The TMJ received 1 – 3 direct branches (maximal diameter 0.7–0.8 mm) from the maxillary and middle meningeal arteries medially, and the superficial temporal artery laterally. Fixation of TMJ on zygomatic processes minimally increased the intercondylar distance on recipient face. However, transplanted joints were located more inferior and anterior compared to their normal anatomical position. Class 1 original donor occlusion was achieved with normal ramal inclination and mandibular range of motion.

CONCLUSION: We demonstrated that TMJ-included total face allograft procurement and transplantation is technically and functionally feasible and reasonable occlusion, range of motion and lateral excursions is achievable.

One-Stage Reconstruction Using Dual Innervated Double Muscle Flap Transplantation for Re-Animation of Established Facial Paralysis

Presenter: Hajime Matsumine, MD, PhD
Co-Author: Hiroyuki Sakurai, MD, PhD
Affiliation: Tokyo Women’s Medical University, Tokyo

BACKGROUND: A natural smile involves several facial expression muscles. Conventional dynamic reconstruction with a single muscle flap only restores unidirectional movement. Early flap reinnervation prevents atrophy. We describe our one-stage double-muscle reconstruction technique comprising latissimus dorsi (LD) and serratus anterior (SA) flaps, dually reinnervated by the contralateral facial nerve (FN) and ipsilateral masseter nerve (MN) with successful outcomes for reanimation of facial paralysis.

METHODS: We used this technique in two facial paralysis patients. A double-muscle flap comprising a left LD and a fifth left SA flap was harvested with the thoracodorsal artery and vein; a 15-cm thoracodorsal nerve (TN) section attached to the LD flap; and 5-cm and 1-cm long thoracic nerve (LTN) sections at the proximal and the distal sides of the SA flap. The buccal branch of the contralateral FN was exposed and the ipsilateral masseter was incised exposing the masseteric nerve. The LD and SA flaps were sutured along the directions of motion of the zygomaticus major and risorius, respectively, in a pocket from the corner of the mouth to the anterior portion of the auricula; the thoracodorsal artery and vein were anastomosed with the facial artery and vein. The contralateral FN and ipsilateral MN were interconnected by triple nerve suturing for dual innervation of two flaps: medial branch of TN to the distal end of the LTN; the proximal end of the LTN to the ipsilateral MN, and the buccal branch of the contralateral FN to the main trunk of the TN. The recipient site was closed conventionally.

RESULTS: Good contraction of the transferred flaps resulted in good smile reconstruction. No donor site complication, such as difficulty in abduction was observed.

CONCLUSION: Fast axonal outgrowth from the ipsilateral MN achieved swift reinnervation of the SA flap via the long thoracic nerve, and the LD flap via the medial branch of the TN, preventing atrophy of both flaps. Axonal outgrowth from the buccal branch of the contralateral FN dually reinnervated both flaps, enabling reanimation of a natural symmetrical smile.

Swallowing Outcomes of Hypopharyngeal Reconstruction with Free Jejunal Flap - Retrospective Statistical Analysis of 83 Consecutive Cases in Japanese Single Institution -

Presenter: Keisuke Takanari, MD, PhD
Co-Authors: Miki Kanbe, MD; Takafumi Uchibori, MD, PhD; Yutaka Nakamura, MD; Naoki Nishio, MD, PhD; Kenta Murotani, PhD; Katsumi Ebisawa, MD, PhD; Yasushi Fujimoto, MD, PhD; Yuzuru Kamei, MD, PhD
Affiliation: Nagoya University, Nagoya

INTRODUCTION: Total pharyngo-laryngo-esophagectomy (TPLE) and free jejunal flap (FJ) reconstruction has been a widely used procedure for extensive hypopharyngeal or laryngeal cancer. There are several reports that assess swallowing outcomes of hypopharyngeal reconstruction with FJ flap. Pre/postoperative irradiation, chemotherapy and resection of lateral retropharyngeal (Rouviere) lymph nodes are known factors to influence postoperative
swallowing outcomes in Caucasian people. However, to date, little is known regarding the influential factors in Asian people. In the current report, we retrospectively analyze postoperative functional outcome of patients in one institution in Japan and statistically assessed influential factors for swallowing outcome.

PATIENTS AND METHODS: From January of 2007 to October of 2017, 83 cases that underwent FJ transfer for hypopharyngeal reconstruction in Nagoya University hospital are included in the study. The patients were 58 males and 25 females, with a mean age at the operation of 66.2 years. Indication for the operation included 67 hypopharyngeal cancers, 10 laryngeal cancers and 6 esophageal stenoses due to irradiation or operative scar formation. Pre/postoperative chemoradiotherapy, operative technique as well as postoperative complication are listed for possible influential factors associated with postoperative outcomes. Swallowing functions were extracted from medical records. Statistical analysis was performed utilizing (SAS 9.4, SAS Institute, United States), and univariate regression analysis as well as multivariate regression analysis were performed. P value under 0.05 was considered as statistically significant.

RESULTS: FJ flap failure resulted from venous thrombosis in one patient and was rescued with staged pectoralis major flap transfer. 3 months post-operatively, 55.6 % of patients could tolerate normal diet. This rate was 66.1 % at 6 months and 76.9 % at 12 months after the operation. Anastomotic stapler was found to be a risk factor for dysphagia at 3 and 6 months postoperatively, but was not a risk factor at 12 months. Neither preoperative nor postoperative radiotherapy was found to be risks for dysphagia.

DISCUSSION: Swallowing outcome is a result of a complex relationship of multiple factors such as age, pre/postoperative chemoradiotherapy, surgical intervention and rehabilitation. In this study, the anastomotic stapler was found to be a risk factor for dysphagia in the early postoperative phase; however, this relationship disappeared at one year. Balloon dilation procedure or rehabilitation might have improved the outcome during the course. These analysis may help to improve operative procedure to achieve best postoperative functional outcome.

Antitumorigenic Effect of Deferoxamine on Human Head and Neck Cancer Cell Proliferation

Presenter: Alexis Donneys, MS, MD
Co-Authors: Jeremy V. Lynn, BS; Kevin M. Urlaub, BS; Jessica Hoxie, BS; Lauren Buchman; Halil S. Uygur, MD; Noah S. Nelson, BS, MPH; Kavitha Ranganathan, MD; Alicia Snider, MD; Chitra Subramanian, MBA, PhD; Mark S. Cohen, MD; Steven R. Buchman, MD
Affiliation: University of Michigan, Ann Arbor, MI

PURPOSE: The ability of deferoxamine (DFO) to mitigate the deleterious effects of radiation on bone regeneration in the craniofacial skeleton is well documented in the scientific literature. However, there remains concern about the tumorigenic potential of DFO when administered to head and neck cancer (HNC) patients. The purpose of this study is to investigate the effects of DFO on MDA-1986 head and neck squamous carcinoma (HNSC) cell proliferation in the absence and presence of radiotherapy (XRT).

METHODS: MDA-1986 cells were exposed to increasing doses of DFO (0, 25, 50 uM) and XRT (0, 5, 10 Gy) in triplicate and counted via hemocytometer to delineate the dose-dependent effects of each therapy. An MTS assay was then performed to comparatively analyze the following groups: control, XRT, DFO, and XRT+DFO. Statistical analysis was performed using ANOVA.

RESULTS: Cell counts significantly decreased with increasing doses of XRT. Interestingly, DFO also displayed a significant dose-dependent potency to HNSC cells when analyzed via hemocytometer. For the MTS assay, a significant diminution of cell proliferation was observed in all treatment groups compared to control. The addition of DFO reduced cell proliferation to a significantly greater degree than XRT treatment alone, and the combination of XRT and DFO decreased cell proliferation even further.

CONCLUSION: Surprisingly, DFO exhibited an antitumorigenic effect more pronounced than the effects of radiotherapy. Our findings provide preliminary evidence that DFO may be safely utilized in select HNC patient populations in order to promote new bone formation during craniofacial reconstruction.