Editorial Commentary

Importance of perioperative nutrition and euthyroid function in achieving successful head and neck free tissue reconstruction

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The experts, Healy *et al*., who contributed to this work should be commended for their achievement. The consensus statements provided in this study cover a wide range of perioperative factors that can influence the odds of successful free flap reconstruction in head & neck microvascular surgery patients (1). Typical patients that require free flap reconstruction in the head & neck region are often some of the sickest patients in the hospital. They often require surgery as a direct result of advanced head & neck cancer contributed to by prolonged history of smoking and/or alcohol abuse, osteoradionecrosis from previous radiation therapy, and massive craniofacial trauma. Comorbidities often associated with head and neck cancer include coronary artery disease, peripheral artery disease, chronic obstructive pulmonary disease, chronic and acute malnutrition, and often prior radiation therapy as well. For the clinicians who are in early stages of their career or just starting out, the consensus statements mentioned in this study will likely serve as an invaluable tool to efficiently minimize potential complications that surround head & neck free flap patients.

Interestingly, the consensus statements provided in this study mirror the free flap protocol that we have instituted and refined over the years with the help of our anesthesia and intensivist colleagues. Such protocol refinement is often a result of years of trial and error and incremental approach to improvement in outcomes for our free flap clinical cases, and took several years to coalesce into a reliable and reproducible system. For a free flap surgeon, aside from achieving surgical technical competency in performing the microvascular anastomosis and the free flap inset, it is just as important to optimize treatment of various clinical factors that will greatly influence wound healing and overall clinical course of our patients.

Free flap cases that involve restoring integrity of the alimentary tract can be more challenging. Exposure to saliva and associated microbial flora require watertight closure, as a salivary leak from wound dehiscence can lead to flap pedicle vessel infection, thrombosis and create a potential for total flap failure. Furthermore, it can lead to deep space neck infection and sepsis. As such, we strongly agree with the importance of aggressive nutritional support (high calorie and high protein diet) as well as careful nutrition monitoring. At our institution, we prefer prealbumin over albumin as a nutrition lab marker due to its shorter half-life (2 *vs.* 20 days) (2). This allows for more timely monitoring of acute postoperative nutritional status within the first 10 days after free flap reconstruction. This vital time period is when angiogenesis occurs from the peripheral tissue, and the free flaps' blood supply are heavily dependent on flap pedicle vessels. We routinely draw weekly prealbumin and have observed in our patients that prealbumin levels below 10 mg per dL are often associated with a higher risk of poor wound healing, thus warranting careful monitoring and special attention to nutrition. This mirrors other studies that have shown worse survival and longer hospital stay in patients with severe malnutrition with low prealbumin (less than 10 mg per dL) (2).

In respect to wound healing, one other factor that we feel is also worthy of mentioning is thyroid hormone, which

is a well-established factor that can impact wound healing. Of total laryngectomy patients, hypothyroid patients were 3.6 times more likely to develop fistula and 11.4 times at higher risk of reoperation when compared to euthyroid patients (3). In our free flap patients, it is relatively common to observe patients who were admitted with normal thyroid function to present with suddenly high TSH (thyroid stimulating hormone) postoperatively even when thyroid vessels were not disturbed. As such, we also similarly follow TSH on a weekly basis and aggressively replace it using thyroid replacement medication.

We agree with rest of the consensus statements and concur with the importance of airway management using clear communication between teams, judicious use of blood transfusion to avoid severe anemia, limiting excess fluid administration, and considering the use of vasopressors to optimize blood flow. We have observed a trend that usage of vasopressors was associated with less total crystalloid fluid administered, which in turn would help with severe free flap tissue edema. We have not seen any compelling studies to favor any particular vasopressor over another, and defer to our anesthesia and intensivist colleagues to appropriately choose for the given situation.

It is also important to note that our protocols are continually reviewed and amended as necessary as the body of knowledge and literature in our field expands. Our protocols are integrated into enhanced recovery after surgery (ERAS) pathways, with emphasis on goal directed fluid therapy (GDFT) and opioid sparing multimodal analgesia. These pathways are reviewed and changed if necessary, within our multidisciplinary ERAS committee, with inputs and guidance from our anesthesia and intensivist colleagues

We would like to congratulate the authors for this work as it addresses a void in consensus statements on free flap management that spans across different disciplines and covers different phases of surgical care.

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Footnote

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Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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