40 Managing the Components of the Aging Neck: From Liposuction to Submentalplasty, to Neck Lift

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Abstract

The ideal appearance of the youthful neck is described as having a distinct inferior mandibular border with no jowls, subhyoid depression, visible thyroid cartilage bulge, distinct border to the sternocleidomastoid muscle, and a cervicomental angle between 105° and 120°. Treatment options are based on individualized patient assessment and vary from liposuction to submentalplasty alone to a traditional neck lift with the possibility of liposuction as well as submentalplasty. The authors discuss the techniques and possible complications.

40.1 Introduction

A youthful-appearing neck often defined as a jawline with minimal jowling and an angle of approximately 90° from mentum to hyoid and sternal notch is a sought-after characteristic in many patients undergoing facial rejuvenation. Indeed, this area of the jawline often begins to exhibit signs of aging from the late 30s on and can be more consequential due to physiologic factors, than facial aging above the jawline. Consequently, it is a common phenomenon for patients in this age range to upwardly pull on the excess tissue of the neck in an attempt to simulate a more youthful appearance ("finger pull test") and to eliminate the telltale sign of aging [1]. As one laser manufacturer whose product was ostensibly aimed at this market stated, "a million women wake up every day in New York City look in the mirror and start their day by lifting their jawline." Although there are many nonsurgical treatments for the aging face which may delay interest in surgical intervention, there are limited nonsurgical options for the neck. The aging neck however can be isolated from the face and have specific surgical interventions directed toward it. It is the goal of this chapter to provide an

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algorithm and describe surgical interventions to treat the aging neck.

The ideal appearance of the youthful neck is described as having the following characteristics: a distinct inferior mandibular border with no jowls, subhyoid depression, visible thyroid cartilage bulge, distinct border to the sternocleidomastoid muscle, and a cervicomental angle between 105° and 120° [2, 3]. In evaluating patients for neck rejuvenation, one should be aware of the quantity and quality of the skin, the status of the platysmal muscle including bands, the submandibular glands, the digastric muscle, the architecture of the mandible, and the cervical fat distribution and any other features associated with this area [4]. Treatment options vary based on individualized patient assessment. They vary from liposuction to submentalplasty alone, to a traditional neck lift with the possibility of liposuction as well as submentalplasty.

40.1.1 Patient Selection

Ideal candidates for neck surgery "alone" are those who want to address neck rejuvenation without the need to concomitantly address the midface with a facelift. It appears that patients that seek out neck surgery alone are motivated by various factors such as solely being concerned with their neck, have a midface that is adequately addressed with nonsurgical treatments, or prefer not to have a preauricular scar associated with facial surgery [1]. During the initial consultation, it is essential to evaluate the patient's goals and expectations and to reconcile them with the surgeon's evaluation and treatment plan. Furthermore, it is important to discuss relevant procedures that may play a role in enhancing the result of neck surgery, such as chin augmentation, buccal fat pad removal, salivary gland treatment, or skin quality enhancement [3, 5].

When evaluating the patient and discussing the options, it can be valuable to use an algorithm to discuss the surgical treatments available to treat the soft tissue components of the aging neck (Table 40.1). These include the skin, the platysmal muscle, and the subcutaneous or submuscular fat.

Table 40.1 Treatment algorithm for managing the soft tissue components of the aging neck

Treatment	Fat	Muscle	Skin
Liposuction	+	Minimal laxity	Adequate
Submentalplasty (platysmal resection, plication, or incising)	+	Visible or redundant medial platysmal bands	Adequate
Neck lift (includes submentalplasty and liposuction)	±	Visible or redundant platysmal bands	Excess

Consequently, patients with younger and fattier necks with good skin tone and absent platysmal banding will benefit from liposuction alone (Fig. 40.1). Patients with platysma muscle laxity with or without lipodystrophy of the neck are treated with a submentalplasty, which consists of liposuction with or without submuscular fat treatment and platysmal surgery, without skin excision (Fig. 40.2). Finally, more advanced cases of the aging neck are treated with a neck lift, which encompasses liposuction and submentalplasty along with the addition of wide skin-flap elevation and skin excision (Fig. 40.3) [1]. The neck lift is the sum of the prior techniques, incorporating components of each to give the greatest result in patients who will benefit from skin excision.

There are occasions in which selected patients that are anatomically candidates for a more invasive technique based on their physical findings may decide on less invasive procedures; the authors refer to this as downstaging. However, the patient must be educated that while a less invasive procedure maybe associated with a shorter surgical time and less recovery and expense, it will result in a less optimal result given the anatomy therefore that they should have realistic expectations regarding the outcome.

Some surgeons advocate for treatment of the underlying digastric muscles and partial resection of the submandibular gland as part of their management of the aging neck [6]. Other surgeons do not resect the gland and view the complications greater than the benefit that may arise from resecting it [4]. If

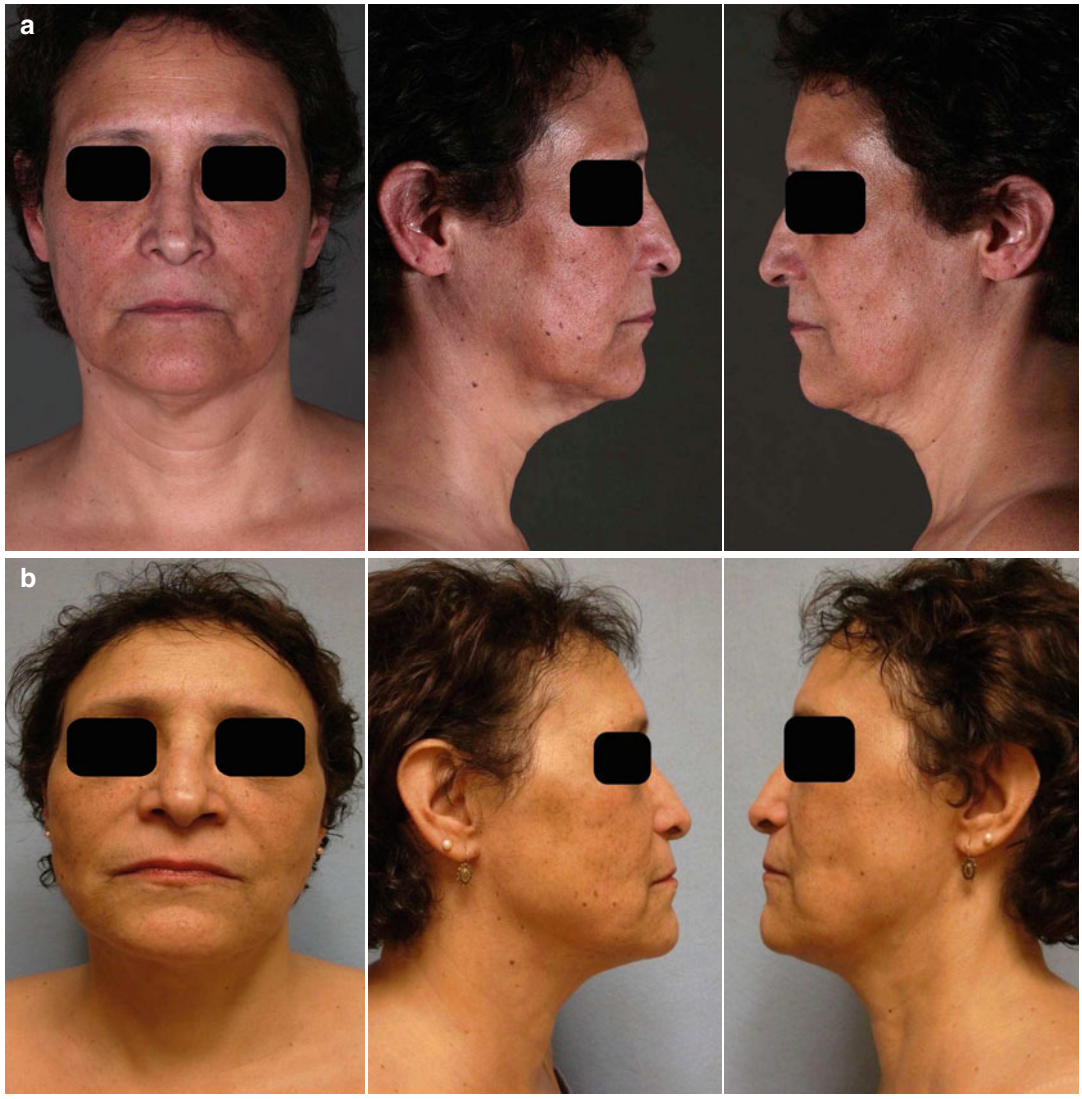

Fig. 40.1 (**a**) Preoperative 59-year-old female with good skin tone. (**b**) Postoperative following neck liposuction alone showing adequate skin contraction despite her age

noticeable hypertrophic submandibular glands are noted, they may achieve some benefit with botulin toxin injections [1].

40.2 Technique

A traditional neck lift encompasses improvement in the area from the jawline (midportion of the mandible) down to the collar area. In some circumstances, if patients desire improvement in the jowls as well as the neck, an "extended" neck lift addresses the same areas as neck surgery plus the jowls. This is accomplished by extending the neck lift incision slightly cephalically and preauricularly toward the tragus. Furthermore, jowl liposuction will often accompany either procedure for greater facial rejuvenation.

In the traditional neck lift, the procedure is performed in an accredited ambulatory facility under spontaneous ventilation general anesthesia administered by an anesthesiologist. Perioperative

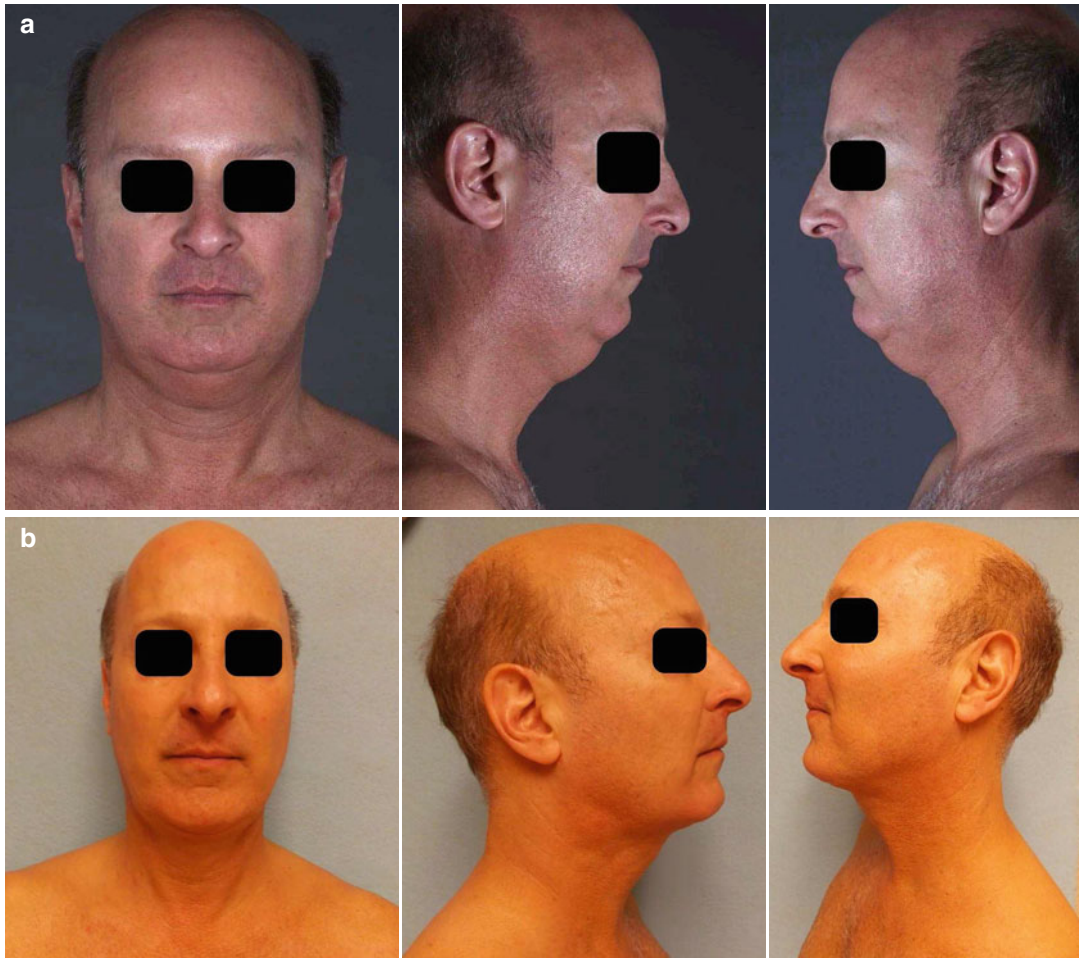

Fig. 40.2 (**a**) Preoperative 52-year-old male. (**b**) Postoperative after submentalplasty with buccal fat pad excision

antibiotics are used and synchronized compression devices are placed for the entirety of the case. Antibiotic ointment is placed in the nostrils and cotton soaked in Betadine is placed in each ear canal.

The surgical field is infiltrated with local anesthetic solution containing 1 mL of 1:1,000 epinephrine, 100 mL of 1 % lidocaine, and 200 mL of normal saline. After waiting for the effect of the local anesthetic, liposuction of the subcutaneous fat is begun. A 2.4 mm Mercedes cannula is used for the neck liposuction, and a 1.8 mm Mercedes cannula is used for the jowl area. In cases of liposuction alone as the sole treatment of the fatty neck, additional liposuction is conducted with a spatula-tip cannula.

After completion of liposuction, a submental incision is made just above or below the natural submental crease if treatment of the platysmal muscle is indicated (submentalplasty). Wide undermining of the neck skin is performed with the aid of a lighted fiber-optic retractor and countertraction on the skin. Medial platysmal bands are identified. Various options for the repair of the midline platysmal muscle repair have been described [7, 8].

In patients that have loose redundant or hypertrophic anterior platysmal bands, the senior author (AM) begins by excising a strip of excess platysmal muscle. Once this is resected, submuscular fat can be identified and treated in patients that will benefit from a reduction. This is carried

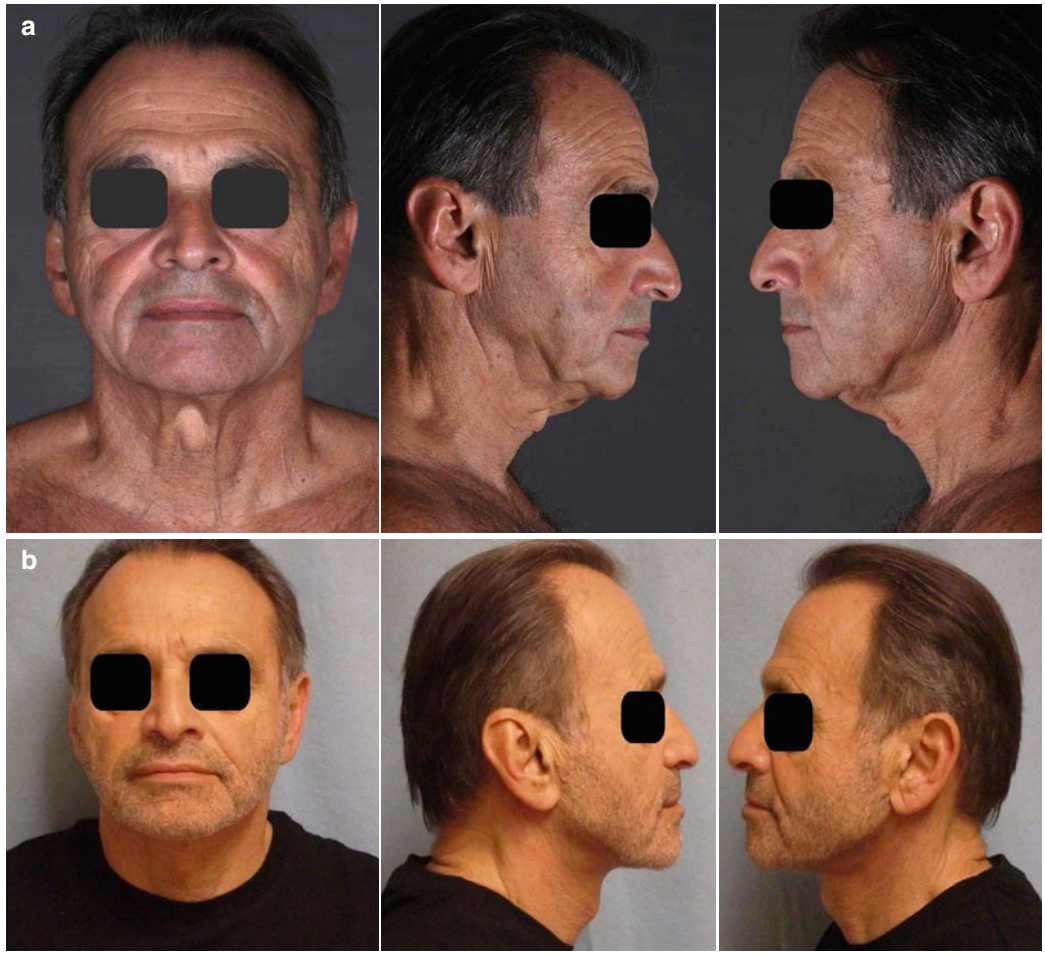

Fig. 40.3 (**a**) Preoperative 66-year-old male. (**b**) Postoperative following traditional neck lift

out by directly excising small amounts of fat and melting the remainder with a ball-tip electrocautery. Attention is then returned to the platysmal muscle, which is first back cut at the level of the hyoid bone and a horizontal wedge removed. Depending on the integrity of the muscle, it is either repaired in the midline in layers with a 3-0 Mersilene (Ethicon, San Lorenzo, Puerto Rico) suture which when complete, resembles an Eiffel Tower.

Once the anterior neck treatment is complete, the patient's head is turned, and the surgery continues on the right side of the neck where the incisions are demarcated. The skin flaps are incised and undermined under direct vision sharply and with supercut facelift scissors. The neck is completely undermined from side to side connecting the dissection with the prior submental plane. The lateral border of the platysma is located and evaluated. If the platysma is lax or redundant, it is undermined approximately 3–4 cm below the angle of the mandible, back cut and sutured to the sternocleidomastoid (SCM) fascia with 3-0 Mersilene suture while avoiding placing excessive tension on the midline repair. In other cases, the platysma is plicated to the SCM at three points including the lower superficial muscular aponeurotic system (SMAS) for jowl improvement. Final hemostasis is achieved by electrocautery, and Jackson-Pratt (JP) drains (Cardinal Health, Dublin, Ohio) soaked in betadine are placed and brought out through the wound. The

drains are secured by suturing them to the wound edges. Excess skin is elevated, advanced, redraped, and excised so as to optimize the result and preserve the integrity of the hairline.

The hair-bearing region is closed with staples, and the area between the hair-bearing region and postauricular incision is closed with half-buried absorbable sutures. The postauricular crease is closed with 3-0 nylon sutures; the lower preauricular area if opened for an extended neck lift is closed with 5-0 nylon sutures. The submental incision is closed with a subcuticular 5-0 Prolene and 5-0 nylon interrupted (Ethicon, San Lorenzo, Puerto Rico). Antibiotic ointment is placed on the wounds. A two-layer facelift dressing consisting of gauze and SurgiNet is placed on the patient [1]. Frequently, accompanying nonsurgical procedures include perioral or periocular erbium laser and facial TCA peels.

40.3 Postoperative Management

Dressing and drains are removed on postoperative day 1 and suture lines are treated with antibiotic ointment. Staples and sutures are removed within the first 10 days. Return to normal activities usually occurs progressively from 2 to 6 weeks. During that time, patients should avoid excessive sun exposure or nonsurgical facial treatments. Firm scars are treated with massage and occasionally ultrasound therapy, as these tend to resolve with time.

40.4 Complications

Complications can vary depending on the extent of the procedure that is performed. Most frequent complications include seroma and hematoma. Small nonexpanding hematomas can be managed in a sterile quiet environment with the blood pressure controlled without the need for the operating room. The hematoma is evacuated with suction under the flap, and the wound is irrigated out with solution containing cold saline, local anesthesia, and epinephrine [9]. Once the irrigation is clear, a pressure dressing is applied, and the patient and their blood pressure are monitored closely. Large or expanding hematomas require immediate acute, open surgical evacuation in an operating room under general anesthesia. Seromas should be serially aspirated and the affected area treated with compression. Patients who have seromas should be monitored frequently as they have a tendency to recur and can lead to indurated, hard, irregular contour deformities that take months to resolve if not treated completely (Fig. 40.4).

Similarly, when drains are removed, they can leave a "tract" of fluid or air, which should be gently milked out in order to avoid a prolonged contour irregularity.

Although skin necrosis is infrequent, it can be a significant complication when it occurs. At the first sign of ischemia, all reversible causes should be evaluated such as fluid collections, excessive skin tension, and infection and treatment instituted. If the ischemic changes worsen, it should be managed with local wound care. Areas of suspected ischemia are treated with RIMSO 50 (DMSO, dimethyl sulfoxide) (Spectrum Chemical MFG Corp, Gardena, CA) plus Nitropaste (Sandoz Pharmaceuticals Inc., Princeton, NJ). If it progresses to necrosis, wounds can be managed with silver sulfadiazine (Silvadene) cream. If infection is noted, it should be treated with evacuation of any fluid which should be sent for culture and sensitivity, copious irrigation, drains, and appropriate antibiotics [1]. Untreated infections can also lead to ischemia and wound necrosis.

Facial nerve injuries are less common than in facelifts but can occur. Most often, the marginal mandibular branch and the cervical branch are placed at risk during the procedure if the overlying platysma muscle is breached. This is more common in secondary surgery. Consequently, great care is taken when performing midline platysmal repair in repeat surgery where the cervical branch is susceptible. To avoid nerve injury laterally, the platysmal muscle is often plicated due to the change in the underlying anatomy from the primary surgery. Theoretically, the marginal mandibular nerve can be injured during liposuction of the jowls, during subplatysmal surgery, or when defatting adjacent to the chin. In

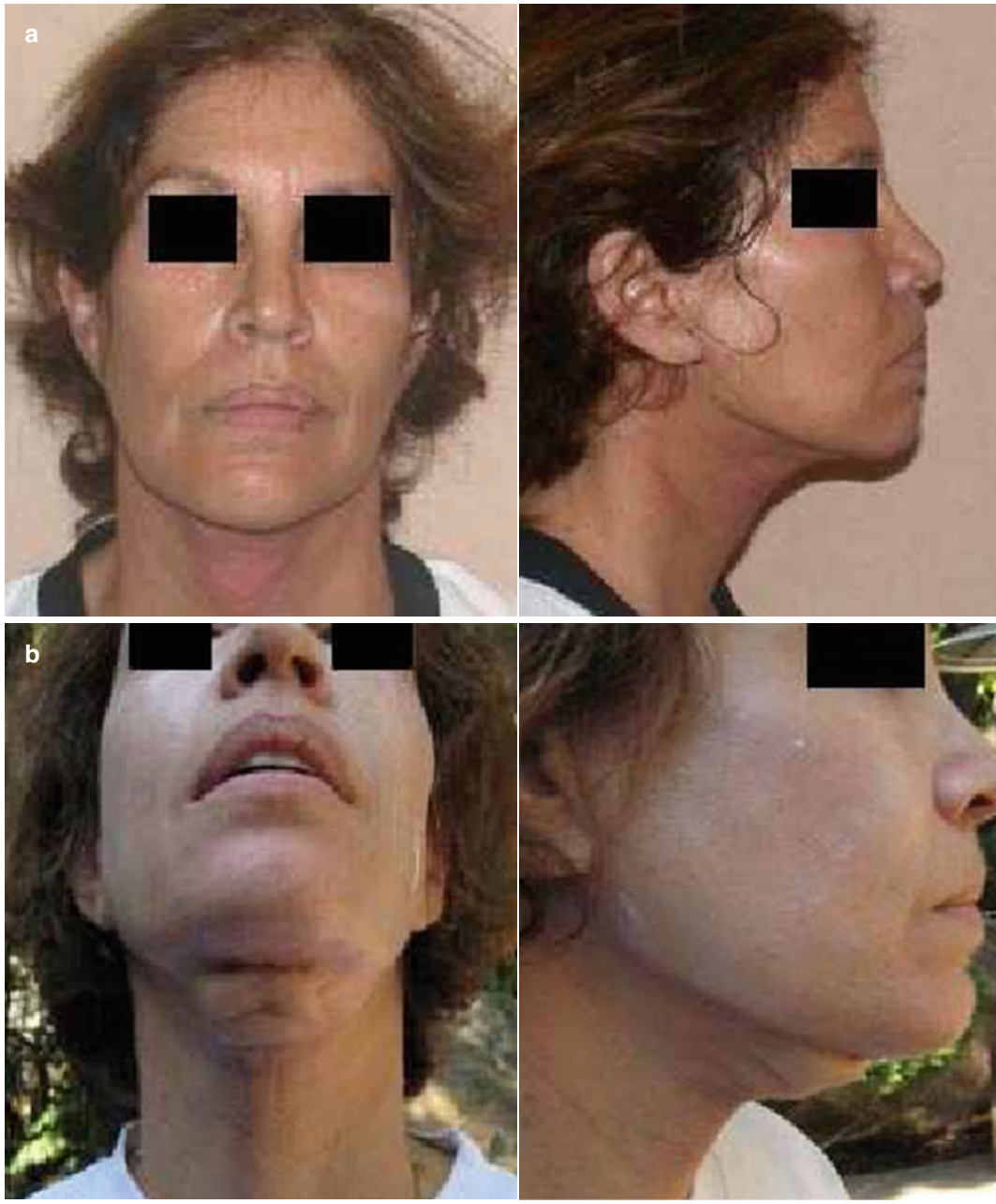

Fig. 40.4 (**a**) Preoperative 60-year-old female. (**b**) Postoperative secondary neck lift with a delayed seroma with contour abnormality

the unlikely event that there is nerve dysfunction postoperatively, standard protocols for their management are advised. In most cases, the nerve function will return within the first 6 months, although in some instances, it can take up to a year [10–12]. Unless the surgeon can recall a specific nerve injury in which case immediate reexploration and repair should be performed, then watchful waiting with patient reassurance and occasional neurotoxin injection for symmetry is advised. The greater auricular sensory nerve is the most common nerve injured during

neck surgery and can lead to sensory changes in the earlobe and neck. The classic landmark for the nerve is at the mid portion of the SCM, 6.5 cm below the external auditory canal [13]. The nerve wraps around the posterior border of the SCM and courses obliquely across the muscle in a superior direction. It runs parallel and about 1 cm posterior to the external jugular vein which also crosses the SCM along the same vector [14]. A thorough understanding of anatomy and careful surgical techniques should be a must to avoid these complications.

Conclusions

Isolated surgical treatment for the aging neck is a viable option for a subset of patients that either do not require or may not wish to have a concurrent treatment of the midface. Excellent aesthetic results can be achieved by tailoring the procedure to the underlying anatomy and expectations of the patient. Ultimately, judicious patient selection and education will provide for the greatest satisfaction in patients undergoing isolated neck lift surgery.

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