

Direct Neck Skin Excision for Correction of Aging Signs Confined to Skin Laxity and Sagging Skin in the Neck: A Local Anesthesia–Based Day Surgery Optimal for Younger Women

Ayhan Okumuş, MD

BACKGROUND The removal of excessive neck skin is considered the key parameter in the best postoperative outcome after a neck rejuvenation surgery.

OBJECTIVE To evaluate the utility of a local anesthesia–based direct neck skin excision surgery in patients with skin laxity and sagging skin in the neck in terms of postoperative aesthetic outcome and patient satisfaction within a 12-month follow-up period.

MATERIALS AND METHODS A total of 47 female patients who underwent local anesthesia–based direct neck skin excision surgery for the rejuvenation of skin laxity and sagging skin in the cervical neck were included. Data on complications and patient-reported outcomes were recorded at the 12th month postoperatively.

RESULTS Postoperatively, none of the patients developed suture breakage or loosening, infection, or bleeding, while ecchymosis (21.3%) and hypertrophic scar (17.0%) were manageable. At the 12th postoperative month, 93.6% of patients reported improved appearance and high satisfaction with the postoperative outcome in terms of a sustained tighter appearance in the neck.

CONCLUSION The local anesthesia–based direct neck skin excision surgery in patients with skin laxity and sagging skin in the neck enables achievement and maintenance of a tighter appearance in the neck, with minor and manageable complications and high patient satisfaction.

The neck is an indisputable part of facial aesthetics and youthfulness and a critical component of any facial rejuvenation procedure to achieve harmony.^{1–3} The neck aging may manifest within a spectrum of severity that ranges from skin laxity and sagging skin with changes in skin quality and elasticity to the more complex changes involving the platysma muscle (loss of muscle tone, platysmal band formation) and subplatysmal and deep neck structures.^{4,5}

Although cervicofacial rhytidectomy remains the gold standard for lower face and neck rejuvenation, postoperative outcomes are considered less satisfactory for the neck in most cases, although many patients seeking facelift surgery are more concerned about the age-related changes in the neck.^{1,2,4,6–8}

The desire for minimally invasive procedures increases in parallel to the demand for facial/neck rejuvenation.⁶ In patients presenting with aging signs confined to the neck, isolated neck rejuvenation rather than the traditional cervicofacial rhytidectomy is more appropriate given that their primary concern in seeking rejuvenation is the correction of these features to address a disharmony between the appearance of neck and face.^{4,7} Isolated neck lift encompasses many techniques that target the cervical facial angle, jowls, platysmal bands, and malpositioned cervical fat,^{9,10} while the removal of excessive skin of the anterior, lateral, and/or posterior neck is considered the key parameter in the best postoperative outcome after a neck rejuvenation surgery.^{4,11,12}

Moreover, while many patients desire cosmetic improvement of neck laxity when consulting with a plastic surgeon about their face, sometimes a patient wishes to have no other facial surgery than an improvement of their excessive skin of the anterior, lateral, and/or posterior neck.⁴ Indeed, skin laxity and sagging skin in the neck may be the sole complaint of neck aging, particularly for patients in office-based jobs who are considered likely to develop a “computer face” and premature signs of aging. Accordingly, the use of a simpler technique based on the removal of excess neck skin per se may offer a convenient and satisfactory option in patients with skin laxity and sagging skin in the neck but normal platysma and subplatysmal structures.

From the Mudanya University, Vocational School, First and Emergency Aid Program, Bursa, Turkey

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Address correspondence and reprint requests to: Ayhan Okumuş, MD, Mudanya University, Vocational School, First and Emergency Aid Program, Çağışan Mah. 2029 Sk. No. 2, Bursa 16940, Turkey, or e-mail: ayhan@ayhanokumus.com.tr

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This study aimed to evaluate the utility of a local anesthesia–based direct neck skin excision surgery in patients with skin laxity and sagging skin in the neck in terms of postoperative aesthetic outcome and patient satisfaction within a 12-month follow-up period.

Material and Methods

Study Population

A total of 47 female patients (mean age: 42 years, range 35–52 years) who underwent a local anesthesia–based direct neck skin excision surgery for the rejuvenation of skin laxity and sagging skin in the cervical neck region were included in this single-center study conducted between 2020 and 2023. Patients with more advanced neck aging involving the platysma (i.e., sagging, band formation) and subplatysmal structures (i.e., sagging) were excluded from the study.

The study was conducted in accordance with the ethical principles stated in the “Declaration of Helsinki.” Written informed consent was obtained from each subject for the operative procedures and the use of patient data for publication purposes.

Assessments

Data on the patient-reported outcomes regarding the tighter appearance in the neck after treatment (worse, no change, improved, much improved, and very much improved) and satisfaction with the treatment (very satisfied, satisfied, or not satisfied) were recorded at the 12th month postoperatively. Complications were recorded throughout the entire follow-up period.

Operative Technique

Surgical operations were performed under local anesthesia with lidocaine (Jetokain, 4 vials) containing 20 mg/mL lidocaine HCL and 0.0125 mg/mL adrenaline in 100 mL, which was applied subcutaneously to an area extending from the neck hairline toward the middle of the neck, bilaterally. A skin incision was performed starting from the region 1 cm superior to the neck hairline to the level of the ear lobule. A rectangular-shaped skin flap was dissected within the limits of the incision site till the level of parasymphysis while preserving the subdermal circulation. The dissection area was limited by the mandible superiorly and by the beginning of the incision inferiorly and stayed over the platysma muscle (Figures 1 and 2). The dissections extending beyond the defined limits of incision may cause a larger dog-ear formation, necessitating an enlarged incision during skin closure. After the completion of dissection, the skin was pulled laterally from the middle part to stretch the neck and determine the amount of excess skin. Excessive stretching of the skin was avoided to prevent dehiscence or marked scar formation during postoperative healing. Excess skin was cut in the middle, and the cut was advanced medially until the visualization of the hairline incision site, forming a final horizontal T shape incision (Figures 3 and 4). After the hemostasis, the tip of the midline

cut was pulled toward the hairline and fixed to the middle part of the incision via 4/0 polydioxanone (PDS) suturing. In this way, 2 equal skin flaps were created at both sides (Figures 3 and 4). Of these skin flaps, the inferior 1 was pulled upward medially and the superior 1 was pulled downward medially, and the parts next to the incision line were removed by cutting (Figures 3 and 4). Dog-ear formation was prevented by relieving the incision poles with a 1.5- to 2.0-cm subcutaneous dissection toward the normal skin. The closure of the incision site was performed from lateral to medial at both ends with the use of 5/0 PDS, while 3 4/0 PDS sutures were used at the most tightened middle part to prevent the dehiscence. No skin sutures were placed, and the operation was ended after placing the Steri-Strips (Figures 3 and 4). Postoperative elastic bandaging was applied to the neck. All patients were sent home 30 minutes after the operation.

Results

The mean duration of follow-up was 12 months (range 6–36 months). Postoperatively, none of the patients developed suture breakage or loosening, infection, or bleeding. Ecchymosis occurred in 10 (21.3%) patients and disappeared within a week in all of them. Hypertrophic scar was noted in 8 (17.0%) patients, which was resolved by intralesional steroid and silicon sheet application within a year in 5 patients. In the remaining 3 (6.3%) patients, a depressive scar (1 cm) was developed due to steroid injection, which was resolved by scar revision.

Figure 5 and **Supplemental Digital Content 2**, Figures S1 and S2, <http://links.lww.com/DSS/B595> illustrate the pre-operative and postoperative outcomes. At the 12th postoperative month, 44 (93.6%) patients reported that the appearance after treatment was very much improved, and they were very satisfied with the postoperative outcome in terms of provision of a sustained tighter appearance in the neck. However, 3 (6.4%) patients reported that they found the operation more satisfactory during initial postoperative months, while the outcome in the 12th month was less satisfactory than the earlier months and remained below

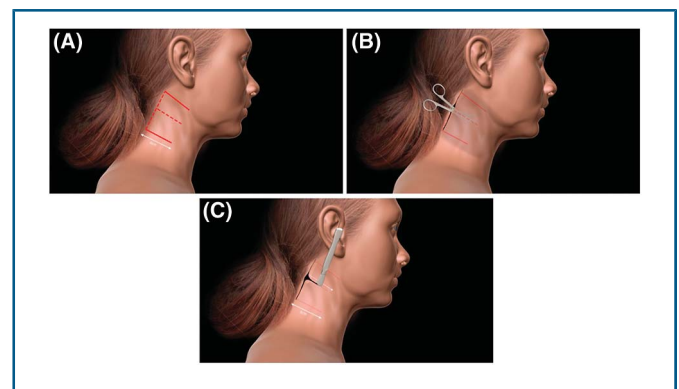


Figure 1. Medical illustration showing the consecutive steps of (A) surgical planning, (B) dissection of neck skin, and (C) formation of skin incisions.

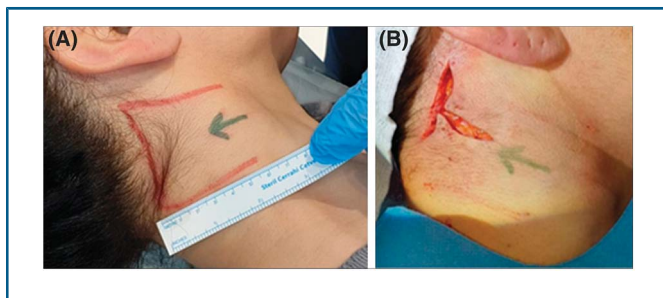


Figure 2. (A) A rectangular dissection area, limited by the mandible upward and by the incision starting point below. A skin incision was performed starting from 1 cm above the neck hairline to the level of the ear lobule below, and a rectangular skin flap was dissected and within the limits of the incision site to the level of parasymphysis. (B) Excess skin was cut in the middle, and the cut was advanced medially until the visualization of the hairline incision site, forming a final horizontal T shape incision.

their expectations regarding the long-term tightness in the neck area.

In addition, the results were also confirmed by consulting with 2 independent plastic surgeons. After examining the preoperative and postoperative pictures, both surgeons agreed that there were visible and effective corrections.

Discussion

The authors' findings revealed the favorable utility of the local anesthesia-based direct neck skin excision operation in patients presenting solely with skin laxity and sagging skin in the neck. The technique was successful in achieving a sustainable tighter appearance in the neck with minor and manageable complications and high patient satisfaction. The operational outcomes are highly favorable also in terms of leaving a minimal scar hidden by the hairline and a short postoperative recovery period, enabling the return to daily activities within hours of the operation. Hence, direct removal of excess skin via a local anesthesia-based day surgery can be a good rejuvenation technique in patients

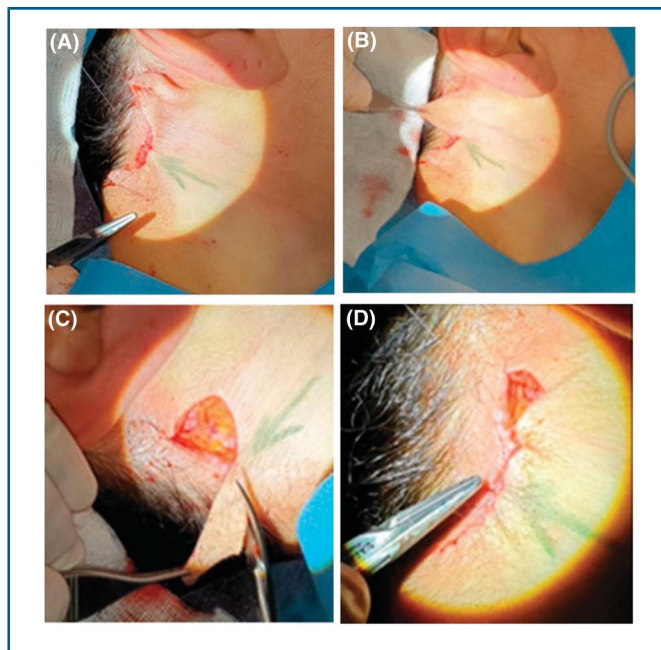


Figure 4. (A) After the hemostasis, the tip of the midline cut was pulled toward the hairline and fixed to the middle part of the incision via 4/0 PDS suturing. In this way, 2 equal skin flaps were created at both sides, (B) of these skin flaps, the inferior 1 was pulled upward medially and the superior 1 was pulled downward medially and their parts next to the incision line were removed by cutting, (C) the closure of incision site was performed from lateral to medial at both ends with the use of 5/0 PDS, while 3 4/0 PDS sutures were used at the most tightened part middle part to prevent the dehiscence. No skin sutures were placed, and the operation was ended after placing the Steri-Strips, (D) the closure of the incision site was performed from lateral to medial at both ends with the use of 5/0 PDS, while 3 4/0 PDS sutures were used at the most tightened part middle part to prevent the dehiscence. No skin sutures were placed, and the operation was ended after placing the Steri-Strips. PDS, polydioxanone.

with neck aging confined to skin laxity and sagging skin but normal platysmal and subplatysmal structures.

The proposed technique does not require general anesthesia, and it is practicable as a day surgery lasting 40 minutes under superficial local anesthesia, enabling the immediate return to everyday activities shortly after the procedure. Moreover, the use of a smaller incision leaving a minimal postoperative scar (~5 cm) hidden by the hairline, the removal of an appropriate amount of excess skin without excessive stretching to prevent the development of ear lobe deformity, and the closure of incision site to prevent the dead space seem to be other major advantages of this technique over the more complex neck lift techniques.

In the authors' series, the dissection area was limited by the mandible upward and by the incision point below and stayed over the platysma muscle to prevent large dog-ear formation and thus a need for an enlarged incision during the skin closure. Also, the amount of excess skin was carefully determined without excessive stretching of the skin to prevent the formation of earlobe deformity, dehiscence, or a spread scar over time.¹³ The accomplishment of

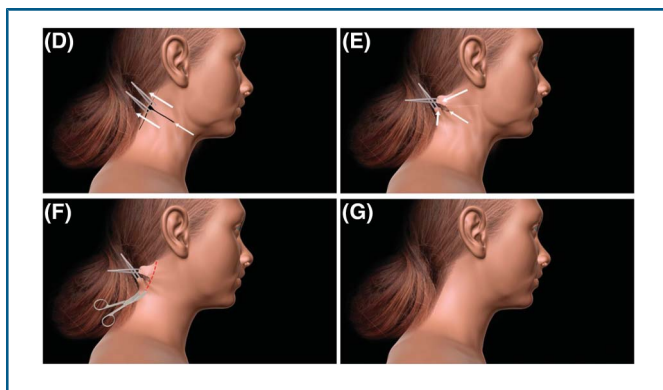


Figure 3. Medical illustration showing the consecutive steps of (D) perpendicular advancement of the midline incision medially to the hairline, (E) vector directions for removal of excess skin, (F) cross-oblique pulling of inferior and superior skin flaps and cutting of their parts next to the incision line, and (G) postoperative scar appearance.

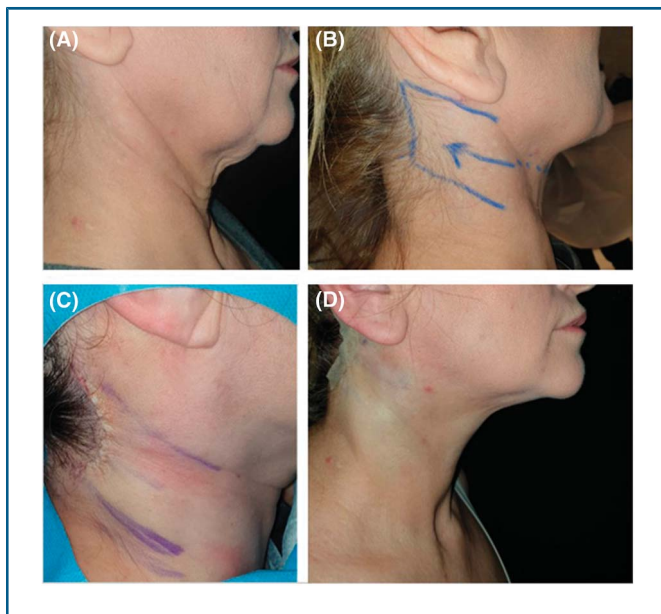


Figure 5. (A) Preoperative view, (B) flap planning, (C) final appearance of the scar, and (D) early postoperative view.

appropriate neck skin excision in the authors' series is also important given its direct correlation with the successful outcome of a neck rejuvenation operation.^{11,14,15}

Complications related to isolated neck rejuvenation operations are largely dependent on the extent of the procedure and may include seroma, hematoma, nerve injuries, infection, and skin necrosis.^{5,16,17} The use of a small incision and well-defined dissection area in the authors' technique is particularly important in providing a safer surgical area in terms of the neck vasculature, which together with the absence of the dead space reduces the risk of potential postoperative complications (i.e., bleeding, hematoma and delayed healing). Accordingly, the postoperative complications in the authors' series involved transient ecchymosis (21.3%) and hypertrophic scar (17.0%), which was resolved either by intralesional steroid and silicon sheet application or scar revision, while none of the patients developed suture breakage or loosening, infection, or bleeding postoperatively. Earlobe deformity, which is among the noticeable complaints after the lower face and neck lift surgery,^{18,19} was not observed in the authors' patients. Thus, the use of a small incision alongside the hairline in neck skin excision surgery, instead of a longer incision around the ear lobe used in traditional neck lift surgeries, allows a more natural look postoperatively.^{18,20,21}

Patients with minor aesthetic problems in the neck such as skin laxity and sagging skin may refrain from major surgeries with prolonged healing periods and extensive scars; therefore, they frequently seek multiple noninvasive producers (i.e., fillers, lasers and energy-based devices, Botox, micro-needling, golden needle therapy, mesotherapy).^{3,22–24} However, noninvasive options rarely achieve a satisfactory outcome, and the results are not only temporary but are time-consuming and costly, besides the potential risk of

misdiagnosis and serious complications (i.e., skin infection, skin necrosis, permanent scarring).^{3,23,25–27}

The anterior cervicoplasty has also been used as a local anesthesia-based technique for the removal of redundant skin and underlying tissue in patients troubled by excessive midline skin of the neck (turkey neck appearance).^{13,28,29} However, it is a more complex procedure (involving submental excision, midline platysmal placcation and cutaneous Z-plasty) than the authors' operation, and although it was effective at restoring the cervico-mental angle, it leaves a very problematic final scar.^{13,28,29}

Hence, direct neck skin excision surgery seems to offer an effective long-term solution for patients seeking rejuvenation only to address the skin-related problems in the neck appearance. These problems are not advanced enough to justify a more complex isolated neck lift surgery involving also the platysmal maneuvers but are troublesome enough to make patients seek a long-lasting and safe treatment, which noninvasive procedures largely fail to provide. Nonetheless, it should be noted that the average age of women in this study was 42 years, and thus the utilization of direct skin excision in the younger population seems to confer an additional age-related advantage of the minimal risk of the disharmony between the face and neck when only the neck is addressed, since their lower face laxity is still relatively minor. The simple skin excision technique may also be useful when revising the neck portion of an unsatisfactory facelift.

The main drawback of this technique seems to be its limited application as considered to be an optimal approach particularly in younger women; therefore, its effectiveness would be limited in older women or any patient with evidence of platysmal banding, in men because of their beard line and in the elderly due to poor skin elasticity. In addition, clinically, 12-month follow-up is not a long follow-up period for a neck lift, representing a limitation of the study.

In conclusion, the authors' findings revealed the favorable aesthetic outcome of a local anesthesia-based direct neck skin excision surgery in patients with skin laxity and sagging skin in the neck in terms of achievement and maintenance of tighter appearance in the neck, with minor and manageable complications, and high patient satisfaction. The use of a small incision and a well-defined dissection area and the accomplishment of the appropriate amount of neck skin excision with avoidance of excessive stretching of the skin and the dead space are the main advantages of this local operation. Accordingly, patients experienced minor postoperative complications (i.e., hematoma, bleeding, ear-lobe deformity), faster healing, and long-term maintenance of a tighter appearance in the neck, significantly contributing to their final satisfaction with the operation. Hence, this local anesthesia-based day surgery seems to offer an ideal solution in patients with mild aging signs confined to skin laxity and sagging skin in the neck, enabling a long-term tighter appearance in the neck while leaving minimal or invisible

scars and offering the comfort of an immediate return to everyday activities.

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