Difficult Necks and Unresolved Problems in Neck Rejuvenation

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KEYWORDS

• Neck rejuvenation • Neck lift • Face lift • Aging face • Cosmetic surgery

KEY POINTS

- Aesthetic changes related to facial aging include excess skin laxity, volume loss, and contour irregularities and may impart an aged or unattractive facial appearance.
- Neck rejuvenation techniques aim to restore the features of facial beauty found in youth including a well-defined jaw contour, optimal cervicomental angle, smooth-appearing skin without laxity, and normally positioned soft tissue volume.
- Variations in anatomy, skin quality, and fat content make some cases inherently challenging and may limit the degree to which improvement can be made.
- Specific considerations and techniques may be used to address these problem areas and improve outcomes.
- Careful patient evaluation, counseling, and management of expectations is critical for patient satisfaction in difficult cases.

INTRODUCTION

The appearance of the neck has a profound impact on the overall youthfulness and attractiveness of the face. Changes of facial aging involve the skin, soft tissue, and underlying bone loss as this process progresses. Over time, excess skin laxity, volume loss, and contour irregularities combine to impart an aged and unattractive look. All facial rejuvenation procedures aim to restore the ideal features of facial beauty found in youth.

Facelift and necklift operations have grown in both societal acceptance and popularity since the 1970s.[1] A better anatomic understanding of the dynamics of facial aging coupled with improved techniques for superficial musculoaponeurotic system (SMAS) mobilization have established these procedures as powerful treatment options.[2,3] There are now a variety of sound techniques that can be performed safely and effectively.

However, the success of surgery does not solely depend on technique. Variations in anatomy, skin quality, and fat content make some cases inherently and particularly challenging. Additionally, psychological expectations vary based on the individual's perception of the problem and motivation for change. Patient satisfaction after surgery can be improved through careful communication of these inherent limitations and by setting realistic expectations. Only after rigorous patient evaluation and counseling can technical modifications of the surgical approach prove useful.

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The goal of this article is to examine the difficult neck. The most common difficult situations encountered during neck rejuvenation are presented and several unsolved problem areas discussed. Clinical examples as well as specific surgical approaches are included.

MOST COMMON DIFFICULT SITUATIONS

Anterior Hyoid and/or Retrognathia

The ideal neck displays a well-defined jaw and optimal cervicomental angle, which reflect a balance between underlying bony support and soft tissue projection. The variable anatomy of the hyoid bone and mandible may limit the ability to restore these features.

The hyoid bone is a horseshoe-shaped bone in the midline of the anterior neck typically found at or above the level of the fourth cervical vertebra. Unlike other bones, the hyoid is only loosely articulated with adjacent bony structures and mostly suspended by the suprahyoid and infrahyoid musculature.[4] In 1992, Guyuron[5] performed cephaloxerograms on 54 patients and reported a variable hyoid position in both the cranial–caudal and anteroposterior dimensions. This variation can influence the cervicomental angle as the suprahyoid muscles insert on the hyoid bone from their origin on the inferior mandible. Ideally, this angle should measure between 105° and 120°.[6]

A high and posterior hyoid position is most favorable, because the suprahyoid muscles course horizontally to create a sharp cervicomental angle. Conversely, a low and anterior position is associated with a vertical orientation and more obtuse angle. This configuration can lead to the appearance of a double chin or heavy neck.

The hyoid position is important to identify preoperatively, because it will influence the degree to which improvement can be made. The Dedo classification system was designed to categorize patients anatomically, with class VI representing a low hyoid position.[7] These patients must be counseled about the limitations of surgery and their expectations should be managed appropriately.

In addition to the hyoid, the position, size, and shape of the mandible can vary. Several methods for assessing chin projection have been described, using either the lower vermillion border or Frankfurt horizontal plane as landmarks.[8] In men, the chin should project to a point along a line tangential to the lower vermillion border. If the Frankfurt plane is used, projection should extend to a perpendicular line that is tangential to the nasion. In women, chin projection should be just posterior to these points. Retrognathia describes a poorly projected, or weak, chin and may be congenital or acquired with age owing to resorption. Micrognathia is a condition in which an underdeveloped chin is associated with dental malocclusion in Angle class II position. Microgenia is characterized by an ill-defined chin without associated occlusal abnormalities.[9] These conditions pose a challenge during neck lift surgery because the inherent structural deficiency of the chin cannot be overcome by improvement in the cervicomental angle alone. In these cases, the aesthetic goal of restoring definition of the jawline is difficult to achieve and the contour will likely remain blunted. Chin augmentation using alloplastic implants or orthognathic consultation in cases with associated malocclusion should be considered. Chin augmentation or advancement genioplasty can help mask the effects of an anterior hyoid position[10] (**Fig. 1**).

Thick/Heavy Skin

The skin is the most external tissue involved in the process of facial aging and, therefore, can betray the youthfulness of facial appearance even in the absence of other signs. Ultimately, the success of neck rejuvenation depends on the ability to correct excess tissue laxity, suspend the strength layers, and redrape the skin into a more youthful position. Definition of the jawline, cervicomental angle, sternocleidomastoid muscle, and trachea are the desired features associated with the aesthetic ideal.[11] This result requires skin that is able to conform, tighten, and contract. The

Fig. 1. Anterior hyoid position.