

# Wide-undermining Neck Liposuction: Tips and Tricks for Good Results

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## Abstract

**Background** Neck rejuvenation is one of the most sought after procedures in the restoration of the facial contour. Numerous techniques to improve the aesthetic outcome and reduce downtime have been described. In our experience, wide undermining and local anesthesia are key to obtaining good results in selected patients who want a quick recovery. This article presents our experience with liposuction of the neck and proposes some tips and tricks to master wide-undermining neck liposuction.

**Methods** From January 2005 to September 2012, a total of 118 patients (34 males, 84 females) underwent neck liposuction. Patient selection was based mainly on age and neck-aging features. The procedure was performed with the patients under local anesthesia. A wide rhomboid-shaped skin undermining of the submandibular and neck area was performed and a very thin fat layer was preserved. Dressing was applied for 3 days.

**Results** Improvement of the neck's contour was observed in all patients. Redefinition of the cervicomandibular angle and skin redraping of the cervical area occurred in all cases. No further touch-ups were needed. Edema and ecchymosis resolved in a few days. No major complications were observed.

**Conclusions** Our results show that wide-undermining neck liposuction performed under local anesthesia is an effective and safe procedure. Patient selection based on age and anatomical features was fundamental to obtain impressive improvement of neck contour.

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**Keywords** Neck liposuction · Neck aging · Neck contour · Neck undermining

## Introduction

The neck contour is a key factor in facial rejuvenation, particularly the submental and submandibular areas. The face looks much older when the cervicomental angle becomes less defined, so restoration of the neck contour is an essential component of facial rejuvenation.

The neck-aging process involves different components, i.e., skin, fat, muscles, and salivary glands. The correct identification of the anatomical structures involved in this process is fundamental in the choice of the right surgical technique [1].

In this article we report our experience, since 2005, with neck rejuvenation using liposuction performed under pure local anesthesia, and give some tips and tricks to master this safe, effective, and reproducible technique to improve the neck contour. Advantages and limitations of this procedure are evaluated as well.

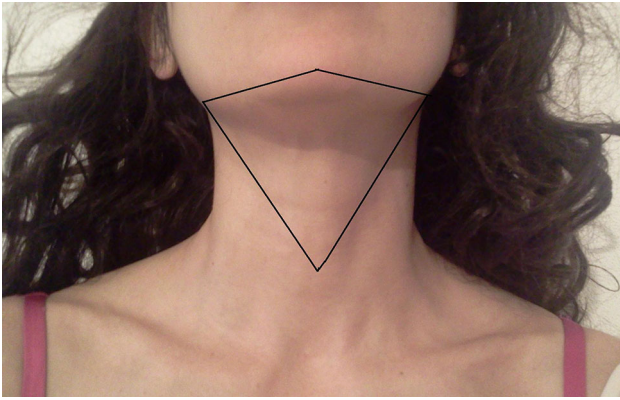
## Materials and Methods

### Patient Selection

Since January 2005, we performed a total of 118 (34 males, 29 %) neck liposuctions with the patient under local anesthesia without sedation. All patients were between 35

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**Fig. 1** Rhomboid-shaped area of submandibular and neck undermining

and 45 years old; they had different types of skin and they all needed to have the submandibular and submental profile redefined and the cervicomental angle improved upon.

Localized subcutaneous lipodystrophy in the submental and submandibular areas was evaluated by palpating the areas while they were at rest and in motion by asking the patient to swallow with the neck hyperextended. Skin elasticity was evaluated by pinching the skin in the area that needed to be treated. Patients with skin laxity, platysma bands, and fat deep to the platysma were not included in this study. On the other hand, patients with wrinkled skin were included.

#### Preoperative Markings

Preoperative markings were made in two different areas: the liposuction area where fat had to be removed and the surrounding area of dissection. The liposuction area varied from patient to patient and depended on the amount and the disposition of fat to be removed. On the other hand, the dissection area was the same in each patient, i.e., rhomboid-shaped, wider than the area that underwent liposuction, and extending from the whole submandibular region to the neck area down to the level of the thyroid cartilage. Landmarks of the mandibular border were also identified (Fig. 1). During surgery the patient was placed in the supine position, with the head hyperextended. A roll was placed under the neck for the patient to maintain the correct position during surgery. The surgeon stood at the top of the patient's head for good visibility of the surgical field. After a small wheal of local anesthesia (3 ml of lidocaine 2%), a single 3-mm incision was made in the submental natural fold with an 11 blade.

#### Local Anesthesia

Cold saline solution (100 cc) with 10 cc naropine 1% + adrenaline 1 mg was prepared. The amount of

infiltrated solution depended on the neck area that needed to be treated; on average, 45 cc of prepared solution was used. The liposuction area was infiltrated by the superwet technique using a short Klein needle connected to a 10 cc syringe. The surrounding area of dissection was infiltrated with a smaller amount of solution that allowed for good anesthesia and hydrodissection. Intraoperative antibiotic prophylaxis was performed with amoxicillin-clavulanate 2 g IV.

#### Surgical Technique

Fifteen minutes after infiltration, when adrenaline started having an effect and the skin became bleached, surgery started. Gentle and slow manual aspiration was performed using an in-and-out technique. We used a 15-cm Cobra cannula, with a Luer Lock 3–4 mm in diameter, connected to a 10-cc syringe. In the area of lipodystrophy, several tunnels were made with the cannula until the amount of fat that needed to be removed was aspirated. The piston of the syringe was retracted to the 3-cc marker to create a mild negative pressure, which helped to avoid aggressive damage to the adipocutaneous flap and allowed it to be thinned in a harmonious way. The aspiration was under constant visual and manual control, and we used a finger test to check for uniform thickness by pinching and rolling the skin. During the procedure the assistant kept the skin wet and also performed the necessary countertraction, especially during detachment.

A very thin layer of fat (a few millimeters) was left in place beneath the dermis, avoiding subdermal suction and obtaining an adipocutaneous flap. This was done for two reasons: (1) to prevent the deep dermal component from adhering directly to the muscle fascia underneath. This would cause unsightly cord adhesions and bridles that may not be visible at rest but could become visible when the neck moves and when swallowing and would require further corrective surgery such as lipofilling; and (2) to prevent the flap from vascular (subdermal plexus) damage that may lead to either partial flap necrosis or the formation of a skin pattern resembling cutis marmorata [2, 3].

When a regular thickness flap dissection was obtained, a wider adipocutaneous flap was dissected by using a twisting motion without aspirating in a rhomboid-shaped area that included the entire submental/submandibular and anterior neck area. The cannulas were moved following a fan-shaped trajectory (from right to left and from left to right) to release and interrupt the fibrous septal attachments that run through the subdermal layer from the dermis to the muscular layer. This maneuver allowed undermining of the flap detached from the deep layer. Then the surgeon could reposition the flap following the new neck profile and

obtain a harmonious contraction of the skin to redrape the new neck profile.

In male patients, during flap undermining it was very important not to damage the hair follicles of the beard. This could cause permanent alopecia which may require correction by transplant surgery.

At the end of surgery, a subcutaneous stitch was placed to close the incision after pressing with a roll of sterile dressing to drain the area. The skin was gently distributed by hand with care so that the flap properly adapted to the new profile of the region without any skin distortions in order to avoid any irregularities. A custom-made Reston™ sheet was applied to the treated area. In the postoperative period the role of the sheet is to follow the submental decompression created during swallowing. In fact, the repeated delaminations that occur during swallowing may delay healing and probably cause irregularities in skin distribution and entrap edema and hematoma. A bandage was gently applied after the Reston™ sheet. Drainage was not used because the dressing was able to ensure a valid hemostasis; the dressing was maintained for 3 days. After this period any bruising in the neck was easily covered with a foulard.

#### Postoperative Period

Antiedema therapy with Bromelain was prescribed for after surgery, and beginning early in the postoperative period, patients were instructed to perform a very light lymphatic massage to improve the pain as well, starting at the medial area and moving toward the lateral area. Starting 8 h after surgery, pain management was obtained by administration of

paracetamol 500 mg, one tablet every 6 h for the first 2 days. After 15 days, mechanical vacuum lymphatic drainage was recommended twice a week for 1 month for faster healing. The vacuum was also useful for stimulating the contraction of elastic fibers and facilitating skin retraction. Firming creams were also recommended to enhance healing and improve results.

The longest follow-up period was 1 year; patient evaluations were performed and photos were taken.

#### Results

In all cases improvement of the cervicomandibular angle was observed, the submandibular contour appeared more defined, and a decrease in neck wrinkles occurred as well. These changes made overweight patients appear slimmer with a longer neck (Figs. 2, 3, 4, 5, 6, 7, 8, 9). No major complications (0 %) such as skin necrosis, paresthesia, reduced mobility of the lower lip due to nerve damage, or significant hematoma were reported [4–8]. In five patients (4 %) who were less compliant and did not perform the postoperative antiedema therapy, a slower resolution of the edema was observed. In males, the thicker dermis was not a significant obstacle to its retraction. In seven patients (6 %), flap undermining led to transient thinning of the beard, perhaps because of ischemia or the mechanical trauma to the bulbs. In all patients the results improved gradually until 12 months after the procedure. No patient needed further touching up.

Local anesthesia with naropine was very effective; patients did not complain about any pain the first 8 h after surgery. In ten patients (8 %), the infiltration of the

**Fig. 2** **a** Preoperative view of 35-year-old female showing poorly defined cervicomandibular angle. The neck seems heavy and short. **b** One year after surgery. The cervicomandibular angle is redefined and the neck seems longer and thinner. The patient's appearance is improved and she looks younger and slimmer



**Fig. 3** **a** Heavy neck and wrinkling of 45-year-old female patient. **b** Nice improvement of the neck contour and wrinkling



**Fig. 4** **a** Very heavy neck and no definition of the cervicomandibular angle of 45-year-old female patient. **b** Wide undermining allows this very nice improvement of the neck contour



dissected area resulted in transient paralysis of the lower lip and imbibition of the marginalis mandibular nerve in its path in the submandibular area.

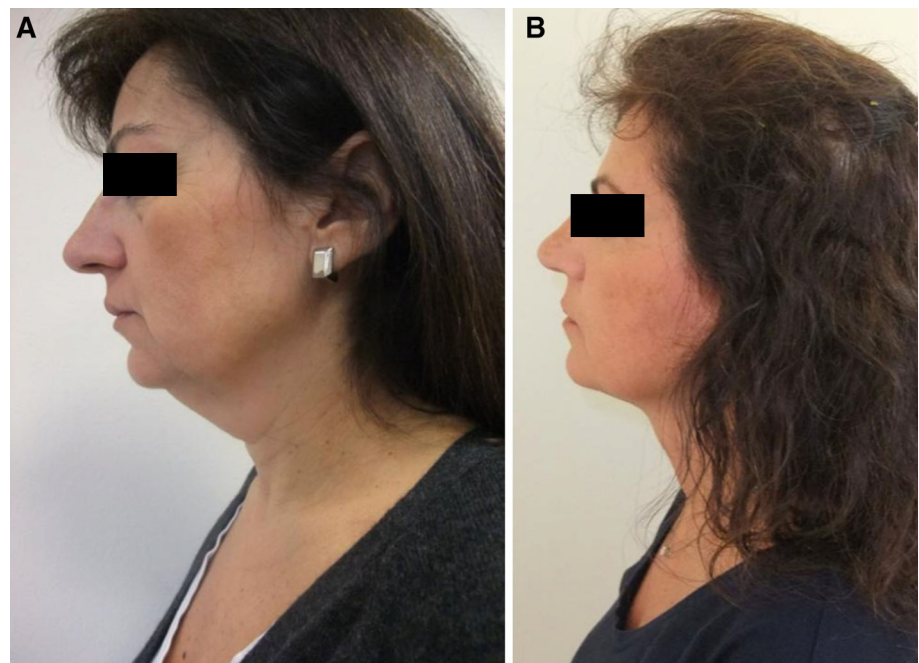
## Discussion

Improving the neck contour has induced surgeons to look for several different approaches, most of which can achieve

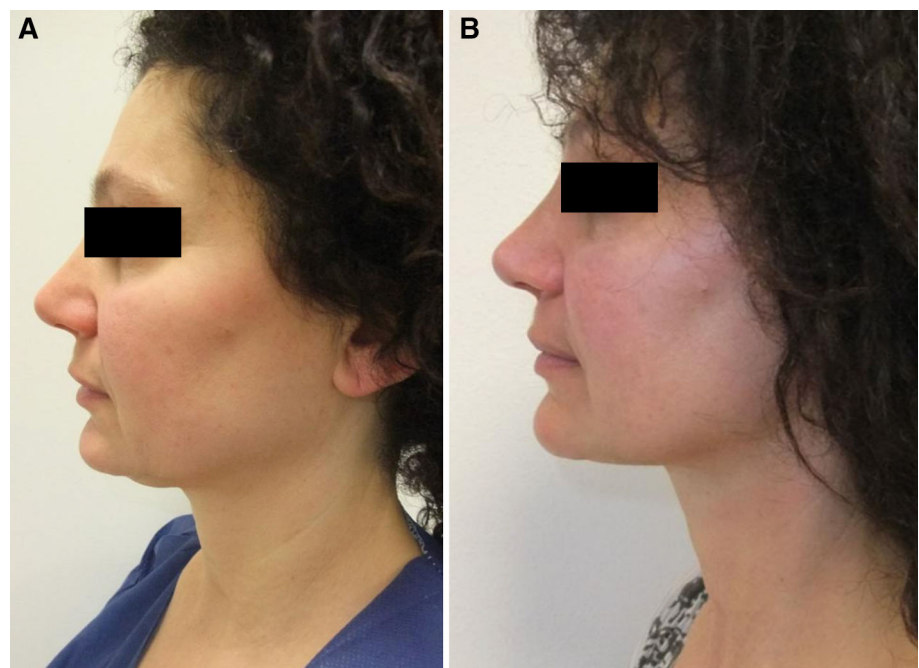
good and long-lasting results but seem to be too aggressive for some patients.

Wide-undermining neck liposuction, the technique that we propose, can improve the cervicomandibular angle with less invasive surgical and anesthetic techniques and a significant reduction of costs and risks for the patient. Patient selection is the surgeon's main concern because different anatomic components are involved in the neck-aging process and this technique has an effect on only the cutaneous

**Fig. 5** **a** Preoperative view of 42-year-old female patient. **b** Postoperative view; skin retraction allowed for improvement of the cervicomandibular angle



**Fig. 6** **a** Minor correction of the neck contour is needed in 40-year-old female patient. **b** Note the improvement in neck wrinkling and mandibular contour



and subcutaneous planes. It does not help submandibular gland ptosis or platysma band dislocation, which may get even worse after liposuction.

Adipocutaneous flap thinning and skin redraping are the goals of this procedure and to reach them it is fundamental to test the skin's elasticity. Good skin quality is fundamental or a satisfying and more harmonious result. Good retraction of the adipocutaneous flap is key; it is also an important in improving neck wrinkling. To

obtain good retraction the flap must be thinned very evenly, leaving no irregularities. A very thin layer of fat, which will be a cleavage plane, must be retained to prevent the direct adhesion of the dermis to the muscle–fascial plane below. For good distribution of the skin, it is essential to take particular care in applying the dressing.

Liposuction of the neck requires less technical effort and does not require extensive skin incisions as in a traditional

**Fig. 7** **a** Preoperative view of 38-year-old male patient. **b** Postoperative view at 6 months showing nice improvement of the cervicomandibular angle



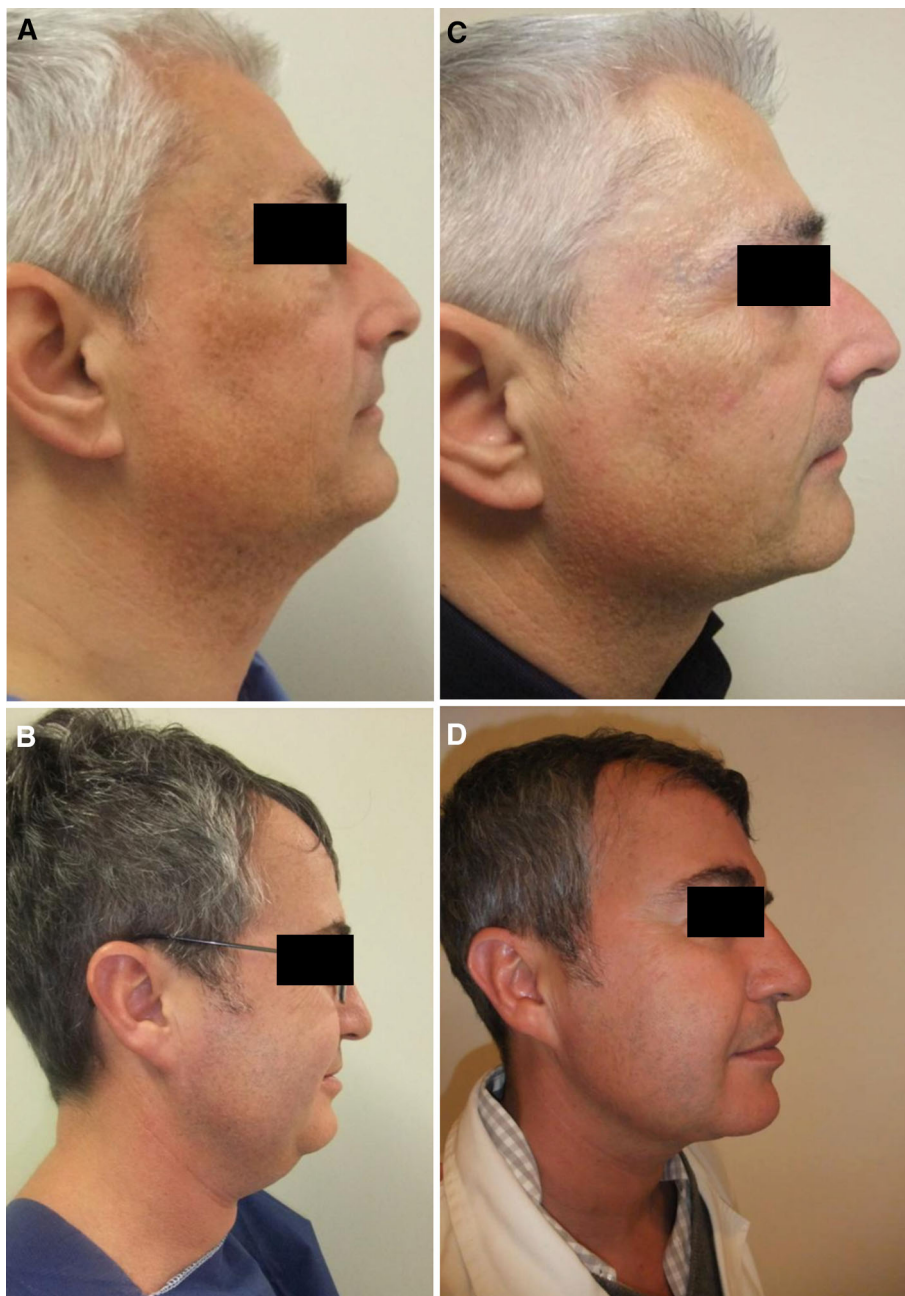
**Fig. 8** **a** Preoperative view of heavy neck in 42-year-old male patient. **b** Postoperative view at 6 months; note the improvement of the neck profile



neck lift. Thus, the more rapid postoperative recovery and short downtime associated with liposuction of the neck allow the patient to go back to daily social and professional activities very quickly. SMAS flaps pose more risk of damage to important structures such as nerves (great auricular nerve and marginalis nerve). With liposuction, the incidence of complications such as skin necrosis is

certainly lower than with a cervical lift, making it safer and more feasible in patients who smoke. Even the use of drains can be obviated with liposuction because the compression applied on the flap ensures adequate hemostasis. Another advantage of liposuction is its lower cost because it is a day surgery procedure as opposed to the neck lift which requires hospitalization.

**Fig. 9** **a, b** Preoperative view of the heavy neck of two 45-year-old male patients. **c, d** Postoperative view at 1 year; wide undermining allowed redefinition of the cervicomandibular angle



The results obtained with respect to the definition of the cervicomandibular angle with a face and neck lift may exceed those obtained from liposuction, i.e., the angle may remain slightly convex, altering the contour of the profile. In general, however, we want to focus on the improvements obtained with technique presented here, which can be proposed to those patients who reject the more invasive techniques, keeping in mind that the criteria for patient selection, including the narrow age range of the patients (35–45 years), have a fundamental role in obtaining good results.

The absence of extensive scars, typical of other surgical techniques, makes this technique acceptable to younger

patients who otherwise would not accept the correction of the defect. Unsatisfactory results could be due to improper preoperative analysis and the presence of deep fat below the platysma muscle or platysma band dislocation.

### Conclusion

Neck liposuction is a very effective and reliable rejuvenation technique in selected patients. Our study shows that localized fat, age, and skin elasticity are the parameters to be considered when choosing this procedure and to obtain

good results. Subdermal fat location, patients under 45 years of age, and good skin elasticity are key factors when choosing this technique, which is easy and safe to perform. When these conditions are present, the tips we recommend are:

- the use of long-lasting pure local anesthesia works very well in this procedure; it does not require hospitalization or a long downtime period. In fact, patients can return quickly to their daily activities wearing a turtleneck sweater or a foulard;
- leave a very thin layer of fat (about 2 mm) in place beneath the dermis in the area of lipodystrophy;
- undermine a rhomboid-shaped area much wider than the area aspirated. This allows very good skin redraping and retraction, not only correcting the lipodystrophy but also improving neck wrinkling and recontouring the neck profile.

Wide-undermining neck liposuction allows very good and predictable results in females and males. Costs and risks for patients are limited and it does not leave extensive scars.

**Conflict of interest** The authors have no conflicts of interest to disclose.

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