMP, CZ-MTZ, and LEV-MTZ were significantly less associated with infection compared to clindamycin (OR 0.232 95%CI: 0.118-0.465), (OR 0.075, 95%CI: 0.032-0.174) (OR 0.118, 95%CI: 0.015-0.923) respectively. This statistical significance continued after controlling for diabetes, and prior radiation.

CONCLUSIONS: CZ-MTZ is associated with a decreased postoperative infection rate compared to AMP and Clindamycin, even after controlling for patient factors.

Multivariable regression analysis for risks of neck infection requiring washout in the OR		
Variable	Odds ratio (95% CI)	P-value
Antibiotic regime		
Clindamycin	Reference	Reference
CZ-MTZ	0.075 (0.032-0.175)	< 0.0001
AMP	0.236 (0.119-0.465)	< 0.0001
LEV-MTZ	0.121 (0.256-0.165)	0.044
Diabetes	1.368 (0.697-2.684)	0.362
Prior radiation	0.945 (0.422-2.116)	0.891

