Contouring the Aging Neck With Submandibular Gland Suspension

Submandibular gland suspension, a procedure designed to complement surgical rejuvenation of the aging neck, uses largely blunt dissection and suspension to the mandibular periosteum to elevate the gland, improving neck contour without excision of submandibular gland tissue. Although there is an increase in operative time, the risk of intraoperative and postoperative bleeding problems is very low, and the authors report high patient satisfaction. (Aesthetic Surg J 2006;26:465–471.)

Loss of neck contour, especially the cervicomental and cervicomandibular angles, is a common sign of aging. Attenuation of the cervical fascia and musculature tone are two of the most important factors leading to age-related loss of integrity in the submental sling. Residual submandibular gland ptosis in the patient with a difficult neck often persists even after other surgical objectives (correction of the platysma, cervical fat, and skin laxity) have been accomplished in a comprehensive cervical rejuvenation procedure. Submandibular gland accentuation in the submandibular plane is a frequently-occurring phenomenon that, if uncorrected, may lead to a less than pleasing aesthetic result. Submandibular gland suspension can be a valuable complement to a surgical procedure designed to comprehensively rejuvenate the difficult neck.

Relevant Anatomy

Located in the submandibular triangle, the superficial surface of the gland lies against the mandibular body and is covered by the skin, superficial fascia, platysma, and deep cervical fascia in the caudal extent. Key anatomic observations include the extracapsular positions of the marginal mandibular, hypoglossal and lingual nerves, and major glandular perforators originating from the superior thyroid and facial or lingual arteries (Figure 1).1

Patient Selection

When patients with submandibular gland ptosis seek elective aesthetic improvement of the aging neck, we evaluate the degree of glandular ptosis on each side of the neck to determine how much the ptosis will compromise the aesthetic outcome. Additionally, we evaluate patients (asking them to assume animated and static facial postures) for the presence of platysmal bands, study and estimate pre- and subplatysmal fat accumulation to the closest degree possible, and note the cervicomental angle, lateral mandibular angle definition, and hyoid position.

We chose patients with moderate or limited submandibular gland ptosis for submandibular gland suspension. In patients with very ptotic submandibular glands, we do not use suspension because, in such patients, results will be better using gland contouring with an excisional technique.

Using a graded surgical approach, we address problematic areas in each patient. Depending on the amount of cervical fat, we frequently, but not always, combine a midline platysmaplasty with periplatysmal lipoplasty. We often accompany face and neck rejuvenation with selective facial and mandibular fat grafting.

We usually use intravenous sedation without intubation, paralytic drugs, or standard general anesthesia (although we see no reason why general anesthesia would not work well). Our standard protocol includes a thorough betadine preparation of the oral cavity followed by intraoral administration of local anesthesia to block the area.

Operative Technique

Gain neck exposure through an inconspicuous 3.5 cm submental incision, providing access to the platysmal plane. Carry the dissection beneath the platysmal muscle to the area in which the submandibular gland has been previously marked. This allows direct visualization of the
submandibular capsule. Make a vertical 1.5-cm capsular incision along the anterior-inferior surface parallel to the mandibular body. Very carefully, dissect around the gland and free any inferior and lateral pericapsular attachments to allow intracapsular glandular mobility. Insert a blunt, fine snap dissector, oriented cephalad to the lateral aspect of the capsular gland border.

To control insertion and placement, place a finger into the patient’s mouth at the target site between the first and second mandibular molars. Insert the instrument until the inferior border of the mandible is located, and then advance it subperiosteally along the lingual aspect of the mandibular body up to the intraoral mucosa. The tip of the instrument should be lateral to the sublingual gland and medial to first and second molars. Palpate the mucosa tenting with the instrument tip, and carefully create a 2- to 3-mm mucosal incision. Deliver the tip into the oral cavity, and then snap and caudally deliver a 2-0 suture via the mandibular periosteum, bringing it back out through the neck (Figure 2).

Perform a second pass, also from inside the capsule, but make this pass lateral to the gland. The second pass also creates a tunnel under the periosteum of the mandible, but make this dissection about 3 cm anterior to the initial tract. Rotate the snap so that the same 3-mm mucosal incision can be used for the instrument tip exposure. Snap the opposite end of the free suture and bring it down into the neck. After both suture ends have been pulled caudally, traction on the suture will ensure adequate purchase of a sling of periosteum that provides the support: the zone of periosteal adhesion (Figure 3).
Figure 2. Suture delivery of the first pass through the lingual mucosa, mandibular subperiosteal tunnel, and submandibular capsule in a cephalad to caudal direction.

Figure 3. Passage of the remaining intraoral free end of the suture caudally, creating a second pass subperiosteal tunnel at a position on the mandible 3 cm anterior to the first pass, establishing a suspension arc or zone of periosteal attachment.
**Figure 4.** An oblique view demonstrating anterior and posterior tunnels on the lingual surface of the mandible.

**Figure 5.** Elevation of the gland into a youthful position while keeping the suture taut.
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Operative Strategies

Figure 6. Placement of a figure-of-eight suspensory sling tied to secure the desired glandular elevation. The vectors and strength of suspension lie across the zone of periosteal attachment arc.

Figure 7. Closure of the submandibular capsule, cinching it superiorly with permanent sutures.
Then, elevate the gland while keeping both delivered suture ends taut (to prevent slacking). Thread a free-eyed needle onto the suture that is anchored high in the capsule, and tie a figure-of-eight across the inferior aspect of the gland, thereby creating a suture hammock to distribute the suspensory forces broadly across the caudal aspect of the gland. With gentle digital pressure, elevate the gland superiorly to the level of the digastric muscle and the inferior mandibular borders (Figures 4 and 5). Cinch the knot, hand tie it, and secure the elevated position (Figure 6).

After durable suspension is achieved, imbricate the incised periglandular capsule with a permanent suture to bolster the suspension sling inferiorly (Figure 7). Verify hemostasis, close the intraoral incision with one chromic suture, and close the submental incision in the usual way (Figure 7).

Discussion

Submandibular gland ptosis is a challenging problem in face and neck rejuvenation. Gland ptosis creates a fullness in the neck that SMAS surgery and platysmaplasty does not address. Our technique for submandibular gland suspension relies primarily on the strength of the lingual mandibular periosteum suspension arc and adjunctive support of the capsular plication and imbrication.

Figure 8. A, C, E, G, Preoperative views of a 59-year-old man with a ptotic submandibular gland. B, D, F, H, Postoperative views following submandibular gland suspension.
Although there is an increase in operative time, patient satisfaction has been high (Figure 8). The risk of intraoperative and postoperative bleeding problems is very low. No submandibular gland tissue is excised and the suspension is largely a blunt dissection. With glandular elevation, patients with moderate submandibular gland ptosis can improve neck contour, enhancing face and neck rejuvenation.

Reference

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