

# Facelift Approach With a Hybrid SMAS Rotation Advancement Flap in Parotidectomy for Prevention of Scars and Contour Deficiency Affecting the Neck and Sweat Secretion of the Cheek

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Tumors of the parotid gland are generally removed by the standard external bayonet-shaped incision approach without reconstruction of the parotid bed. The disadvantage of this approach is frequently an obvious scar affecting the neck and a conspicuous hollow contour around the angle of the mandible in addition to a sweat secretion of the cheek (Frey syndrome).

To overcome these disadvantages, especially the facial depressed deformity subsequent to parotid surgery, during the last several years, the author has concentrated on facelift incision used in combination with a hybrid SMAS rotation advancement flap.

Twelve patients (7 male; 5 female) ranging in age from 32 to 73 years (mean age, 57.8 years) fulfilled the selection criterion of having a clinically benign discrete parotid lump with a benign preoperative fine-needle cytology result. Parotidectomy was performed using the modified facelift incision in conjunction with the rotation advancement hybrid SMAS flap. All patients were followed up every 3 months during the first year. During follow-up, the patients were specifically asked about their satisfaction with their postoperative appearance and whether they would consent to the operation again.

The vascularized hybrid vicryl mesh/SMAS rotation advancement flap is clinically simple to perform and provides satisfactory cosmetic and func-

tional results in patients undergoing conservative parotidectomy and prevents the gustatory sweating. There are no drawbacks to the use of the modified facelift incision to remove tumors of the parotid gland.

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*Key Words:* Facelift, multiplanar facelift, parotidectomy

Since Gutierrez in 1903,<sup>1</sup> who laid down the guidelines for gaining access to the parotid, tumors of the parotid gland are generally removed by the standard external bayonet-shaped incision<sup>2</sup> (Blair incision) approach without reconstruction of the parotid bed. The disadvantage of this approach is frequently an obvious scar affecting the neck (especially in women)<sup>2,3</sup> (Figs 1 and 2) and a conspicuous hollow contour around the angle of the mandible<sup>3-8</sup> in addition to a sweat secretion of the cheek (Frey syndrome).<sup>3,9-12</sup>

To overcome these disadvantages, especially the facial depressed deformity subsequent to parotid surgery, during the past several years, we have concentrated on using a facelift incision in combination with a hybrid SMAS rotation advancement flap.

The aim of this facelift approach is to allow good exposure, provide invisible cosmetic resultant scars by hybrid augmentation of the parotid bed, and prevent sweat secretion of the cheek during eating.

## PATIENTS AND METHODS

### Patients

Patients fulfilled the selection criterion of having a clinically benign discrete parotid lump with a benign preoperative fine-needle cytology result. All patients were followed up every 3 months during the first year. Twelve patients (7 male, 5 female) ranging in age from 32 to 73 years (mean age, 57.8 years).

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**Fig 1** A 46-year-old woman underwent a right parotidectomy by the standard external bayonet-shaped incision (Blair incision).



**Fig 2** The 8-month postoperative photograph of the patient in Figure 1. The scar affecting the neck is still noticeable.

During follow-up, the patients were specifically asked about their satisfaction with the postoperative appearance and whether they would consent to the operation again.

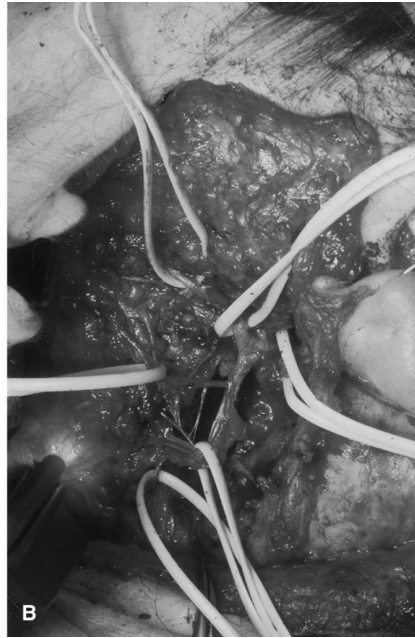
### Methods

A standard tragal incision with preservation of the incisura of the tragus was used.

The preauricular incision is carried out along anatomic interfaces, along the posterior margin of the tragus and not on its interface. A small step in the incision at the inferior tragus is necessary to preserve a distinct inferior tragal border. The incision is curved around the lobe of the ear with preservation of the natural sulcus between it and the cheek. The postauricular incision is placed directly in the existing auriculomastoid groove, and the mark is turned

posterior at the level of the superior aspect of the auditory canal. The occipital portion of the incision is directed along the occipital hairline in such a way that no scar is presented within the fine hair on the nape of neck.

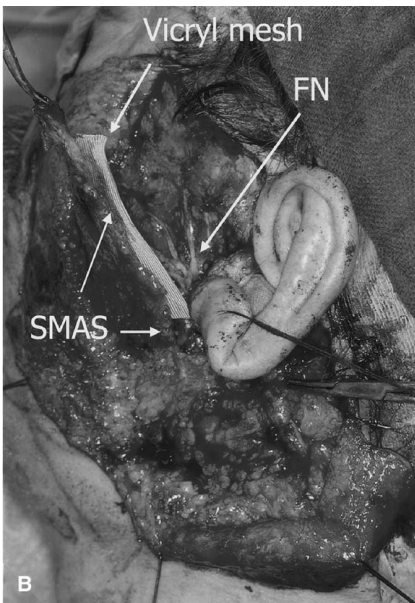
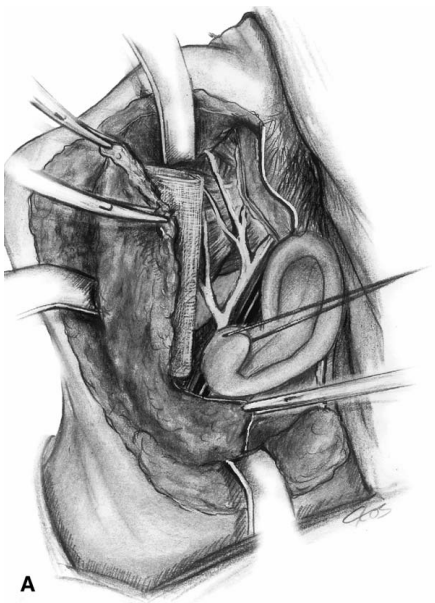
The SMAS is incised horizontally 1 cm inferior to the zygomatic arch (the midportion of the tragus is a usual landmark). This is carried forward to the malar eminence. A vertical incision is designed along the preauricular region along the posterior border of the platysma, to a point 5 to 6 cm below the mandibular border. SMAS elevation is begun sharply, overlying the parotid gland. The dissection is carried on along the posterior border of the platysma. It is important not to buttonhole the flap or to penetrate the tumor capsule if it is superficial. Considerable care is required to raise the SMAS flap at a uniform level and to ensure a good blood supply to the skin.



**Fig 3** (A) Schematic drawing of the incision used to gain access to the parotid region. (B) Intraoperative view of the left surgical site after reflection of the flap using the modified facelift incision approach. There is access to the most anterior extension of the parotid gland. The emergence of the facial nerve at the base of the skull and its ramifications are saved. The nerves are marked with loops around the nerves after performing total parotidectomy.

Although it is possible to elevate the fascia superficial to the platysma, it is preferable to carry the dissection just along the undersurface of the platysma, which provides a thicker, more useful flap. Identification of the platysma muscle low in the neck, and then continuing the dissection anteriorly and cephalad, helps in identifying the proper plane of the SMAS elevation. Dissection proceeds medially toward the anterior edge of the parotid. As the an-

terior border of the parotid is reached, on careful observation sub-SMAS fat becomes visible as the surgical dissection is carried anterior to the brownish parotid gland, exposing the more medial areolar plane that overlies the master muscle. Once this point in flap elevation is reached, dissection can proceed bluntly with gentle finger-gauze dissection. This areolar plane is usually encountered first within the region of the tail of the parotid because this is



**Fig 4** (A) Schematic drawing of the incision used to gain access to the parotid region. (B) Intraoperative view. After total parotidectomy, the resulting retromandibular depression is improved by using the rotation advancement hybrid/SMAS. Therefore, the SMAS is doubled onto itself, incorporating a vicryl mesh to augment the parotid bed. In this method, after SMAS mobilization and redraping along the proper vectors of rotation, the excess SMAS soft tissue is rolled under itself along the markings and folded over a vicryl mesh to create a thick layer for augmentation of the retromandibular groove.

narrowest portion of the gland. The most difficult portion of the SMAS to free up from the gland is where the parotid duct leaves the gland. The SMAS is commonly adherent at this point, although it can usually be dissected with careful technique. Once the parotid is freed by dissection, the SMAS flap is easily elevated in the areolar plane that exists between the superficial and the deep fascia overlying the masseter muscle. It is important to free the SMAS from the underlying parotid cutaneous ligaments in this region of the dissection so that adequate flap mobility is obtained.

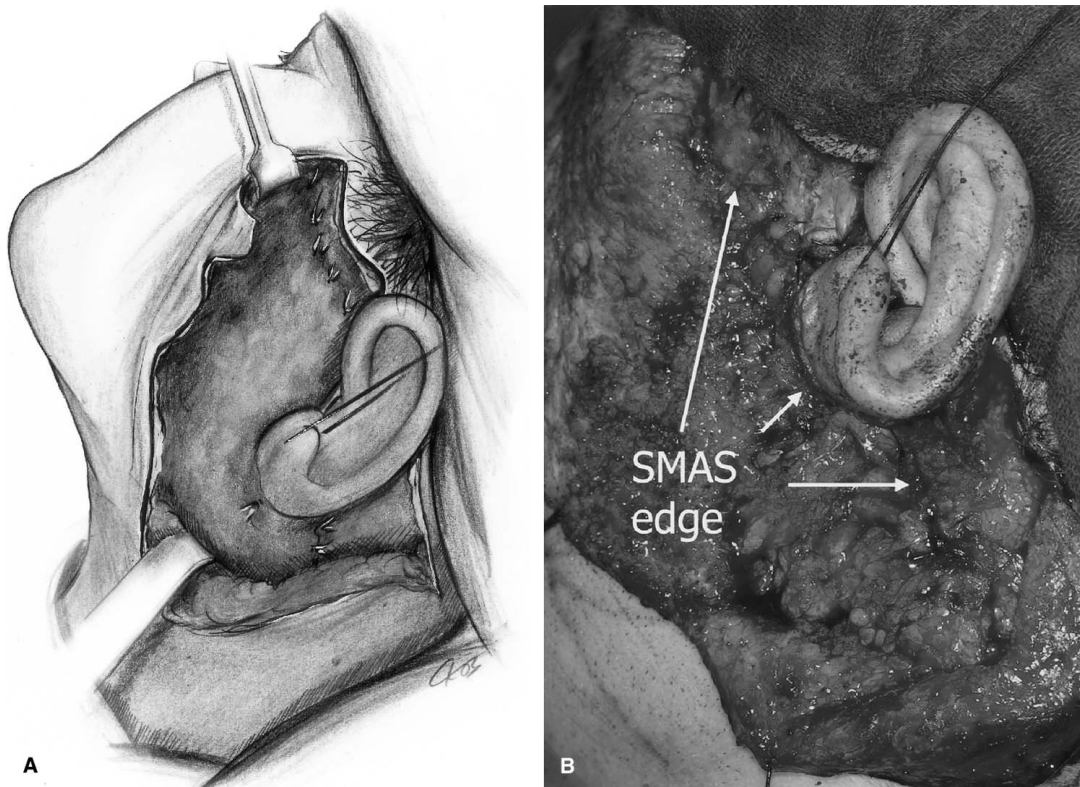
Once the dissection is concluded, parotidectomy proceeds according to conventional method.<sup>13</sup> The surgeon identifies the emergence of the facial nerve at the base of the skull and then proceeds to free its rami forward and outward (Fig. 3). After parotidectomy is performed, the resulting retromandibular depression will be improved by using the SMAS onto itself, incorporating a vicryl mesh (Fig 4). In this method, after SMAS mobilization and redraping along the proper vectors of rotation, the excess SMAS

soft tissue is rolled under itself along the markings and folded over a vicryl mesh to create a thick layer for augmentation of the retromandibular groove.

The vicryl mesh is embedded in the folded SMAS. This thickened hybrid flap is fixed under moderate tension, usually beginning at the malar origin, securing the SMAS to the periosteum of the zygomatic buttress. The closure is continued, and the excess of the skin is trimmed (Fig 5).

#### RESULTS

Data were returned from medical records, and the results were analyzed. The final histopathologic diagnosis revealed pleomorphic adenoma in 10 (5 male and 5 female) patients and chronic nonspecific parotitis in 2 (male) patients. No evidence of accessory or auricular magnus nerve injury was seen. The hollow occurring in the absence of reconstruction or augmentation was markedly improved, as illustrated by Figure. Symmetry of the cheeks was restored (Figs 6–9). All patients were satisfied with the cosmetic outcome and would choose the same procedure.



**Fig 5** (A) Schematic drawing of the incision used to gain access to the parotid region. (B) Intraoperative view. This thickened hybrid flap is fixed under moderate tension, usually beginning at the malar origin, securing the SMAS to the periosteum of the zygomatic buttress. The closure is continued, and the excess of the skin is trimmed as far as necessary.



**Fig 6** Frontal view of a 54-year-old woman with a marked swelling of the parotid region caused by a pleomorphic adenoma of the parotid gland.



**Fig 7** Frontal view of the patient after tumor removal. Notice the symmetry of her face.

#### DISCUSSION

Since the incision was proposed by Gutierrez in 1903,<sup>1</sup> many attempts have been made to modify the incision and to address the issue of hypertrophic scars.<sup>2,14-23</sup>

The advantage of our modified facelift incision is that it leaves no visible scars. This facelift incision approach for parotidectomy allows very good exposure, not only of the parotid area, but also in the submandibular region and over the sternocleidomastoid muscle, similar to the incision described by Ferreria et al in 1990.<sup>21</sup> It obtained good exposure of all divisions of the facial branches. However, the preauricular facelift incision should be placed along anatomic interfaces.<sup>3,21</sup> The type of this incision improves the aesthetic results in that it lacks the horizontal temporal incision line anterior and improves access to the anterior portion of the parotid gland, thus improving the aesthetic results. Differences in

color and texture are less obvious, and the scar will appear as a reflected highlight.

If enlargement of the surgical exposure is necessary, a vertical incision of the skin may be placed below the ear lobe. After mobilization and redraping of the skin, the excess tissue is excised, including the accessory incision below the lobe, as is done in like in facelifting.

Despite that Appiani<sup>18</sup> first mentioned in 1967 the possibility of a rhytidectomy incision for exposing the parotid gland, which was followed by other references in the plastic,<sup>3,17-19,23</sup> maxillofacial,<sup>21</sup> and otolaryngeal<sup>2,14,20,22</sup> literature, without other surgical maneuvers the isolated facelift incision does not eliminate the depression deformity around the angle of the mandible.

For decades, Frey syndrome has been exhaustively documented as a fairly common, troublesome side effect of parotidectomy.<sup>9</sup> It is caused by an anas-



**Fig 8** (A) Lateral view of the same patient in Figure 1; marked swelling of the parotid is obvious. (B) Six-month postoperative photographs of the 54-year-old woman who underwent a left conservative parotidectomy for a benign pleomorphic adenoma. Using the modified facelift incision in conjunction with the rotation advancement hybrid SMAS flap allows the scars to go unnoticed without a marked depression around the mandibular angle.

tomotic communication with the facial sweat glands by parasympathetic secretomotor nerve fibers intended for the excised parotid gland.<sup>9</sup> Treatments generally have run the gamut, from the topical to the surgical, such as the use of alloplastic or autogenous materials, fascia lata, temporalis fascia or muscle, platysma or masseterica fascia, SMAS, and sternocleidomastoid or digastricus muscle flaps.<sup>4-12</sup> Although Frey syndrome usually is preventable by raising the skin flaps in the superficial SMAS layer, the treatment of the established condition often requires additional surgery.<sup>10</sup>

The method described here avoids the morbidity of a second operative site by using a biocompatible interposition hybrid layer (vicryl mesh and SMAS) to prevent the sweat glands of the skin being inappropriately cross-innervated. The surgery involves the SMAS as an interposing flap to interrupt

the anastomotic new communications with the sweat glands. In combination with the vicryl mesh, the SMAS rotation advancement flap is ideal not only because of its prophylactic treatment of Frey syndrome, but also in its alleviation of the unsightly facial depression often seen after parotid surgery.

#### CONCLUSION

**T**he development of the hybrid SMAS (the vicryl mesh is embedded in the folded SMAS) in parotid gland resection is technically simple to perform. It is an effective method both as a preventative measure against Frey syndrome and as an aesthetic improvement over the usual defect typical of parotidectomies. The flap provides excellent cosmetic results for patients undergoing superficial parotidectomy and acts also as a barrier for regenerating



**Fig 9** Magnification of the preauricular and prehairline scar. Differences in color and texture are less obvious, and the scar is inconspicuous.

nerves, preventing the development of the gustatory sweating.

This finding is in agreement with those of other authors who used different interposing flaps, such as autogenous or alloplastic materials, and reported prevention of Frey's syndrome after placing grafts into the parotid lodge.<sup>3-10,12</sup> The vascularized hybrid vicryl mesh/SMAS rotation advancement flap is clinically simply to perform and provides satisfactory cosmetic and functional results in patients undergoing conservative parotidectomy, and it prevents gustatory sweating.

There are no drawbacks to the use of modified facelift incision to resect malignant tumors of the parotid gland that do not affect the superficial planes.<sup>24,25</sup> If radical neck dissection must be performed subsequent to conservative parotidectomy, the incision can be performed without affecting the vascularity of the flaps or altering their aesthetic characteristics.

## REFERENCES

- Gutierrez A. Tumores de la glandula parotida. Su extriacion. *Rev Cirugia* 1923;3:23-27
- Terris D, Tuffo KM, Fee WE. Modified facelift incision for parotidectomy. *J Laryng Otolology* 1994;108:574-578
- Jost G, Guenon P, Gentil S. Parotidectomy: a plastic approach. *Aesth Plast Surg* 2000;24:1-4
- Chow TL, Lam CYW, Chiu PWY, et al. Sternomastoid-muscle transposition improves the cosmetic outcome of superficial parotidectomy. *Br J Plast Surg* 12001;54:409-411
- Kerawala CJ, McAloney N, Stassen LFA. Prospective randomised trial of the benefits of a sternocleidomastoid flap after superficial parotidectomy. *Br J Oral Maxfac Surg* 2002;40:468-472
- Casler JD, Conley J. Sternocleidomastoid muscle transfer and superficial musculoaponeurotic placcation in the prevention of Freys syndrome. *Laryngoscope* 1991;101:95-100
- Kim SY, Mathog RH. Platysma muscle-cervical fascial-sternocleidomastoid muscle (PCS) flap for parotidectomy. *Head Neck* 1999;21:428-433
- Jeng SF, Chien CS. Adipofacial turnover flap for facial contour deformity parotidectomy. *Ann Plast Surg* 1994;33:439-441
- Bonanno PC, Casson PR. Freys syndrome: a preventable phenomenon. *Plast Reconstr Surg* 1992;89:452-456
- Webster K. Early results using porcine dermal collagen implants as an interpositional barrier to prevent recurrent Freys syndrome. *Br J Oral Maxfac Surg* 1997;35:104-106
- Siu LP. Prevention of Freys syndrome following parotidectomy. *Clin J Stomatol* 1988;4:173-174
- Yu LT, Hamilton R. Freys syndrome: prevention with conservative parotidectomy and superficial musculoaponeurotic system preservation. *Ann Plast Surg* 1992;29:217-222
- Laskawi R, Schott T, Mirzaie-Petri M, et al. Surgical management of pleomorphic adenomas of the parotid gland: a follow up study of three methods. *J Oral Maxfac Surg* 1996;54:1176-1179
- Murthy P, Hussian A, McLay KA. Parotidectomy through a rhytidectomy incision. *Clin Otolaryngol* 1997;22:206-208
- Adson AW, Ott WO. Preservation of the fascial nerve in the radical excision of the parotid tumors. *Arch Surg* 1923;6:739-746
- Martin H. Operative removal of tumors of the parotid salivary gland. *Surgery* 1952;31:670-677
- Gurrerrosantos J, Dicksheet S, Guillen C, et al. Hidden incision in surgery of the parotid, submandibular, cervical, and cheek benign tumors. *Ann Plast Surg* 1982;9:402-408
- Appiani A. Surgical management of parotid tumors. *Revista Argentina de Cirugia* 1967;21:236-239
- Appiani A. Plastic incisions for facial and neck tumors. *Ann Plast Surg* 1984;13:335-352
- Cohen S. Personal experience with an alternative incision for parotidectomy. *J Otolaryngol* 1988;17:382-384
- Ferreria JL, Maurino N, Michael E, et al. Surgery of the parotid region: a new approach. *J Oral Maxfac Surg* 1990;48:803-807
- Hagan WE, Anderson JR. Rhytidectomy techniques used for benign parotid surgery. *Laryngoscope* 1980;98:711-715
- Hinderer UT. Prevention of unsatisfactory scarring. *Clin Plast Surg* 1977;4:199-205
- Owsley JQ. SMAS-platysma face lift. *Clin Plast Surg* 1983;10:429-440
- Owsley JQ. Freys syndrome: a preventable phenomenon [discussion]. *Plast Reconstr Surg* 1992;89:457-458