Contents

Videos

Video 3.1: Neck Lift
Video by Munique Maia, Alan Matarasso

Video 4.1: Step-by-Step Sequence to the Lateral Platysmal Window
Video by Rod J. Rohrich

Video 5.1: Triple Suture for Neck Contouring
Video by Enzo R. Citarella, Ramil Sinder, Alexandra Condé-Green, Esther Barrios, Samir Janne Hasbun

Video 6.1: Anterior Approach to the Neck
Video by James E. Zins, Andrew L. Kochuba

Video 7.1: Deep Plane Neck Lift
Video by Benjamin Talei, Daniel J. Gou[illegible]

Video 8.1: Lateral Skin–Platysma Displace[illegible]ent (LSD): A New and Proven Technique for Neck Rejuvenation
Video by Mario Pelle-Ceravolo, Matteo A. An[illegible]elini

Video 9.1: The Aging Neck: Subplatysmal Techniques
Video by Marcelo Cunha Araujo

Video 10.1: AccuTite of the Neck, Face, and Forehe[illegible]
Video by Dennis J. Hurwitz

Video 11.1: Marking for Bipolar Radiofrequency of Lower F[illegible] and Neck
Video by Erez Dayan

Video 11.2: Fractional Radiofrequency Using Morpheus8 (Inmode, Lake Forest, CA)
Video by Erez Dayan

Video 12.1: Performing Neck Liposuction Using the Syringe Metho[illegible]
Video by Aris Sterodimas

Video 12.2: The Adipose Tissue Aspirated by Liposuction Is Processe[illegible]
Video by Aris Sterodimas

Video 12.3: Lipografting of the Malar Area Assisted by Stromal Enriched Lipo[illegible]
Video by Aris Sterodimas

3 Management of the Aging Neck

Munique Maia and Alan Matarasso

Abstract
Multiple treatments are available for neck rejuvenation, ranging from medical grade skincare and nonsurgical treatments to surgical neck lift. In contrast to the face, however, nonsurgical rejuvenation of the neck provides limited improvement. This chapter discusses patient selection, neck lift procedures in isolation and in combination with facial procedures, as well as complications and their management.

Keywords: neck lift, aging neck, liposuction, submentalplasty, platysmaplasty

Key Points

- Preoperative analysis and a comprehensive rejuvenation plan are necessary for optimal results.
- Surgical neck rejuvenation can be performed in combination or independently with facial procedures.
- Surgical procedures address the three most important soft-tissue components of the aging neck (fat, skin, and muscle). Procedures range from liposuction and submentalplasty to neck lift.

3.1 Introduction

It is a common concept in the general population that the appearance of the neck can be a sign of aging and can appear more aged than the face itself. Characteristics of a youthful neck include distinct mandibular border with the relative absence of jowls, subhyoid depression, visible thyroid cartilage bulge, distinct border to the sternocleidomastoid (SCM) muscle, and a cervicomental angle between 105 and 120 degrees.[1,2,3,4] Aging signs can be present in the neck as early as the late 30 s. Consequently, neck lift was ranked as the 12th most common cosmetic procedure by the American Society for Aesthetic Plastic Surgery in the United States in 2019.[5] Moreover, that number is greater when including facelift surgery, which routinely incorporates the neck. Methods for rejuvenation of the neck include surgical (extended neck lift, neck lift, liposuction, and submentalplasty) and nonsurgical (botulinum toxin, deoxycholic acid, dermal fillers, threading, energy-based treatments, and resurfacing). A comprehensive analysis of the neck is paramount for the surgeon to choose the correct treatment for each patient.

Evaluating and determining which components of the aging neck are contributing to its appearance is necessary to plan treatment. Neck lift can be performed alone or in combination with a facelift or other facial or body contouring procedures. Patients often present with a combination of poor skin quality, excess skin laxity, excess fat, and hypertrophied and attenuation of the platysma and retaining ligaments. Furthermore, ptotic submandibular gland and digastric muscle hypertrophy can also contribute to the aging neck. Detailed analysis of the area will determine if the patient is a candidate for a surgical procedure and the extent of the procedure. An algorithm for treatment of the neck is described in this chapter (▶ Table 3.1).

3.2 Patient Analysis

Aging components of the neck should be individually analyzed and addressed accordingly (Box 3.1). Systematic examination of the neck from superficial to deep is helpful. Evaluation begins with the assessment of skin quality and skin quality. The excess skin of the neck is ameliorated with a neck lift; however, very little is derived from this in

Table 3.1 Decision analysis and patient education in treating soft-tissue components in the aging neck

Fat	Muscle[a]	Skin	Treatment
+	No laxity	Adequate	Liposuction
+	+	Adequate	Submentalplasty
+/−	+	+	Neck lift[b]

Note: The three most important soft-tissue components of the neck (skin, fat, and muscle) represent the framework for analyzing a range of neck deformities.
[a]Platysma muscle: visible or lax medial border platysma bands (submentalplasty) muscle treatments include resection, plication (Eiffel tower), or incising.
[b]Neck lift often includes submentalplasty.

patients with poor skin quality. Poor skin quality requires skin care and ancillary procedures, such as lasers, peels, microneedling, fat grafting, or energy-based devices. This is an important topic of discussion as it can cause dissatisfaction postoperatively if the patient is not clear on the distinction and about the goals of the surgery. Next, the presence of platysmal bands should be evaluated in repose and with muscle contraction. The subcutaneous fat (superficial fat) and subplatysmal and interdigastric fat (deep fat) are assessed. Contouring of excess adipose tissue with liposuction or direct excision should be considered. The overall assessment of the neck and lower face and analysis of facial proportions should also be performed. Digastric muscle hypertrophy, submandibular gland descent or hypertrophy, bony deficiency of the chin and mandible, jawline contour, and lower face descent should all be analyzed and can be treated with appropriate procedures. If the patient also has concerns about his or her face, additional procedures such as facelift, chin implant placement, skin treatments, or buccal fat excision[6] should be discussed.

Box 3.1 Related Components to Correct Neck Aging

- Submandibular glands.
- Jowls.
- Marionette lines.
- Hypertrophic earlobes.
- Microgenia.
- Buccal lipodystrophy.
- Larynx.[1]
- Masseter muscle hypertrophy.
- Parotid gland enlargement.

3.3 Patient Selection and Preoperative Planning

A successful outcome is essentially a satisfied patient. Consequently, during the consultation, understanding of patient's concerns and expectations is paramount. The discussion should also include the treatment plan and what can be achieved with surgery alone, where the incisions would be placed, costs, recovery period, and possible complications. To the extent foreseeable, the limitations and goals of each alternative treatments and ancillary procedures should be discussed.

Once the assessment of the neck is completed a treatment plan is outlined. The treatment options follow a laddered approach. Liposuction of the neck is a straightforward procedure and is generally indicated for younger patients with excess subcutaneous fat and good skin elasticity. Although the neck can exhibit a surprising ability to contract even with advanced age, submentalplasty surgery addresses midline muscle laxity and excess fat with some skin rearrangement, albeit without excision. A full neck lift addresses all three soft-tissue layers of skin, muscle, and fat.[7] An extended neck lift that incorporates an additional short preauricular incision can be considered if the patient desires to address the lower face and jowl area, which is the transition area between facial and neck surgery. This is particularly common in patients concerned with jowling as this extends above the border of the mandible and an extended neck lift will improve this area also. Patients can be interested in less invasive procedures; therefore, it is of paramount importance to educate patients about their anatomy and cause for aesthetic dissatisfaction. A "downstaged" procedure that minimizes incision length, discomfort, recovery, or cost yields a different result than a more invasive plan. The treatment plan should proceed only after patient's expectations are fully understood and they accept the treatment proposed.

3.4 Operative Procedure

3.4.1 Surgical Technique

The neck lift is performed in an accredited ambulatory operating room under systemic anesthesia administered by a board-certified anesthesiologist.[8,9] The incisions are marked and wetting solution (1 mL 1:1,000 epinephrine and 100 mL 1% lidocaine in 200 mL of normal saline) is injected in the field. The ear canal is gently packed with a cotton ball soaked in betadine. One gram of intravenous tranexamic acid is used 30 minutes preoperatively unless contraindicated. Liposuction is performed first as indicated. A 2.4-mm Mercedes cannula is used for neck liposuction and a 1.8-mm Mercedes cannula is used for jowl liposuction. A spatula tip cannula can be used for additional contour in heavy fatty necks. ▶ Video 3.1

When submentalplasty is indicated (i.e., for midline platysma surgery or deep structure contouring), a 5-cm submental incision is made, just caudal

[1] Potentially addressed in conjunction with neck surgery.

Video 3.1 Neck lift. This video shows injection, submentalplasty, medial and lateral platysmaplasty, skin redraping, and closure.

or cephalic (in this case, it is undermined) to the submental skin crease. Some surgeons advocate for a slightly curvilinear incision to account for redraping of the skin in cases of full face and neck lift. The midline neck is widely dissected and undermined with the aid of a lighted retractor. Particular attention should be paid to undermining adjacent to the incision and contouring any fat in this area. Medial platysma bands are then identified. When redundant medial platysma muscle is present, a strip of excess muscle can be excised. Conservative subplatysmal fat removal is performed, if necessary, by either direct excision or melting with ball-tip electrocautery. While deep fat can be safely contoured, if removed, digastric excision and submandibular gland removal should be considered.[10,11,12] A back cut (myotomy) is made from medial to lateral in the platysma at the level of the cricoid to treat hard dynamic bands. In order to stave off reattachment of the muscle fibers, some surgeons advocate for partial myectomy. If the muscle can be reapproximated in the midline (based on the extent of separation), it is done with interrupted 3–0 Mersilene sutures (Ethicon, San Lorenzo, Puerto Rico) to achieve a snug, but not tight, approximation. Different techniques for platysmal repair have been described.[13] The hyoid fascia can be incorporated into the repair with the intention of avoiding recurrent banding.[14] The submental portal is inspected for hemostasis and packed with moist gauze until final inspection and closure after the lateral incisions are closed.

The patient's head is turned to the left and the right-side neck lift incision is performed. The skin flap is widely undermined (usually contiguously with the area undermined via submental access). This dissection proceeds and is completed under direct vision with the scalpel and facelift scissors. The lateral border of the platysma (and lower superficial musculoaponeurotic system [SMAS] in extended neck lifts) is identified. If laxity is present, the lateral border of the platysma is undermined and sutured to the SCM fascia, avoiding undue tension on the midline platysmal repair. In extended neck lifts, the platysma and lower SMAS are plicated to the SCM fascia at three to four points to address jowl laxity. Excess skin is redraped, released as necessary from underlying attachments, and excised. The earlobe should be delivered prior to final skin flap excision to avoid a pixie earlobe. The wound is irrigated with the same solution used to infiltrate the skin. Final hemostasis is achieved; a drain (flushed with and soaked in betadine) is inserted, brought through the incision line, and the incision is closed. Careful attention is paid to ensure that while redraping and securing the skin, the hairline is preserved. Hair-bearing skin is closed with staples. The region between the hair-bearing skin and the postauricular incision is closed with half-buried absorbable mattress sutures. The postauricular crease is closed with 3–0 nylon. The preauricular area (extended neck lift) is closed with 5–0 nylon sutures. The closed-suction drain is placed in the postauricular incision and secured with a suture. The head is turned to the right, and the left-side neck lift is performed with a similar technique. The submental dissection is then inspected for final hemostasis and closed with running subcuticular 4–0 Prolene and simple 5–0 nylon sutures.

3.5 Postoperative Care

Antibiotic ointment is applied to all incisions and around the drains. A facelift dressing consisting of three layers of gauze strips covered with a Surginet is placed (Derma-Pac, Stockton, CT). The dressings are removed on postoperative day 1, and a neck strap is used. Drains are removed as indicated by volume and color over the first few days. The incisions are kept moist with antibiotic ointment during the healing process. The sutures and staples are removed as indicated during the first 10 postoperative days.

The patient is specifically instructed to avoid neck flexion to minimize the risk of skin flap ischemia and edema (S. Fredricks, personal communication).

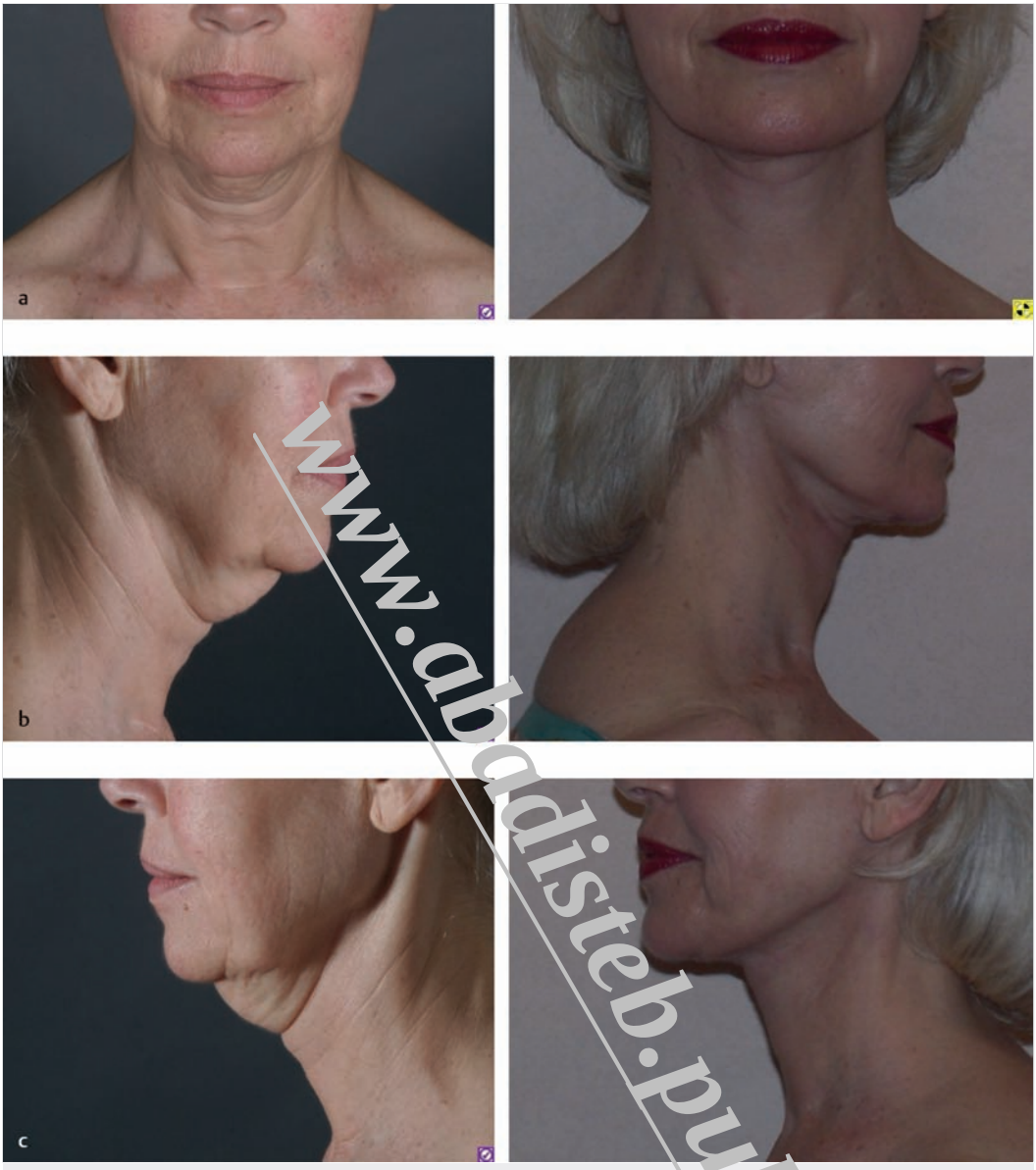

Fig. 3.4 (a–c) Case 4: A 62-year-old woman before and 6 weeks after neck lift.

Fig. 3.5 (a–c) Case 5: A 60-year-old woman after massive weight loss. Six weeks after comprehensive facial and neck rejuvenation: facelift, neck lift, brow lift, upper blepharoplasty, 30% trichloroacetic acid (TCA) peel, and neck lift.

References

[1] Ellenbogen R, Karlin JV. Visual criteria for success in restoring the youthful neck. Plast Reconstr Surg. 1980; 66(6): 826–837

[2] Greer SE, Matarasso A, Wallach SG, Simon G, Longaker MT. Importance of the nasal-to-cervical relationship to the profile in rhinoplasty surgery. Plast Reconstr Surg. 2001; 108(2): 522–531, discussion 532–535

[3] Matarasso A. Managing the components of the aging neck: from liposuction to submentalplasty, to neck lift. Clin Plast Surg. 2014; 41(1):85–98

[4] de Souza Pinto EB. Importance of cervicomental complex treatment in rhytidoplasty. Aesthetic Plast Surg. 1981; 5(1):69–75
[5] American Society for Aesthetic Plastic Surgery. National Cosmetic Surgery Databank Statistics. Accessed July 25, 2020 at: http://www.surgery.org/media/statistics
[6] Matarasso A. Managing the buccal fat pad. Aesthet Surg J. 2006; 26(3):330–336
[7] Matarasso A, Sinno S. Isolated neck lift. In: Chung K, Thorne C, Sinno S, eds. Operative Techniques in Facial Aesthetic Surgery. Philadelphia, PA: Lippincott Williams & Wilkins; 2019:238–241
[8] Matarasso A. Managing the components of the aging neck: from liposuction to submentalplasty, to neck lift. Clin Plast Surg. 2014; 41(1):85–98
[9] de Pina DP, Quinta WC. Aesthetic resection of the submandibular salivary gland. Plast Reconstr Surg. 1991; 88:779–787
[10] Mendelson BC, Tutino R. Submandibular gland reduction in aesthetic surgery of the neck: review of 112 consecutive cases. Plast Reconstr Surg. 2015; 136(3):463–471
[11] O'Daniel TG. Understanding deep neck anatomy and its clinical relevance. Clin Plast Surg. 2018; 45(4):447–454
[12] Auersvald A, Auersvald LA. Management of the submandibular gland in neck lifts: indications, technique, pearls, and pitfalls. Clin Plast Surg. 2018; 45(4):507–525
[13] Ellenbogen R. Pseudo-paralysis of the mandibular branch of the facial nerve after platysmal face-lift operation. Plast Reconstr Surg. 1979; 63(3):364–368
[14] Yousif J, Matloub H, Sanger J. Hyoid suspension of the platysma: a novel technique for the aging neck. Plast Reconstr Surg. 2014; 133(4 Suppl):976
[15] Baker DC, Chiu ES. Bedside treatment of early acute rhytidectomy hematomas. Plast Reconstr Surg. 2005; 115(7): 2119–2122, discussion 2123
[16] Young VL, Boswell CB, Centeno RF, Watson ME. DMSO: applications in plastic surgery. Aesthet Surg J. 2005; 25(2):201–209
[17] McKinney P, Katrana DJ. Prevention of injury to the great auricular nerve during rhytidectomy. Plast Reconstr Surg. 1980; 66(5):675–679
[18] Durnig P, Jungwirth W. Low-molecular-weight heparin and postoperative bleeding in rhytidectomy. Plast Reconstr Surg. 2006; 118(2):502–507, discussion 508–509
[19] Reinisch JF, Bresnick SD, Walker JW, Rosso RF. Deep venous thrombosis and pulmonary embolus after face lift: a study of incidence and prophylaxis. Plast Reconstr Surg. 2001; 107 (6):1570–1575, discussion 1576–1577