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Sternocleidomastoid contour restoration: an added benefit of the anterolateral thigh free flap during facial reconstruction☆

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ABSTRACT

Purpose: To demonstrate the potential of the anterolateral thigh free flap for neck contour restoration.

Study design: Retrospective chart review at a tertiary care medical center of patients who underwent radical parotidectomy with sternocleidomastoid sacrifice, with or without temporal bone resection, and reconstruction of both facial and cervical contour with the anterolateral thigh free flap between November 2011 and March 2015. Seven patients were included and demographics, flap viability, pathology and tumor staging, surgical intervention, adjunctive reanimation procedures, ischemia time, and pre-operative and post-operative photos were recorded and analyzed.

Results: There were no flap failures and the mean ischemia time was 82 minutes. There were 2 recipient site complications. Post-operative neck symmetry was improved for all 7 patients.

Conclusions: The adipofascial anterolateral thigh flap is useful for improving the aesthetic contour of the neck among patients undergoing sternocleidomastoid muscle resection/disinsertion following total parotidectomy with/without temporal bone resection. Contour restoration may be performed with minimal added morbidity and with relatively little additional operative time. This technique may be adapted for other complex facial and neck defects caused by ablative surgery.

Level of Evidence: 4

1. Introduction

Extirpative head and neck surgery, particularly when combined with facial nerve sacrifice, may confer tremendous functional and aesthetic impairments on patients. In the case of high-grade parotid malignancy, radical surgery performed with or without temporal bone resection and neck dissection is associated with even greater morbidity. In these cases, static and dynamic facial asymmetry due to loss of cranial nerve function coincides with a significant contour deformity at the angle of the mandible and at

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the neck, causing a "sunken in" appearance. The contour defect is further accentuated when the sternocleidomastoid (SCM) muscle is resected for complete tumor extirpation or is disinserted, and often ultimately removed, following temporal bone resection. This causes a significant soft tissue defect in the neck, adding to the inherent morbidity the primary procedure.

Given the potential psychological and social impact head and neck asymmetry may cause, recent emphasis has been placed upon using free tissue transfer to achieve satisfactory cosmetic results following complete tumor extirpation, and following adjuvant and neoadjuvant radiation therapy [1–4]. The anterolateral thigh (ALT) flap in particular has been shown to be an effective method for facial defect reconstruction following total parotidectomy [4–6]. Some benefits include minimal donor site morbidity, the possibility of a two-team approach, and access to the tensor fascia lata and the motor nerve to the vastus lateralis (MNVL) for facial reanimation. The long-term improvement in facial symmetry restoration is certainly one of its greatest attributes.

Relatively little consideration has been given to the neck asymmetry that may also accompany a facial contour defect. Given the ample tissue afforded by the ALT, we suggest that this flap may provide the additional benefit of resolving neck asymmetry following radical parotidectomy with temporal bone resection and SCM-sacrificing neck dissection. We describe a series of patients with parotid and temporal bone defects for which a standard adipofascial ALT flap was extended to re-establish normal SCM contour.

2. Methods

We obtained institutional review board (IRB) approval for this retrospective consecutive case series from the University of California San Francisco Medical Center, with a waiver of informed consent (IRB #14-14144). We identified 7 patients who underwent soft tissue reconstruction with an adipofascial ALT free tissue transfer between November 2011 and March 2015. All patients underwent radical parotidectomy with or without temporal bone resection and modified radial neck dissection including sacrifice of the SCM in the treatment of primary or recurrent cutaneous or salivary malignancy. Recorded information included patient demographics, flap viability, pathology and tumor staging, surgical intervention, adjunctive reanimation procedures, post-operative complications and adjuvant and neoadjuvant therapy.

Intraoperatively, the ALT flap was raised in the normal fashion and anastomosed to previously dissected vessels in the neck. After completion of the facial reanimation procedures, the flap was sutured into the defect site. Given that the soft tissue defect was greatest in the parotid bed/temporal bone area, the proximal aspect if the ALT flap was suspended superiorly, and even was occasionally turned over on itself to provide sufficient bulk. The distal, thinner part of the ALT was sutured either to the remnant SCM muscle inferiorly, or it was fixated to the sternal head of the clavicle. The flap was then de-epithelialized and carefully sculpted to faithfully recontour each patient's soft tissue defect (Fig. 1). When appropriate, a small crescent shaped skin paddle was placed in the retroauricular sulcus to permit easy flap monitoring.

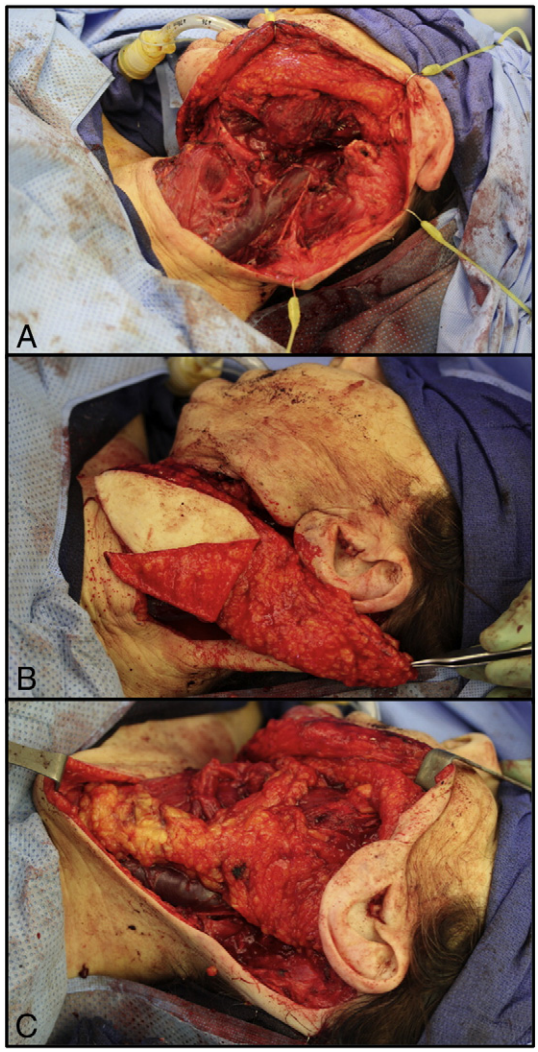

Fig. 1 – Intraoperative details. (A) Resection bed. (B) ALT flap during de-epithelialization, demonstrating adipofascial tissue for defect recontouring. (C) Trimmed ALT flap after inset, with anatomic volume restoration of the defect.

3. Results

All 7 patients underwent radical parotidectomy and neck dissection with SCM sacrifice for treatment of malignancy; three patients had primary parotid malignancies and 4 patients had primary squamous cell carcinoma that either directly invaded or metastasized to the ipsilateral parotid gland (Table 1). Every patient received radiation therapy, either pre-operatively or post-operatively.

Four of the SCM contour reconstructions were completed immediately and the other 3 patients were reconstructed secondarily (dates from primary resection to definitive reconstruction ranged between 237 and 988 days). Four patients underwent simultaneous temporal bone resection. All patients had some degree of facial paralysis due to the burden of disease or previous resection, and 5 of the 7 patients underwent simultaneous facial reanimation procedures. There were no flap losses with an average ischemia time of 82 minutes. There was 1 donor site seroma.