

Liverpool Opinion on Unfavorable Results in Microsurgical Head and Neck Reconstruction: Lessons Learned

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KEYWORDS

- Reconstruction • Microsurgery • Microvascular • Flap transfer • Mandible • Maxilla
- Head and neck • Complications • Pitfalls

KEY POINTS

- Soft tissue reconstruction of the oral cavity.
 - Resect oncologically, aware that maintenance of the patient's own tissue, with a maintained blood and nerve supply, is ideal.
 - Excess tissue in partial tongue reconstruction can result in poorer function.
 - The remaining oral tongue must have optimum movement.
 - Extensive oral tongue resections require more bulk so that the swallow is initiated with little chance of effective chewing because the functioning tongue is more essential than an occluding dentition.
 - The floor of the mouth and buccal tissues require a thin flap to allow good movement.
 - Think of the oral tissues and soft palate as horizontal with less need of a sphincteric affect and the rest of the oropharynx as vertical where the sphincteric effect is paramount.
- Mandibular reconstruction.
 - Segmental resections involving the anterior mandible present more significant challenges than the posterior mandible, where a variety of techniques are used. The height of remaining bone in the anterior mandible and its relationship to the circumoral musculature is critical in the degree of postoperative collapse and the likelihood of effective rehabilitation.
- Maxillary reconstruction.
 - For low level defects (Brown class I and II), maxillary obturation is effective especially if supported by osseointegrated dental and zygomatic implants.
 - Zygomatic implants can be used in conjunction with soft tissue free flaps to effectively rehabilitate patients without the need for composite reconstruction with the associated technical complications and additional morbidity.
 - Maxillary defects involving the orbital floor (Class III) require composite free flaps to effect a satisfactory facial reconstruction and dental rehabilitation.
 - When the orbit is removed (Class IV) the facial profile can be managed with a prosthesis, but dental rehabilitation may still require a composite flap.
 - Collaboration with the team providing final rehabilitation and prosthetic support is essential before deciding on the reconstruction.

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INTRODUCTION

We have been given a title that asks the Liverpool head and neck reconstructive group for an opinion on “unfavorable” microsurgical reconstruction and asks “what lessons have been learned.”¹⁻⁴ This is a personal view, although these opinions have been formed after much collaboration with the co-authors and also additional surgeons involved with the care of the patient, nurses, speech therapists, dietitians, and radiation oncologists. Good reconstruction, which is long-lasting and resilient, makes an enormous difference to a patient who may frequently have lost aesthetics and function through ablative cancer surgery. Although evidence to support this is found in the literature in the form of outcome questionnaire and assessments, the most valuable perspective is derived from the personal experiences gained in the outpatient clinic during the prolonged process of review for this patient group.

It is important to understand the difference between reconstruction for a patient following ablative head and neck cancer surgery and those that have suffered maxillofacial injuries. Trauma patients have no choice in the predicament they find themselves and hope that the reconstruction will improve their final result in a normal life span. A patient with cancer requires to be consented to undergo a potentially damaging procedure in terms of function and aesthetics and hence the reconstructive option and predicted outcome becomes part of the process of consent. Chemoradiotherapy, as an alternative to ablative surgery for organ preservation especially in the larynx and oropharynx, is well-recognized and hence the difference in outcome and function is paramount and still controversial to some extent. Laced in with this argument is also the impact on survival by withholding ablative surgery. Most of our experience has been with the patient with head and neck cancer and so it is with these patients in mind that this article is written.

In my time in surgery I have trained many individuals in complex ablation and reconstruction for the patient with head and neck cancer including the skull base. As a young surgeon starting off, it is essential to achieve free flap transfer success to gain the support of skeptical colleagues, but mostly to fulfill your planned treatment of the patient. This advice is not as good as a training position where one can follow the actions of accomplished surgeons in avoiding and then dealing with poor outcomes.

Potential comorbidities that may either influence the decision to avoid free flap reconstruction or, alternatively, inform a more appropriate flap

choice from the ideal in the primary site (ultimate form, function, and rehabilitation) include

1. Previous bilateral neck surgery
2. Previous radiotherapy and especially chemoradiotherapy to the head and neck
3. Previous failed microvascular techniques
4. Peripheral vascular disease
5. Type II diabetes
6. Sickle cell disease or coagulopathy

In such circumstances the risk of failure may be such that the surgeon and the patient believe that the risks outweigh benefit.

In our practice we are always careful when advising a patient on a reconstructive option when a neck dissection and radiotherapy have already been performed. In such cases it is essential to carefully consider a simpler option than a free flap with the caveat that if unsatisfactory then complex reconstruction can still be considered. In general there is ample evidence in the literature to show that flap failure is not related to obesity or old age, although surgical complications in general may have a more damaging effect on the patient's recovery.

Even in the modern era of microvascular reconstructive surgery there are only a few flaps that are used regularly and fibula is by far the most common option for composite reconstruction of the mandible.⁵ Any microvascular reconstruction requires considerable skill and surgeons with this training should be confident in most free tissue transfer techniques including iliac crest, scapula, and the incorporation of perforator flaps for both these donor sites.^{6,7} The quality of the primary site reconstruction and overall result for the patient is paramount, so selection of the most appropriate reconstruction from the point of view of good rehabilitation is essential, aided by a comprehensive armamentarium of flap options. In Liverpool, the optimum reconstruction to provide the best outcome is selected if the patient is sufficiently medically fit and psychologically prepared to consent for the proposed procedure. Essential in the decision regarding composite tissue loss is the role of the maxillofacial prosthodontist with a special interest in the oral and facial rehabilitation for these patients.

COMMENT ON NONMICROVASCULAR RECONSTRUCTION FOR THE PATIENT WITH HEAD AND NECK CANCER

The most important decision for the patient typically via a tumor board (North America) or multidisciplinary team (United Kingdom) is the offer of ablative surgery as part of their cancer treatment.

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