Invited Discussion on: Aesthetic Submandibular Gland Partial Resection—A Systematic Review and Critical Analysis of the Evidence

Mario Pelle Ceravolo¹

Received: 9 January 2020 / Accepted: 11 January 2020 / Published online: 7 February 2020
© Springer Science+Business Media, LLC, part of Springer Nature and International Society of Aesthetic Plastic Surgery 2020

Level of Evidence V This journal requires that authors assign a level of evidence to each article. For a full description of these Evidence-Based Medicine ratings, please refer to the Table of Contents or the online Instructions to Authors www.springer.com/00266.

Submandibular Gland Reduction is a Powerful Weapon: Learn When and How to Use It

All of us should be grateful to colleagues who review medical literature on a specific subject. Readers have a chance to glance at the most important published papers with the advantage of saving time and energy.

Dr. Benslimane and his colleagues screened a total of 636 papers selecting 6 of them as eligible reports. A total of 602 patients over a 28-year period do not represent a large number of patients. Nevertheless, it allows us to obtain a general vision of the risks related to this procedure.

Interest around SMG reduction has been raised substantially over the last 15 years after the papers by Connell, Marten, Sullivan, Feldman, Ramirez, Mendelson, Guyuron, Rohrich, Auerswald, Bravo, Pelle Ceravolo, etc. [1–17], and as a result, an ever increasing number of surgeons are carrying out SMG reduction nowadays in conjunction with face lift.

The authors propose several interesting considerations on this still controversial subject.

I would add a few thoughts on this procedure, based on my long experience on SMG reduction.

Variability of Indication to SMG Reduction

There is a wide variability (5% to 60%) between different surgeons on the frequency of SMG reduction carried out during a face lift.

In my opinion, in a patient with her head positioned at 90° on the horizontal line the visibility of a bulging gland through a plane that joins the mandible border to the hyoid bone constitutes an undoubtful indication for a SMG reduction.

A precise clinical judgment based on vision and palpation, however, is necessary in individuals with fat necks since adiposity often masks the gland protuberance and a gland that is hidden by fat preoperatively may turn into a visible bulge after a contouring lipectomy.

Apart from this well-defined criterion, some surgeons choose to reduce the gland in most of their patients.

The explanation for this variability lies in the concept of neck beauty.

The five Ellenbogen criteria on the beautiful neck [18] mentioned by the authors that represented a milestone in the 1980s can be reduced to two or three, namely: (1) distinct inferior mandibular border, (2) cervico-mental angle of 105°–120°. A third criterion can be added, i.e., a subhyoid depression if a sharper neck contour is the target (Figs. 1, 2)

Both necks in Figs. 1 and 2 are beautiful. The first one, namely “C neck” (fulfilling criteria 1 and 2), is softer and somewhat rounded, and the second, namely “V neck” (fulfilling criteria 1, 2 and 3), has a sharper and more linear look. The main difference remains the absence of a subhyoid depression in a C neck, whereas it is present in a V neck (Figs. 3, 4).

Apart from aesthetic preferences, the surgical conduct to achieve one or the other varies since an additional number

✉ Mario Pelle Ceravolo
mario.pelleceravolo@live.it

¹ University of Padua, Via Giovanni Severano 35, 00161 Rome, Italy

Fig. 1 A natural “C neck.” Criteria 1 and 2 fulfilled

Fig. 2 A natural “V neck.” Criteria 1, 2 and 3 fulfilled

of steps are usually necessary to obtain a visible subhyoid depression and thus a V neck.

These maneuvers are:

- Aggressive subplatysma and often also supraplatysma lipectomy
- Reduction in the submandibular gland
- Removal of a portion of the digastric muscle
- Plication/reduction of the mylohyoid muscle

These maneuvers are carried out usually following a repeating sequence like in a domino effect.

In many patients, the glands are not clearly visible preoperatively since they lie flat with the fat contained in both superficial and deep compartments of the anterior neck. If the surgeon's target is to achieve a subhyoid depression, an aggressive lipectomy over the anterior neck must be carried out to enhance cervico-mental angle sharpness. This creates a concavity over the anterior neck rendering the SMG visible in most patients and necessarily leads to a reduction in the gland. At this point, the digastric muscle will often bulge and must also be reduced. More rarely also the mylohyoid must be treated to obtain a very sharp contour [19].

Fig. 3 A surgical “C neck.” After a cervico-facial rhytidectomy

Fig. 4 A surgical “V neck.” After a cervico-facial rhytidectomy

The choice of diverse aesthetic criteria explains the difference in the percentage of SMG reduction during a facelift among the surgeons who are familiar with this procedure.

In my statistics, SMG reduction is carried out in about 25% of my patients, whereas authoritative colleagues perform gland reduction in over 60% of their patients.

An important point to be considered when choosing the best neck treatment is a patient's expectations and requests. If the patients ask for a specific neck shape, then aggressivity is justified, but in my experience, this happens rarely. It is not common that a patient consulting for a neck rejuvenating procedure points out the glands, unless they are really protruding. Most of the time it is the surgeon who has a gold standard neck in their mind and tends to reproduce an aesthetic pattern, i.e., a V neck, and then “bona fide” suggests a gland treatment. We know that we can easily influence patient's decisions to match ours and we should spend more energy on investigating whether gland reduction fulfills more patient's expectation or our aesthetic model.

Dr. Nahai [20] wrote on the subject “Not every patient requires neck recontouring or subplatysmal procedures to achieve a pleasing aesthetic result, and not every surgeon

involved in neck rejuvenation or neck contouring will embrace this procedure or incorporate it into his or her practice.”

Many patients that I had operated on before I started doing this maneuver came back for a second facelift with some visible gland and did not request its removal. The surgeon must judge with soul searching and a sense of responsibility upon the necessity of this maneuver, since it entails a certain amount of aggressivity and even if the risks are limited, as correctly pointed out by Dr. Benslimane. A complication following a specific treatment suggested by the surgeon and not requested by the patient is never well tolerated by the patient.

Complications of SMG Reduction

I certainly agree with Dr. Benslimane on the importance of this procedure and on the fact that all other solutions to improve gland bulging are ineffective.

However, there is unanimous consensus that SMG reduction is to be carried out only by surgeons with proven experience and deep knowledge of facial anatomy since the gland lies in an area where structures such as facial vessels and nerves are present.

This paper reports on a very low incidence of complications, but all the authors of the selected reports are well-experienced surgeons, and despite this, 21% minor complications and 4.7% temporary mandibular injury were reported.

Should this procedure become common among young surgeons with limited experience, the risks would steeply increase as well as the frequency of complications.

I would like to reinforce Dr. Benslimane following tip: “Finally, it was noted that none of the reports included a validated patient reported outcome measure (PROM) to appraise the aesthetic outcome.” Most of the papers on SMG reduction report complication rates and other details regarding the surgery, but none of them offer a patient’s satisfaction evaluation or a long-term review of the aesthetic results over the neck contour in patients submitted to vigorous neck shaping.

Large undermining and aggressive lipectomies that are associated with important neck sculpting enhance the risk of contour irregularities [21, 22] as also stated in the paper “Sharp mandibular angle and submandibular hollowing are negative outcomes that may occur after aggressive cervical surgery.” This is true also after overgenerous gland reductions “An over resection of the SMG may result in an abnormally large concavity under the body of the mandible and translates visually as an exaggerated submandibular hollowing.”

Furthermore, should iatrogenic hollowness and/or depressions appear in a scarred neck, the treatment is not always simple and may require multiple fat grafting sessions.

The Lateral Approach to the Gland

Another important point is the access to the gland.

Dr. Benslimane states “SMG surgery through submental incision is challenging.”

The operation can be very demanding if carried out through a short incision into the submental groove; this is why most surgeons using the anterior approach place the incision much lower to have a better visibility of the surgical field.

After having used the submental approach for many years, I switched to the lateral approach, i.e., through the preauricular way, and carried out more than 150 gland reductions through this approach [23–25]. For all patients in whom there is no other indication to open the anterior neck, I use the lateral approach to reduce the gland during a face lift (Fig. 5)

The lateral approach, besides avoiding a visible scar in the middle of the neck (Fig. 5f of Dr. Benslimane paper) that could be disturbing for many patients [22], offers good exposure and shortens surgical time through avoiding the anterior neck undermining (Fig. 6a–d).

A revision of the results of this procedure that will be shortly submitted for publication shows satisfactory results with a low complication rate similarly to the submental approach.

The Downward Head Flexion

Regarding the issue of taking photographs with the head bent 30°–45°, I think it is a great method to evaluate the neck structures as well as the view from the bottom, suggested by Dr. Auerswald. However, I cannot agree with the

Fig. 5 SMG reduction carried out through the lateral approach

Fig. 6 **a, c** Preoperative pictures of a 63-year-old patient with anterior skin laxity and moderate adiposity. An obvious SMG is present. **b, d** One-year post-op after cervico-facial lift with LSD technique and SMG reduction through the lateral approach

authors' opinion "A patient does not undergo surgery so that her/his appearance improves in a limited number of postures and positions." If the result of any operation should be optimal in all positions taken by the patient, we could have problems in avoiding scleral show in our blepharoplasty patients when they look forward with their heads bent. And how should we deal with patients undergoing abdominoplasty who would certainly complain of excess skin folds that would when they bend the trunk on their hips?

In my opinion, the "Whatsapp" (downward head flexion or "Connell view") position is definitely useful during the clinical examination to properly evaluate the volume of the gland.

However, it could be detrimental, as also suggested by Dr. Baker [21] and Dr. Guyuron [22], if it is used intra- or postoperatively to evaluate the results, since it may lead to an unnecessary volume (i.e., fat, gland and muscles) removal and may produce a number of undesirable skeletonized necks with artificial appearance and increase the risk of postoperative complications.

To conclude, Dr. Benslimane's paper achieves his target since his purpose was "... to systematically review of the literature to determine risks specifically related to aesthetic SMG partial resection." His paper properly emphasizes the importance of SMG reduction in many patients undergoing a facelift and collects the reports of the best papers dealing with this issue. However, it must be pointed out that this surgery is a complex one, it needs a deep knowledge of anatomy and surgical skill [26], it could be very challenging for unexperienced surgeons, and the indications must be wisely and properly selected respecting patient's safety and demands.

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Human and Animal Participants This article does not contain any studies with human participants or animals performed by any of the authors.

Informed Consent It is not required for this type of study.

References

- Connell BF (1978) Contouring the neck in rhytidectomy by lipectomy and muscle sling. *Plast Reconstr Surg* 61:376–383
- Connell BF, Gaon A (1983) Surgical correction of aesthetic contour problems of the neck. *Clin Plast Surg* 10:491–505
- Connell BF (1987) Neck contour deformities. The art, engineering, anatomic diagnosis, architectural planning, and aesthetics of surgical correction. *Clin Plast Surg* 14:683–692
- Marten TJ (2002) Maintenance facelift: early facelift for the younger patient. *Semin Plast Surg* 16:375
- Marten TJ, Connel FB, Feldman JJ, Little WJ (2005) Treatment of the full obtuse neck. *Aesthet Surg J* 25(4):387–397
- Sullivan PK, Freeman MB, Schmidt S (2006) Contouring the aging neck with submandibular gland suspension. *Aesthet Surg J* 26:465–471
- Feldman JJ (1990) Corset platysmaplasty. *Plast Reconstr Surg* 85:333–343
- Feldman JJ (2014) Neck lift my way: an update. *Plast Reconstr Surg* 134(6):1173–1183
- Ramirez OM, Robertson KM (2001) Comprehensive approach to rejuvenation of the neck. *Fac Plast Surg* 17:129–140
- Mendelson BC, Tutino R (2015) Submandibular gland reduction in aesthetic surgery of the neck: review of 112 consecutive cases. *Plast Reconstr Surg* 136(3):463–471
- Guyuron B (1992) Problem neck, hyoid bone and submental myotomy. *Plast Reconstr Surg* 90:830–837
- Rohrich RJ, Pessa JE (2010) The subplatysmal supramylohyoid fat. *Plast Reconstr Surg* 126:589–595
- Auersvald A, Auersvald LA (2014) Innovative tactic in submandibular salivary gland partial resection. *Plast Reconstr Surg Glob Open* 2:e274
- Auersvald A, Auersvald LA, Uebel CO (2016) Subplatysmal necklift: a retrospective analysis of 504 patients. *Aesthet Surg J* 37:1–11
- Auersvald A, Auersvald LA (2018) Management of the submandibular gland in neck lifts: indications, techniques, pearls, and pitfalls. *Clin Plast Surg* 45(4):507–525
- Bravo GF (2013) Submandibular and parotid gland reduction in facelift surgery. *Plast Reconstr Surg* 132(4S-1):95–96

17. Pelle Ceravolo M, Angelini M, Silvi E (2017) Treatment of anterior neck aging without a submental approach: lateral skin-platysma displacement, a new and proven technique for platysma bands and skin laxity. *Plast Reconstr Surg* 139(2):308–321
18. Ellenbogen R, Karlin JV (1980) Visual criteria for success in restoring the youthful neck. *Plast Reconstr Surg* 66:826–837
19. O' Daniel Gerald. Personal communications
20. Nahai F (2006) Commentary on contouring the aging neck with submandibular gland suspension 2006 july–august 471. *Aesthet Surg J* 26:465–471
21. Baker DC (2006) Face lift with submandibular gland and digastric muscle resection: radical neck rhytidectomy. *Aesthet Surg J* 26(1):85–92
22. Guyuron B (2016) 2017 commentary on: subplatysma necklift: a retrospective analysis of 504 patients. *Aesthet Surg J* 37(1):12–13
23. de Pina DP, Sullivan PK, Freeman MB, Schmidt S, Quinta WC (1991) Aesthetic resection of the submandibular salivary gland. *Plast Reconstr Surg* 88:779–787
24. Gonzales R (2014) The LOPP-lateral overlapping plication of the platysma: an effective neck lift without submental incision. *Clin Plast Surg* 41:211–216
25. Pelle-Ceravolo M, Botti G (2013) *Midface and neck aesthetic plastic surgery*, vol I, 1st edn. Acta Medica Edizioni, Parma
26. O'Daniel TG (2018) Understanding deep neck anatomy and its clinical relevance. *Clin Plast Surg* 45(4):447–454

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.