Defining an Algorithm to Guide Salvage of a Failing Free Flap in Head and Neck Reconstruction

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Introduction: Loss of a free flap for head and neck reconstruction can be fatal and devastating, however, the risk factors and techniques for salvaging a failing head and neck flap are poorly described. Much of the current literature is limited by small numbers or has combined all type free flaps which may not be applicable specifically for head and neck reconstruction. [1-2]

Methods: Retrospective review of all head and neck free flaps performed from 2000-2010.

Results: Overall, 2296 head and neck free flaps were performed with 151 flaps (6.6%) suffering microvascular complications. Patient age (mean: 58.4 years) and BMI (mean: 26.6kg/m^2) had no impact on flap survival, nor did comorbidities including diabetes, vascular disease, smoking, or prior radiation. However, prior chemotherapy was significantly associated with loss of a free flap (OR: 2.58, CI: 1.21-5.48; p=0.013). Flap type (ALT/AMT: 61, fibula: 33, radial forearm: 24, ulnar forearm: 5, latissimus dorsi: 10, VRAM/TRAM: 7, jejunum: 2, other: 9) had no impact on flap salvage rates; however, muscle flaps had significantly lower salvage rates than fasciocutaneous or osteocutaneous flaps (p=0.002). Surgeon experience also did not affect salvage rates (p=0.88). Vein grafts were used in 23 arterial anastomoses and 26 venous anastomoses and did not affect flap survival; however, venous anastomosis performed with a Coupler had significantly fewer flap complications compared to hand-sewn anastomoses (p=0.03). While venous thromboses were the most common, supercharging a flap did not decrease flap loss rates (p=0.45). Flaps that were found to have an arterial and venous thrombosis had significantly lower salvage rates compared to complications with either the vein (n=59) or the artery (n=26; p<0.0001). The use of aspirin, Fogarty catheter thrombectomy, thrombolytics, and heparin did not improve salvage rates. Flaps requiring multiple takebacks (one takeback: 55.6% vs. 2 takebacks: 3.3% vs. 3 takebacks 1.3%; p=0.003) and late takebacks (>3 days) had significantly worse outcomes (p=0.003). Overall successful salvage rate was 60.3% with 60 total flap losses (2.6%).

Conclusions: Microvascular complications in head and neck free flaps are relatively rare occurrences, and salvage techniques do not decrease flap loss rates. While an attempt should be made to salvage a failing flap, multiple attempts are not recommended especially for muscle flaps. Thromboses of the artery and the vein and late thromboses also have an overall dismal prognosis for flap survival.

References

[1] Mirzabeigi MN, Wang T, Kovach SJ, Taylor JA, Serletti JM, Wu LC. Free flap take-back following postoperative microvascular compromise: predicting salvage versus failure. Plast Reconstr Surg. 2012;130(3):579-589.

[2] Selber JC, Angel Soto-Miranda M, Liu J, Robb G. The survival curve: factors impacting the outcome of free flap take-backs. Plast Reconstr Surg. 2012;130(1):105-113.

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