# MICROSURGICAL RECONSTRUCTION OF THE HEAD AND NECK

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Achilleas Thoma

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Ralph W. Gilbert and Peter C. Neligan

Laryngotracheal reconstruction using free-tissue transfer represents one of the new challenges for the head and neck reconstructive surgeon. This article reviews the anatomy and physiology of the larynx and trachea and discusses the clinical context of laryngotracheal reconstruction, particularly with regard to malignant tumors involving the larynx and cervical trachea. It reviews the free-tissue reconstructive options, including the free forearm flap, the temporoparietal flap, and the two-staged procedure described by Delaere.

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Fu-Chan Wei, Sukru Yazar, Chih-Hung Lin, Ming-Huei Cheng, Chung-Kan Tsao, and Yuan-Cheng Chiang

This article discusses the indications for and the advantages and principles of flap combinations and the selection of two pairs of recipient vessels for double free-flap transfers in reconstruction of extensive composite head and neck defects.

#### **Paranasal Sinus and Midfacial Reconstruction**

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Stuart Archibald, Stan Jackson, and Achilleas Thoma

Midface defects pose the most difficult of the facial reconstruction problems. Current reconstruction relies heavily on microsurgical techniques, among which there are numerous possibilities. Although midface defects frequently extend to the upper and lower face, often an awareness of the midface subunits most involved can be of critical importance. This article presents an approach that will help the surgeon to identify the defect-related problems, prioritize the reconstructive goals, and select the best surgical option in the total patient context.

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Carolyn Levis, Nicolas Hynes, and Stuart Archibald

This article considers the particular demands of reconstruction of this complex region of the head and neck in terms of its functional and aesthetic requirements. It presents a classification system that may assist in the selection of the appropriate reconstruction. Finally, the authors discuss some of the more common techniques and flaps that should be considered when planning microsurgical management, and they review the outcomes they have seen in terms of speech, diet tolerance, oral continence, and survival.

### **Pharyngo-cervical Esophageal Reconstruction**

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### Stuart Archibald, J.E.M. Young, and Achilleas Thoma

Patients with advanced-stage hypopharyngeal or cervical esophageal carcinoma have a poor prognosis and may require a pharyngolaryngo-cervical esophagectomy. This treatment is usually palliative. In the past, the localized defect after resection has been reconstructed using many techniques. Currently, microsurgical techniques have become most common, both for full and partial circumferential defects. The jejunal free flap is the most frequently used, with free skin flaps as an alternative. The surgical complication rate is acceptable. Insufficient quantitative data exist to document postoperative swallowing function. Speech rehabilitation is often done with a tracheo-esophageal puncture technique, but studies documenting how the various methods of surgical reconstruction affect speech are lacking.

### Methodologic Issues in the Comparison of Microsurgical Flaps/Techniques in Head and Neck Reconstruction

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### Achilleas Thoma and Sheila Sprague

This article informs head and neck microsurgeons, investigators, and readers of the head and neck microsurgical literature about key methodologic issues when comparing techniques/flaps in head and neck reconstruction. The following is discussed: (1) the principles of evidence-based microsurgery, (2) the hierarchy of the strength of evidence for treatment decisions in microsurgery, (3) types of questions asked (background and foreground questions) to identify the best available evidence, (4) strategies for searching the head and neck microsurgical literature, (5) issues regarding study outcomes (types, perspective, and time horizon) in microsurgery, (6) the relevance of incorporating economic analyses into head and neck microsurgical trials, and (7) the interpretation and applicability of published study results to an individual microsurgeon's clinical practice.

#### **Oromandibular Reconstruction After Cancer Resection**

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### Achilleas Thoma, Carolyn Levis, and J.E.M. Young

The goals of this article are (1) to summarize the epidemiology of oromandibular cancer, (2) to describe the classification of defects after cancer extirpation, and (3) to discuss the principles of and state of the art in reconstruction of the oromandibular defect. The four commonly used flaps (fibula flap, radial forearm flap, scapula flap, and the iliac crest) and their key characteristics are summarized. Finally, some future speculations are entertained.

### **Scalp and Forehead Reconstruction**

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### Claire L.F. Temple and Douglas C. Ross

The reconstruction of defects that involve the scalp and forehead presents unique aesthetic and functional challenges. This article reviews the surgical anatomy of these regions and presents an algorithm for decision making in reconstructive surgery. Non-microsurgical techniques are briefly reviewed. The microsurgical reconstruction of scalp and forehead defects differs from the more common oropharyngeal reconstructions in several ways, including flap choices, choices for recipient vessels, and the opportunity to

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