

Parotidectomy: A Plastic Approach

G. Jost, M.D., Ph. Guenon, M.D., and S. Gentil

Paris, France

Abstract. Three disadvantages are frequent after parotidectomy: a scar affecting the neck, a deep hollow between the sternocleidomastoid muscle and the mandible (the larger the resection is, the deeper is the hollow), and a sweat secretion. These disadvantages can be prevented or reduced by using four simple procedures: (1) using a facelift incision; (2) using a very simple and original “trick,” by displacing outward the posterior belly of the digastric muscle; (3) using a flap with an upper pedicle taken from the sternocleidomastoid muscle; and (4) using a double free graft, taken from the superficial and deep temporal fascias. These two grafts lay down on the net constituted by the preceding flaps. They line the skin, thus blocking the wrong innervation.

Key words: Parotidectomy — Muscular flaps — Muscular anatomy — Facelift incision — Frey’s syndrome

Among 92 parotidectomies, we had 6 exceptional cases: 2 sarcoïds, 1 hydatid cyst, 2 benign cysts, and 1 schwannoma. Among the other cases 10 were adenocarcinomas (5 of them were primitive, the other 5 were malignant recurrences of pleiomorphic adenomas); radical neck dissections were made at the same stage. The other cases were 59 primitive pleiomorphic adenomas (mixed tumors), 11 benign recurrences of pleiomorphic adenomas (consequence of a primitive lack of adequate resection), 4 papillary cystadenomas (Warthin’s tumors), and 2 adenoid cystic carcinomas (cylindromas).

Whatever the diagnosis is, parotidectomy must follow the rules of cancerology. In the case of Warthin’s tumor, it can be limited to the superficial lobe. Mixed tumor imposes a deep lobe resection. In the case of cylindroma we must use a very extensive resection, which includes pieces of the masseter and sternocleidomastoidian muscles.

Such an attitude has some disadvantages.

The first one, less important, is if we choose to use the classical bayonet-shaped incision, to create a visible scar affecting the neck.

The second one, much more serious, is, mainly, if we have to deal with a deep lobe tumor, to create a deep hollow between the sternocleidomastoidian muscle (SCM) and the posterior border of the mandible, the skin being attracted toward styloid muscles and even pharyngeal mucous membrane. That is why a lot of techniques have been described to try to fill the empty parotidian lodge.

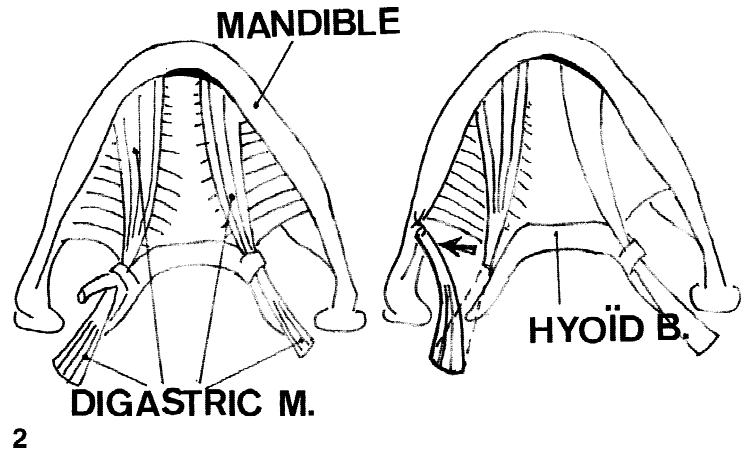
The third one, the most unpleasant for patients and the people around them, is sweat secretion, mainly while eating. The physiopathology of this syndrome is not precisely clarified. It is difficult to avoid, even if, during the operation, we take the precaution of eradicating the secretory nerve.

We can try to prevent these complications during primary operations, using some simple procedures. Four procedures were used at the same time, in 47 cases of pleiomorphic adenomas, cylindromas, and Warthin’s tumors.

Technique

Prevention of a Scar Located in the Neck

Instead of making a bayonet-shaped incision, we use a facelift incision (Fig. 1). The temporal part of the incision is located, for women, in the scalp or at the border of the hair. In the case of males, it crosses the crossroads. Such an incision gives very good exposure not only of the parotid area itself, but also of the SCM area (we will see, later on, the advantage of this detail). We can even enlarge the exposure by making, at the beginning of the operation, a slight vertical incision below the lobe. This incision will disappear, at the end of the operation, while resecting cutaneous strips and stretching the skin, the method we use during a facelift operation. It is safer to incise in front of the tragus than on the border of it [4].



2

Fig. 1. Facelift incision avoids a cervical scar. It gives a large approach to the SCM. It is safer to trace the preauricular incision in front of the tragus than on its border.

Fig. 2. Lateral displacement of the intermediate tendon of the digastric muscle (fixed on the mandible). It changes a mastoidohyoïdian muscle into a mastoidomandibular one; the styloid curtain is displaced outward.

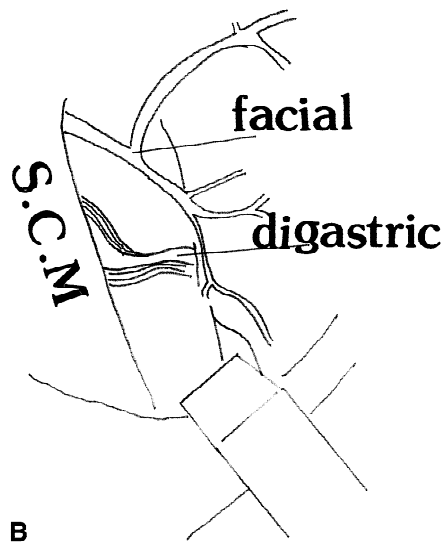


Fig. 3. (A,B) The tendon is easily discovered. (C) It is cut and moved outward with a forceps.

Prevention of a Deep Hollow Behind the Mandible

The first “trick” is original. It consists in displacing the posterior belly of the digastric muscle laterally. It is easy, after removing the parotid, to locate the intermediate digastric tendon and to cut it. Then we just have to fix it to the angle of the mandible. In other words, this procedure consists in changing a “mastoidohyoïdian muscle” into a “mastoidomandibular” one (Fig. 2). In consequence, the styloid curtain, which constitutes the posterior inner face of the parotidian lodge, is moved outward and the acute bottom of the parotidian lodge is smoothed (Figs. 3 and 7).

The second procedure consists in trying to fill the empty parotid lodge. A lot of techniques have been de-

scribed [4,5,7,8,10,11,14]: flaps, dermal grafts, fat grafts, use of clots, etc. Unfortunately dermal and fat grafts dissolve with time. It is not frequent to be able to keep the superficial temporal pedicle each time the tumor is located high or deep or imposes the ligation of the external carotid. Using the superficial tissues lining the external face of the parotid [12] does not respect the carcinologic attitude, which imposes a large resection for these tumors, which have a high potential of recurrence.

We used to use a flap taken from the superficial part of the SCM muscle [4]. We must avoid using an inferior pedicle flap, which would give a visible and palpable string. It is better to use a superior pedicle flap. The facelift incision gives a large view of the upper insertion of SCM (Fig. 4). The pedicle is taken from the anterior

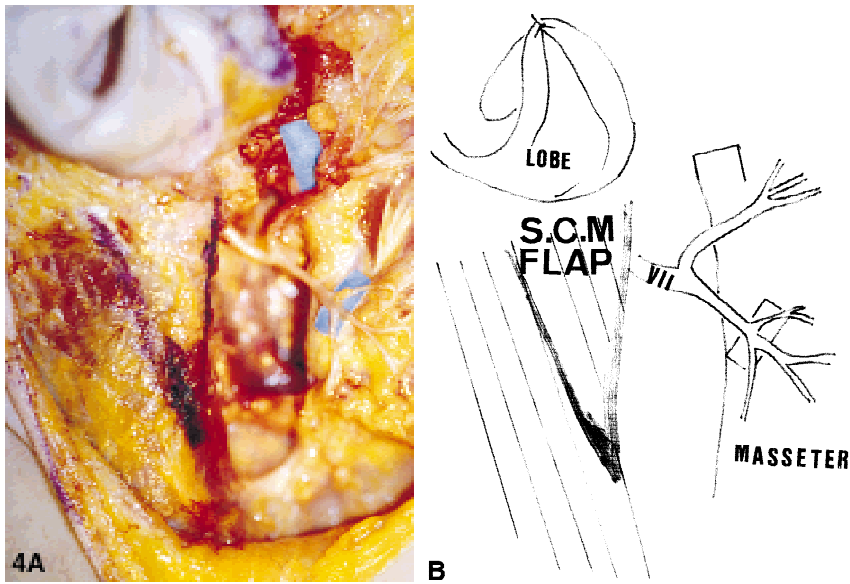


Fig. 4. (A,B) A triangular flap is traced at the anterior border of the SCM. The ear is curled on itself by a stitch uniting the lobe and helix, avoiding the use of a retractor.



Fig. 5. The smooth dissection is superficial, far from the accessory nerve.

Fig. 6. The flap is divided into three parts.

Fig. 7. The four flaps underlined by a scalpel handle. They are fixed to the soft tissue of the posterior border of the mandible, and they constitute a net. This net fills the empty parotid lodge and gives a good bed for temporal grafts.

and the superficial part of the muscle; it must be thin enough to be sure not to damage the accessory nerve (Fig. 5). This flap is divided into three parts (Fig. 6). They will be fixed; the upper one, on the temporomandibular articulation; the intermediate one, to the posterior part of the masseter; and the lower one near the mandibular angle (Fig. 7).

Prevention of Sweat Secretion [1–3,6,9,14]

Sometimes, it is years after a parotidectomy that we have to deal with such a complication. In our experience, the

best way to get rid of it is to line the skin affected by the sweating with a fascial graft taken from the temporal fascia. During this “secondary operation,” we must elevate the skin carefully, in order not to damage the facial nerve, which is no longer protected by the parotid gland.

This procedure gives good aesthetic results, and the secretion is usually completely stopped or limited to small areas (Fig. 8).

Thus, we used to use such a technique systematically during primary operations; according to the large pathway, the laying-out of the graft is much easier than during a secondary one; the graft is stretched by a few



Fig. 8. (A) Late result of a parotidectomy limited to the superficial lobe. There was no attempt to fill the empty lodge. A bayonet-shaped incision was used. The ear lobe is attracted inward; the scar along the anterior border of the SCM is visible. (B) Late result of a parotidectomy (large resection of a mixed tumor of the deep lobe). The three described procedures were used. The scar, groove, and sweating are improved.

reabsorbable stitches. Usually, we take two grafts that we pile up, a small one taken from the deep temporal fascia and a larger one from the superficial temporal fascia. The use of two grafts has the advantage of preventing the sweat secretion but, in addition, contributes, associated with the preceding procedures, to filling the parotid lodge. It is safer and simpler to take the two grafts through an incision of the scalp independent of the parotidectomy incision.

Results and Discussion

The results were good. Among the 47 cases, we had no sweating at all in 9 cases. The sweating was poor and peripheric in all the other cases but one. We have to keep in mind that, after parotidectomy without special precaution, almost half of patients have subjective symptoms of Frey's syndrome and almost a quarter have "symptoms of concern and annoyance" [15].

The groove behind the mandible was deeper than the one on the normal side in only 33 cases; in 3 cases of parotidectomies limited to the superficial lobe, we kept complete symmetry. In seven cases the quality of the filling of the parotidian lodge was a little bit lower than expected. In three cases the hollow was much deeper than expected (two of them had to suffer from a postoperative hematoma).

A critical argument against the use of grafts and flaps consists in saying that the postoperative observation, looking for a recurrence, is more complicated. In fact, this argument is no longer valid since we use the IRM radio. Another small critique which could be made is that the operation takes a little bit longer to perform.

References

1. Frey L: Le syndrome du nerf auriculo-temporal. *Rev Neurol (Paris)* **2**:97, 1923
2. Ford FR, Woodhall B: Phenomena due to misdirection of regenerating fibers of cranial, spinal and automatic nerves, clinical observations. *Arch Surg* **36**:480, 1938
3. Laage-Hellman JE: Treatment of gustatory sweating and flushing. *Acta Otolaryngol (Stockh)* **49**:132, 1958
4. Jost G, Legent F, Baudelot S: Le comblement des dépressions résiduelles après parotidectomie par un lambeau de sternocleidomastoidien. *Ann Oto-Laryngol (Paris)* **85**:357, 1968
5. Kornblut AD, Westphal P, Miehleke A: The effectiveness of a sternomastoid muscle flap in preventing post-parotidectomy occurrence of the Frey syndrome. *Acta Otolaryngol* **77**:368, 1974
6. Sessions RB, Roark DT, Alford BR: Frey's syndrome: A technical remedy. *Ann Otol Rhinol Laryngol* **85**:734, 1976
7. Tegmeier RE, Gooding RA: The use of a fascial flap in ear reconstruction. *Plast Reconstr Surg* **60**:406, 1977
8. Smith RA: The free fascial scalp flap. *Plast Reconstr Surg* **66**:204, 1980
9. Singleton GT, Cassisi NJ: Frey's syndrome: Incidence related to skin flap thickness in parotidectomy. *Laryngoscope* **90**:1636, 1980
10. Avelar JM, Psillakis J: The use of galea flaps in craniofacial deformities. *Ann Plast Surg* **6**:464, 1981
11. Okamura H, Sasaki H, Yanagihara N: Surgical treatment of Frey's syndrome by implantation of lyophilized human dura. *Otolaryngology (Tokyo)* **54**:224, 1982
12. Rappaport L, Allison GR: Superficial musculoaponeurotic system amelioration of parotidectomy defects. *Ann Plast Surg* **14**:315, 1985
13. Zaoli G: Filling of residual depressions after parotidectomy with a composite arterial subcutaneous flap. *Ann Chir Plast Esthet* **34**(2):123, 1989 (in French)
14. Harada T, Inoue T, Harashina T, et al.: Dermis-fat graft after parotidectomy to prevent Frey's syndrome and the concave deformity. *Ann Plast Surg* **31**:450, 1993
15. May M: *The Facial Nerve*. Thieme Verlag: Stuttgart-New York, 1986
16. May JS, McQuirt WF: Frey's syndrome treatment with topical glycopyrrrolate. *Head Neck* **11**:85, 1989