

Innovative Tactic in Submandibular Salivary Gland Partial Resection

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Summary: Adequate neck contour is one of the goals in facial rejuvenation. In some patients, treating the submandibular salivary gland (SMSG) ensures a satisfying result. Hematoma, sialoma, and paralysis of the depressors of the lower lip may occur when the deep neck is approached. The objective of this work is to present a new tactic to prevent the aforementioned complications. Two hundred forty consecutive neck lift patients with partial resection of the SMSG were studied. The tactic consisted of placing sutures to facilitate the retraction of the platysma muscle and the accompanying marginal mandibular and cervical branches of the facial nerve during the resection of the SMSG. It also included stitches that bring the platysma muscle in contact with the remaining SMSG, sealing the dissected area. The first 25 (control) subjects did not undergo the tactic; the remaining 215 (study group) did. The occurrence of paralysis of the depressors of the lower lip and of hematoma and sialoma originating from the SMSG resection was observed. When comparing the control group with the study group, the rates of hematoma (8% vs 0%) and sialoma (24% vs 0%) were significantly higher in the former. Paralysis of the depressors of the lower lip also had a higher rate in the control group (4% vs 0.9%) although this difference was not statistically significant. The surgical tactic described is efficient in preventing the occurrence of hematoma, sialoma, and paralysis of the depressors of the lower lip in neck lift with partial resection of the SMSG. (*Plast Reconstr Surg Glob Open* 2014;2:e274; doi: 10.1097/GOX.000000000000240; Published online 23 December 2014.)

Dissatisfaction with neck contour is one of the most frequent complaints of patients seeking facial rejuvenation.¹ Submandibular sali-

vary gland (SMSG) bulge is a very common finding among these patients.^{2,3} One way to approach this fullness is by partially resecting the superficial lobe of the SMSG.²⁻⁴ Although this surgical removal has been described in detail,² many surgeons are not comfortable in performing it because of its potential complications, specially hematoma, sialoma, and injury to the marginal mandibular nerve and to the superior cervical branches of the facial nerve.^{2,5}

Quilting sutures are effective in preventing seroma by obliteration of dissected spaces.⁶ Hematoma in facelifts encountered a similar solution by the use

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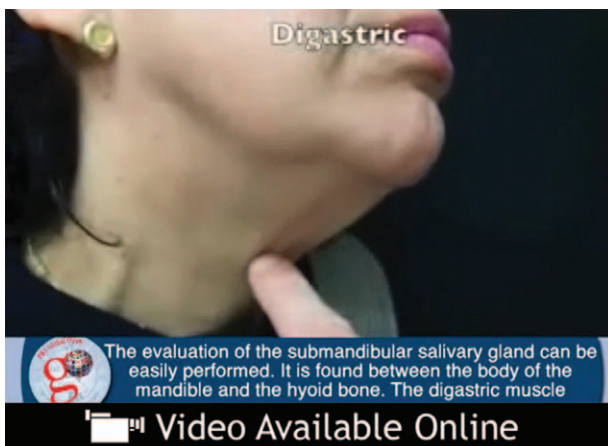
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of transfixing stitches encompassing skin flap and the superficial muscular aponeurotic system (hemostatic net).⁷

The objective of this study is to add a new surgical tactic to the partial resection of the superficial lobe of the SMSG. In essence, the platysma muscle flap is manipulated with simple sutures that help to preserve the marginal mandibular nerve and the superior cervical branches of the facial nerve as well as to prevent fluid collection (blood and saliva) from occurring.

METHODS

Two hundred forty patients were submitted to neck lift, including partial resection of the SMSG, between July 2011 and January 2014. The first 25 patients served as control subjects; the remaining 215 were included in the study group in which the proposed tactic was used. Hematoma and sialoma originated from the SMSG resection and paralysis of the depressors of the lower lip were observed during the first 72 hours after surgery. The results were analyzed using Fisher's exact test. A *P* value of 0.05 or lower was established for rejection of the null hypothesis. (See **Video 1, Supplemental Digital Content 1**, in which an edited surgery demonstrates the tactic to avoid nerve injury and fluid collection during partial resection of the superficial lobe of the SMSG. This video is available in the "Related Videos" section of the full-text article on <http://www.PRSGO.com> or available at <http://links.lww.com/PRSGO/A68>.)



Video 1. See video, Supplemental Digital Content 1, in which an edited surgery demonstrates the tactic to avoid nerve injury and fluid collection during partial resection of the superficial lobe of the SMSG. This video is available in the "Related Videos" section of the full-text article on <http://www.PRSGO.com> or available at <http://links.lww.com/PRSGO/A68>. The audio in this video is in Portuguese and the English transcript is available at <http://links.lww.com/PRSGO/A69>.

After general anesthesia with orotracheal intubation, tumescent subcutaneous infiltration of a local anesthetic solution is performed to facilitate dissection.

Submental incision is placed about 2–3 cm posterior to the submental crease, allowing a more direct access to the SMSG.⁸ After subcutaneous detachment, the right platysma muscle is lifted and the capsule of the SMSG visualized.

To ensure adequate retraction of the platysma muscle and the accompanying branches of the marginal mandibular nerve, a stitch of 2-0 nylon is placed, encompassing the skin and the platysma muscle (Ethilon 2-0, triangular 30-mm needle, Ethicon, Brazil) (Fig. 1). This maneuver ensures the visualization of an adequate surgical field and proper protection of the mandibular nerve. This stitch is later removed once the superficial lobe of the SMSG is resected.

After the release of the gland from its capsule, an electrocautery (Force FX, Valleylab, Mass.) is used to remove 50–75% of the superficial lobe of the SMSG.² As the gland is richly irrigated, special care is taken to control bleeding. The use of a powerful suction with a Yankauer tip is essential to accomplish this step. The SMSG capsule is closed with a 3-0 gluconate monofilament suture (Monosyn 3-0, cylindrical 26-mm needle, B. Braun, Germany). (See **Supplemental Digital Content 2**, which shows the complete sequence of the stitches, <http://links.lww.com/PRSGO/A70>.)

The maneuver to prevent sialoma and hematoma from the SMSG is then performed. The freed platysma muscle is brought in direct contact with the remaining SMSG and the mylohyoid muscle by suturing these structures together using another 3-0 gluconate monofilament suture (*idem*) (Figs. 2–4). This effectively obliterates the dead space. In larger glands, with wider dissections, 2 or more stitches are

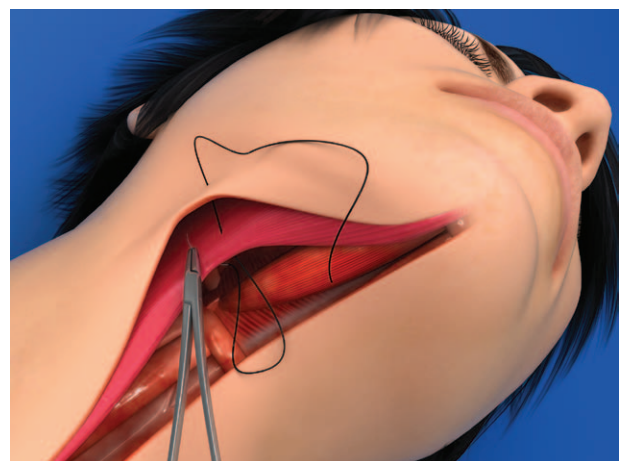


Fig. 1. Stitch to appropriately retract the platysma muscle from the operating field.

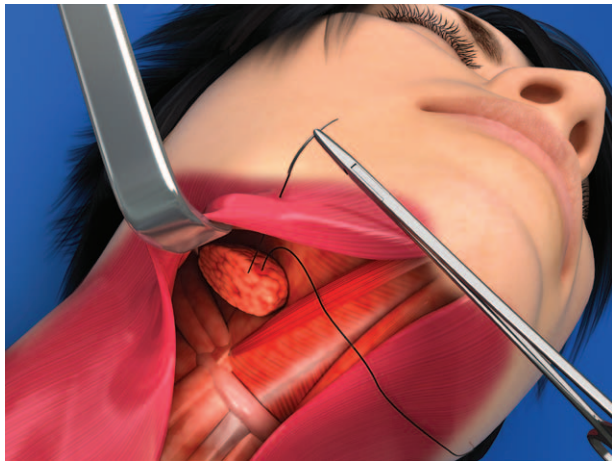


Fig. 2. Closure of the residual SMSG space: the needle passes through the gland and emerges through the platysma muscle.

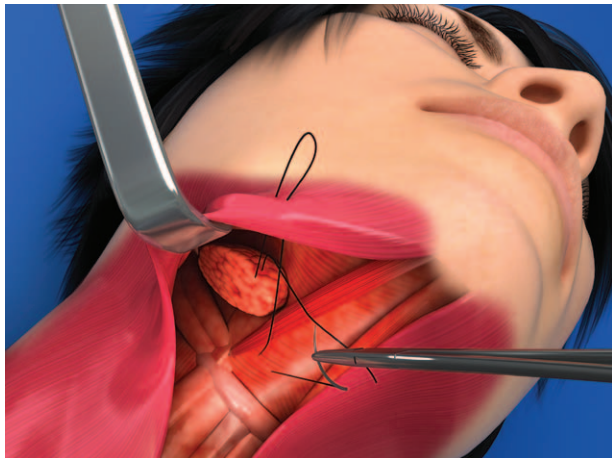


Fig. 3. The needle returns through the platysma muscle incorporating the mylohyoid muscle.

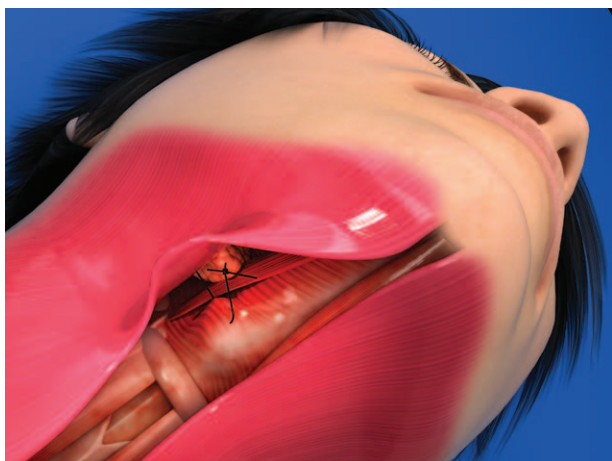


Fig. 4. The SMSG residual space closed.

eventually needed. Importantly, the stitch is placed 4–5 cm from the mandibular margin.

Once the right side is treated, the left SMSG is then approached in the same manner.

Drains are not used. A light compressive bandage is used for 48 hours. (See **Supplemental Digital Content 3**, which demonstrates a patient who underwent partial resection of the SMSG using the proposed tactic, <http://links.lww.com/PRSGO/A71>.)

RESULTS

Two patients (8%) in the control group presented hematoma, whereas no patient had such complication in the study group ($P = 0.010$). Six patients (24%) had sialoma in the control group, an incidence higher than in the study group, in which this complication did not occur ($P < 0.001$). Two patients in whom the tactic was used presented paralysis of the depressors of the lower lip, a problem encountered in 1 patient (4%) of the control group ($P = 0.282$).

DISCUSSION

Since de Pina and Quinta⁴ first published the removal of the SMSG for aesthetic reasons in 1991, few articles have addressed the issue. Feldman² certainly offered the most complete description of this surgery, demonstrating its reproducibility. In his view, shared by the authors, bleeding is the most feared complication. Despite careful hemostasis, perforating arteries of the gland constitute a considerable postoperative risk for bleeding. In the tactic described here, the platysma muscle is brought over the remaining surface of the gland, effectively closing the dissected space and minimizing the occurrence of hematoma.

Sialoma is another possible complication after partial resection of SMSG.^{2,5} Although not frequent, it may lead to a prolonged postoperative recovery. In some patients, the symptom is swelling in the SMSG area that usually takes up to 3 months to resolve. In other cases, the volume exceeds the patient's tolerance to visual discomfort and pain, demanding repeated needle aspirations until the complete closure of the remaining salivary ductiles. Before the authors started to use the tactic proposed here, they operated on their first 25 patients with partial resection of the SMSG (control group), of which 15 presented with persistent swelling. Six of these 25 patients needed aspiration and were considered to have sialoma. Although the injection of toxin botulinum has been described as an alternative to treat salivary fistulae in reconstructive surgery,^{2,9} these patients were not submitted to this type of therapy, mainly because the authors were very comfortable with the efficacy of the needle aspiration method.

The incidence of sialoma observed in the control group led the authors to create a tactic to solve this inconvenient problem. In the study group, 215 patients underwent the tactic: no sialoma occurred and a clear diminution on the swelling was observed. Similar to what is seen in laryngectomies, in which the use of pectoralis major myocutaneous flaps prevents the occurrence of salivary fistulas,¹⁰ this maneuver with the platysma muscle seals the area where the saliva could eventually be collected.

Paresis and paralysis of the depressors of the lower lip are complications that usually occur due to injury to the marginal mandibular nerve and/or to the superior cervical branches of the facial nerve.² Pulling the platysma muscle and these accompanying nerves from the operating field with a simple stitch is an appealing idea. Although the results did not show statistical difference in the rate of these complications between the group that received this maneuver and the one that did not, the convenience of having a safer and clearer operating field justifies its application.

Finally, it must be mentioned that the authors do not drain the subcutaneous space. Instead, they apply the hemostatic net concept in which the dissected space is closed with a running transfixing suture of 5-0 nylon, encompassing the skin and the superficial muscular aponeurotic system-platysma. This tactic ensures that no hematomas will happen in this area.⁷

CONCLUSIONS

Presented is a tactic to prevent hematoma, sialoma, and injury to the marginal mandibular nerve and to the superior cervical branches of the facial nerve in partial resection of the SMSG gland. The platysma muscle flap is manipulated with stitches

that provide a secure and reproducible way to avoid fluid collection and to preserve the nerves from being injured.

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