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S. Mark Taylor and Maria Brake

*Otolaryngology -- Head and Neck Surgery* 2012 146: 1028 originally published online 24 February 2012

DOI: 10.1177/0194599812438337

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What is This?
Liposuction for the Management of Submental Lymphedema in the Head and Neck Cancer Patient

S. Mark Taylor, MD, FRCSC¹, and Maria Brake, MD¹

No sponsorships or competing interests have been disclosed for this article.

Keywords
lymphedema, liposuction, neck, cancer

Received November 11, 2011; revised December 12, 2011; accepted January 18, 2012.

Submental lymphedema is a common problem encountered by patients following treatment of head and neck cancer. Radiotherapy alone may disrupt lymphatic channels, but the addition of neck dissection further compounds the problem. Lymphedema results in the interstitial deposition of protein-rich fluid, which causes a cycle of inflammation, adipose tissue hypertrophy, and fibrosis, resulting in persistent and often fluctuating swelling and induration of the cervical soft tissues, causing disfigurement and functional deficits.¹ Liposuction has been well described for the management of lymphedema of the upper extremities following the treatment of breast cancer.² To our knowledge, the use of liposuction for submental and cervical lymphedema has not been previously described. We obtained full approval through our local research ethics board for the study. The purpose of this article is to introduce the otolaryngologist–head and neck surgeon to this management option and to describe our surgical technique, which is exceedingly simple and well tolerated by patients suffering from this condition.

Surgical Technique

After obtaining informed consent, patients are examined in the sitting position, and the area to be treated is marked with a surgical marking pen. Patients are then placed supine on the operating table. A 1-cm submental incision is marked in a suitable skin crease, and the angle of the mandible is marked bilaterally to landmark the position of both marginal mandibular nerves (Figure 1). The submental incision and the outlined areas to be treated are then infiltrated in a subcutaneous plane with approximately 30 cc of 1% lidocaine with epinephrine. The area is then pricked and draped in a sterile fashion.

A # 15 blade is used to open the incision, and small tenotomy scissors are used to raise a limited inferior flap to free the skin from the underlying tissue. A 3-mm blunt-tipped Accelerator 3 (Mentor, Irving, Texas) cannulae is introduced without suction, and tunneling is performed using the nondominant hand to pinch the underlying tissue as the cannulae is passed through the treatment area. All areas to be treated are broken down using a fanning technique to facilitate subsequent suction lipectomy. At this point, the cannulae is connected to wall suction, and the sterile suction tubing is kinked to prevent trauma to the incision while the cannulae is reintroduced. The area is then treated on suction using a similar fanning technique in the plane of the previous dissection. Great care is taken to keep the suction ports of the cannulae down facing the deep tissue to avoid suctioning of the overlying skin. Increased resistance will be encountered based on the amount of suction employed. We pay particular attention to treating the submentum and neck evenly and symmetrically. A simple way to ensure this is to make a similar

![Figure 1. The markings for submental liposuction are shown. The neck is approached through a small submental incision, and a fanning technique is used to treat the lymphedematous area, which is outlined prior to local infiltration.](image-url)

¹Dalhousie University, Halifax, NS, Canada

Corresponding Author:
S. Mark Taylor, MD, FRCSC, Deputy Head and Associate Professor, Otolaryngology—Head and Neck Surgery, Dalhousie University, Halifax, NS B3H 1V7, Canada
Email: smtaylorwashu@yahoo.com
number of passes centrally and to each side of the midline at various angles until the jowl is encountered. The cannula is maintained in constant motion and is removed every minute or so to clear it of fatty debris. The tubing is kinked on withdrawal and reinsertion to avoid oversuctioning at the submental entry point. Visual inspection and palpation is used to confirm the even removal of fat and lymphatic fluid from the treatment area. As a rule, we generally treat from the left jawline to the right jawline, focusing our liposuction mainly in the midline of the submental region depending on the location of maximal lymphedema. We also prefer to perform liposuction approximately 1 to 2 cm outside the lymphedematous area to transition the region of involvement into the surrounding normal tissue.

At the conclusion of the procedure, a compressive facelift dressing is applied. The dressing consists of fluffed gauze and cling covered with a Tensor elastic bandage. All patients are given a 1-week course of antibiotics. Patients are seen on postoperative day 2, and the dressing is removed. The Tensor bandage is replaced and is worn as much as possible until the second visit at 1 week. We do allow the patient to remove the Tensor dressing periodically for washing, but patients are instructed to wear it as much as possible. After 1 week, the bandage is worn at night only for a total of 1 month.

Results
To date, we have performed submental liposuction on 10 patients for persistent lymphedema following treatment of their head and neck cancer. All patients had been treated with radiotherapy for a head and neck malignancy. Five patients had previous neck dissections, one of which was radical. The cohort had at least 1 year of cancer-free follow-up prior to the procedure. No patients in the cohort developed a recurrence in the neck. All patients tolerated the procedure well under local anesthesia. There have been no complications. All 10 patients were satisfied with the results of their procedure and would recommend it to other patients. All patients had preoperative photos taken immediately before the procedure and at 6 months postoperatively. Figure 2 shows 2 representative cases and the results made possible with this technique. Please see the appendix available online at otojournal.org.

Conclusion
Liposuction is a simple and uncomplicated surgical technique for the treatment of persistent submental lymphedema in patients with a previous head and neck cancer. The procedure is well tolerated under local anesthesia and in our hands has proven to be very effective, resulting in high patient satisfaction. We plan to continue to offer this to our head and neck cancer patients with submental lymphedema and encourage others to consider it as part of their treatment strategy.

Author Contributions
S. Mark Taylor, design, data acquisition, writing of article, final approval; Maria Brake, design, writing article, final approval.
Disclosures
Competing interests: None.
Sponsorships: None.
Funding source: None.

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