Schwannoma of the Facial Nerve with Facial Resuscitation with Facial Hypoglossal Neurotization

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Abstract

Schwannoma is a rare pathology of the facial nerve. Its preoperative diagnosis is difficult since it has no symptoms or pathognomonic signs of the disease.

The dissection of the facial nerve in its trunk and its branches with electrostimulation is the surgical way to suspect it intraoperatively. Partial decompression or complete exercises should be considered according to the experience of the surgical team in nerve reconstruction.

The repair of the facial nerve as a first option should be the immediate graft or end-to-end suture.

Neurotization is a surgical procedure that causes the patient facial symmetry with management of ocular occlusion and management of the corner of the mouth, it must be performed within a year of the nerve injury.

The rehabilitation of the facial nerve requires a multidisciplinary team and the permanent collaboration of the patient to achieve the proposed objectives.

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Introduction

Schwannomas (also called neurilemomas) of facial nerve is a benign tumor that arises from Schwann cells, from the neural sheath of the peripheral, sensitive or sympathetic and sympathetic nerve nerves and in cranial nerve, except for the optical and olfactory nerves Cranials that lack Schwann cell pod.

Extra cranial neurilemomas 25-45% occur in the head and neck. Being the extra cranial location cervical Latero the most frequent, the most frequent intracranial neurilemoma is acoustic neurinoma (Iix nerve). Facial Schwannoma are extra cranial neurilemoma that is presented as a parotid mass of slow and painless growth. The presentation arises in the third or fourth decade of life, preferably in the female sex.

The preoperative diagnosis is difficult, the PAAF only has 40% sensitivity, it can exclude other parotid tumors. Tomography guides us to the location of tumor and NMR shows ISOINTENSE mass to the muscle in T1 and hyperincent to the muscle in T2 with a weak intensity in the center that becomes greater towards the periphery "sign of the Diana".

In 1910 Verocay first described a group of neurogenic tumors to what he referred to as a neurinoma. In 1920 Antoni described two histological patterns characterized by hypercellularity and myxoid. In 1935 it was proposed that these tumors originate from the nerve sheaths called neurilemomas.

The definitive diagnosis is performed by biopsy, finding double histological pattern with antoni a and b areas, the areas of Antoni A are fusiform cells with nuclei arranged in palisades separated by the extensions of the Schwann cells originating the Verocay bodies in the pattern hypercellular The Antoni B type area is hypocellular with myxoid stroma with blood vessels and inflammatory cells.

The malignant degeneration of tumor is rare, the removal of the lesion is the treatment of choice. The recurrence is rare. The damage of major nerve trunks should be considered for immediate repair by means of terminals of the nerve or immediate nerve graft.

Facial nerve preservation during tumor resections in the different portions of its journey is a great concern on the part of the surgical team.

The rehabilitation of facial paralysis will depend on the intraosea (intracranial) or peripheral (extra cranial) location, on the condition of the wound, of the time elapsed by the lesion, a state of degree of muscle atrophy, the technical possibilities of reconstruction and psychological states - patient's mood.

Facial nerve repair can be performed by various techniques, passive techniques are the most used, but it is the dynamic techniques that allow it to recover ocular occlusion, oral occlusion and social smile.

The ipolateral neurorraph consists of the approximation of the nerve ends directly or with an interposition of nervous graft preferably of the major atrial nerve or the skin to the electrical stimuli of the nerve ends.

Cross nerve grafts consist in the interposition of nervous graft from the branches of the facial nerve to function to the nerve branches do not work, the movements are synchronized and symmetrical. It must be done before three months of nerve injury [1,2].

Neurotization consists of nerve anastomosis. As a disadvantage, it presents morbidity in the donor nerve area, tongue atrophy, swallowing (hypogloso), winged scapula (spinal), loss of chewing force (trigeminal). The other disadvantage that presents is the movement the lack of coordinated movement.

The advantages that these procedures present allow partially recovering the affected function and favoring the psychological, social and labor reintegration of patients.

The rehabilitations of these patients require a multidisciplinary team composed of head and neck surgeon, plastic surgeon, neurosurgeon, physiotherapist and the patient's collaboration to complete the exercises in their home, to understand the times that takes the neurological recovery of the facial nerve.

Goal

Show the facial nerve schwanoma as an unusual presentation pathology and the different nerve repair alternatives of the facial nerve. Neurotization as a surgical tool to achieve facial symmetry and social, labor and psychological reintegration of the patient.

Material and Methods

34-year-old patient, no history of importance. It presents length parotid tumor of long data located in parotid cola topography, polyylobulated hard-elastic lesion with skin with normal coloration and good facial nerve functionality.

The patient was performed preoperatively and Paaf with ultrasound guide. The ultrasound presented mixed nodular image, with predominantly solid cystic areas without 23 x 27 mm vascular flow located in left parotid without separation plane. Compatible with Warthin tumor (Figure 1). Fine needle puncture (PAAF) had extended result with few isolated epithelial cells and in a medium nucleus group with slight pleomorphism accompanied by stromal cells. Some of the droopy and eccentric center with a diagnosis of indeterminate cells Milan System [3].

The patient is performed NMR presented smooth and net edge ovoid lesion that involves superficial lobe extending to the deep lobe of the left -handed parotid, hypointerna in T1 and hyperincent in T2

Figure 1: Preoperative ecography.

with cystic areas of 30 x 24 x 24 mm posterior and transverse anterior suggestive of pleomorphic adenoma.

The patient is performed. Superficial lobe clamp under general anesthesia with a Bailey incision (Figure 2), progression by plane is performed by observing solid cystic lesion in parotid tail that partially involves facial nerve is performed nerve (Figure 3).
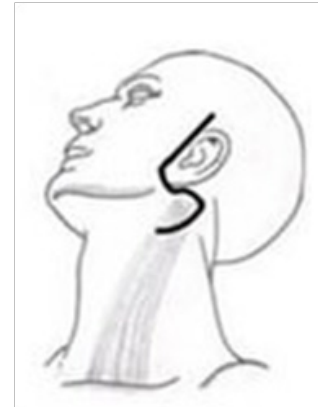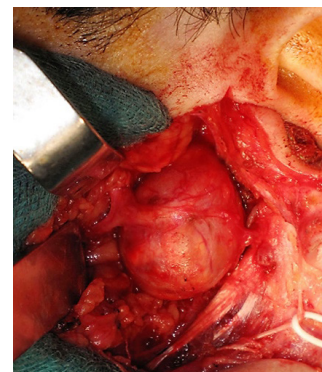

Figure 2: Bailey incision.

Figure 3: Left parotid tumor.

The patient in the immediate postoperative period presents complete facial paralysis, so it is performed by the prevention of corneal ulcer and physiotherapy begins at 10 days of surgery in search of facial muscles response.

The pathological anatomy has a diagnosis of Schwannoma of the facial nerve which is delivered to the 30 days of the surgery.

The patient is performed electromyogram with driving speed presenting to the four months of surgery, with physiotherapy to the date of the study. It presents as conclusion axonal neuropathy of left facial nerve with commitment in its upper and lower branch (Figure 4).

The patient is proposed facial resuscitation with facial nerve neurotization with hypoglyphacial anastomosis under microscope, is explained of the advantage and disadvantage of the procedure (Table 1).

Facial function assessment with gradation scale of the Facial Muscle Function of House-Brackmann was performed giving a preoperative degree result (Table 2).

The surgery was performed in central operating room of San Bernardo Hospital with a team made up of head and neck surgeons and plastic surgery. The microscope used is double head to facilitate microscopic anastomosis. For facial nerve and nerve location,
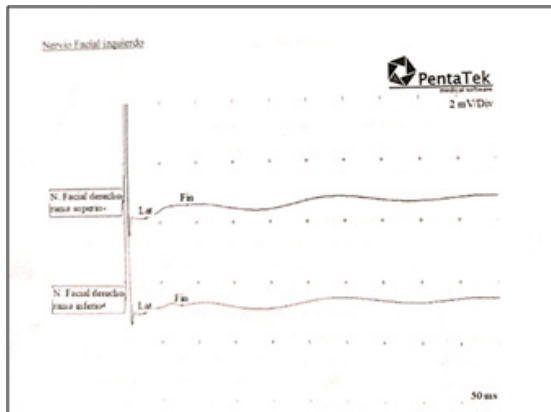
Figure 4: Electromyogram with Postcirgery Driving speed of plotting.

Table 1: Hypoglyphacial anastomosis advantages and disadvantages.

Advantages	Disadvantages
High success rate	mass resuscitation, low separate muscle mobility
Restoration of facial symmetry at rest	absence of involuntary mobility (gesture of emotion)
Palpebral closing recovery	Readable phonatory disorder
It facilitates social, psychological and labor reintegration of the patient	transitory deglutory disorder

Table 2: House-Backmann facial muscle function gradation scale.

GRADE I NORMAL FUNCTION IN ALL TERRITORIES
Grade II Mild dysfunction. Slight weakness of the musculature, at rest facial symmetry, without syncinesia or contracture or facial spasms
Grade III Moderate dysfunction. Clear difference on both sides. Incompetence for complete palpebral closure, Asymmetry Mounts oral commissure. At rest symmetry and normal tone
Degree IV Moderate-Grave Dysfunction. Weakness or asymmetry, there is no movement in the frontal zone, impossibility of closing the eye, syncinesia and facial spasm.
GRADE V SERIOUS DYSFUNCTION AT ASIMETRY Degree vi facial paralysis there is no movement, total loss of tone

neuroestimulator model AMRRA MYOTEST DGT was used (Figure 5 to Figure 7).

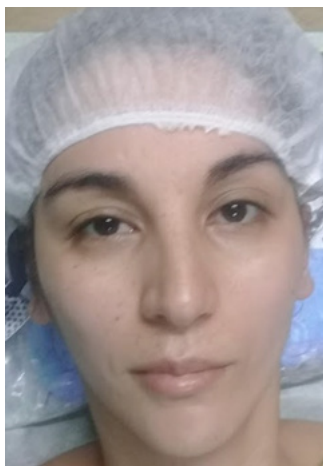The location of nerve trunk of facial nerve with its upper and lower

Figure 5: Sample patient in rest and dynamic phase before hypoglypacial anastomosis.

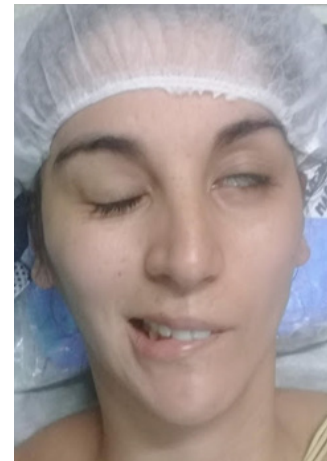branches was performed with neuroestimulator, magnifying glass and nerve tissue check with freezing biopsy.

Figure 6: Sample patient in rest and dynamic phase before hypoglypacial anastomosis.

Figure 7: Patient in an operative position where preauricular previous incision is observed with cervical extension.

The hypoglysed nerve location was carried out by anatomical references and by intraoperative neurostimulatory stimulation.

The facial anastomosis was performed with microscope with 10.0 suture with separate epineural points terminal - terminal.

The wound closure was performed by plane and with aspirative drainage in LOGDE. The patient's hospitalization was for the term of 5 days without intercurrences (Figure 8 to Figure 10).

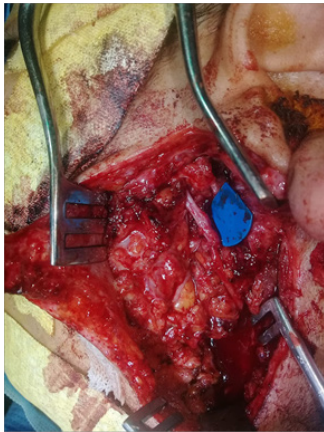**Figure 8:** Hypogloso-facial terminal anastomosis.

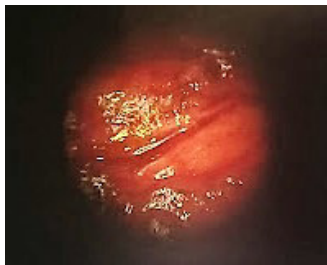**Figure 9:** Hypogloso-facial terminal anastomosis.

Figure 10: Microscopic image of facial hypogloso anastomosis.

The patient begins immediately after the cervical points with physiotherapy with electrostimulation and facial mimicry exercises against mirror for the term of 4 hours a day.

The monitoring of the progress of the facial resuscitation is done with short videos where facial movements of eye and smile closure are requested.

The appearance of the first re-aorvation symptoms occurred 60 days with increased tonicity and spasmodic movement of the muscles of the left cheek region.

The oral oculus movement began to produce from 120 days.

The differentiation of the facial upper group movement and the lower facial group began to demonstrate from 180 days (Figure 11 to Figure 14).
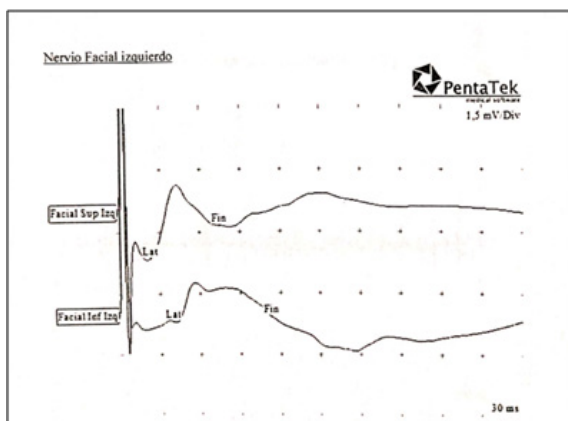

Figure 11: Post surgery electromyogram per year of facial hypogloso anastomosis.

Figure 12: Patient with complete facial resuscitation rehabilitation with facial hypoglossal anastomosis. It is observed at rest, smile and ocular occlusion from left to right.

Figure 13: Patient with complete facial resuscitation rehabilitation with facial hypoglossal anastomosis. It is observed at rest, smile and ocular occlusion from left to right.
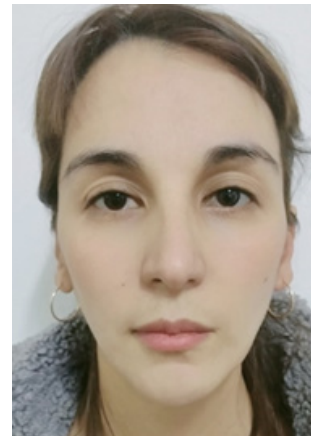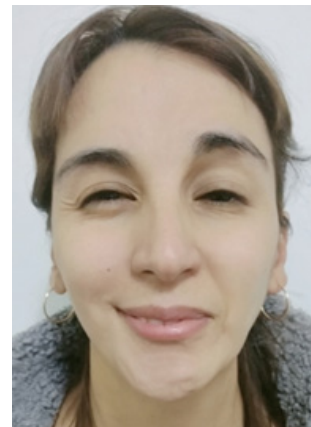

Figure 14: Patient with complete facial resuscitation rehabilitation with facial hypoglossal anastomosis. It is observed at rest, smile and ocular occlusion from left to right.
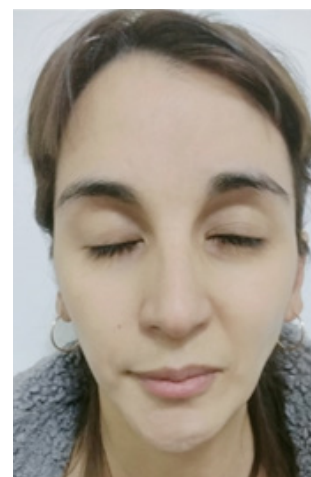
The patient is evaluated in the gradation scale of the Facial Muscle Function of Postoperative House-Brackmann with a grade III value (Table 2).

The patient continues with her physiotherapeutic rehabilitation, current physiotherapeutic.

Discussion

Schwannoma are benign tumors that arise from Schwann's cells of any nervous pod. Facial nerve schwanoma can be intratemore that represent the majority of cases or intraparapid that correspond to 9 % The incidence varies between 0.2 to 1.5 % of the total benign tumors of the parotid [4].

Preoperative diagnosis is essential for surgical planning, but it is difficult due to the low frequency it presents and the few typical associated signs, there are no pathognomonic images of this type of tumor.

Ultrasound is presented as hypoecogenic image in the form of spindle and cystic areas, it is of little use since it does not allow to locate the facial nerve and its commitment [5,6].

Tomography gives us an orientation of location and relationship with other elements of the parotid cell, but shows a very delimited smooth surface lesion that does not allow it to distinguish it from other parotid lesions. The resonance has a characteristic image in which in T1 is intense, with increased intensity in the periphery and decrease in the center in T2 (Diana Sign).

The definitive diagnosis of Schwannoma gives the biopsy, in case of performing it it is prudent to perform it in the peripheral region so as not to cause nerve injury. The histological findings of the antoni a and type antoni b patterns are pathognomic of the lesion [7,8].

Immunohistochemical techniques can help differential diagnosis, the most used markers are S100, smooth muscle actin, CD68, pancitoqueratin and calretinin. S100 staining is more specific for diagnosis, actin to differentiate it from tumors of muscular origin, CD68 to differentiate it from histiocytic lesions and pancite that epithelial tumors and calretinine distinguishes the neurofibroma schwannoma.

The resection decision of a facial nerve schwanom monitoring with electromyogram and resonance.

The facial nerve function assessment is performed through a gradation scale of the House-Backmann facial muscle function [9].

Neurotization is the election procedure when both ends of the facial nerve are not found. We define as neurotization to anastomosis between a functioning motor nerve (giver) and an injured nerve (receiver). Facial hypoglossal anastomosis terminal term which provides rehabilitation of facial nerve function with a dynamic technique. Korte is attributed to Korte in 1914 the realization of the first facial hypoglossal anastomosis in a patient with petrositis.

The number of axons that has a normal hypoglossal nerve in 9778 ± 1516 is superior to what a normal facial nerve 7228 ± 950 has. Anastomosis entails mocc muscle atrophy atrophy for the phonation of the letters "D" and "R" and Deglutoria. Table of advantages and disadvantages are presented

The maximum time to perform a facial resuscitation should not exceed the year of the lesion, major intervals involves atrophy of mimic muscles, which histologically presented adipose tissue infiltration.

Samii and collaborators analyzed 74 cases of hypoglyphacial anastomosis presented 16% excellent results with voluntary management of separated palpebral occlusion and lipstick. 58% with good results with preserved facial symmetry, good palpebral occlusion and present sinquinesias and 26% with evil result without ocular occlusion. Rosenwasser and collaborators reviewed a complete bibliographic of 564 cases of hypoglyphacial anastomosis presenting 65% positive result, 22% bad and 13% complete absence of facial reinervation.

There are variations in the technique of classical facial hypogloso anastomosis were raised to minimize the sequels generated by the hypoglosos nerve section, the May and collaborators technique uses an graft between the facial nerve and the partial section of the hypoglossus that has 15% of Hemilenguage atrophy. ARAI and collaborators modifies this procedure by carrying out a longitudinal direction of the hypogloso nerve avoiding the use of interposed graft.

Terzis and collaborators perform a technique that consists of a two -stage facial reconstruction. The first stage is to perform a classic hypoglyphacial anastomosis next to transfocial anastomosis of the terminal branches of the functional nerve at the periorbital and peribucal level with its equivalent branches of the paretic side through the coast of the coast without performing sutures to these last nerves. This first stage guarantees facial resuscitation by the hypoglysed nerve and in a second stage that is carried out a year, the transfacial nerves are finished, which manages to functionalize the face by maintaining involuntary gesture. This technique is called "Baby Sister."

Conclusions

Schwannoma is a rare pathology of facial nerve. Its preoperative diagnosis is difficult since it has no symptoms or pathognomonic signs of the disease.

The dissection of facial nerve in its trunk and its branches with electrostimulation is the surgical form of suspecting it intraoperatively. Partial decompression or complete exercise should be considered according to the experience of the surgical equipment in nervous reconstruction.

Facial nerve repair as the first option should the immediate graft or terminal termination.

Neurotization is a surgical procedure that causes the patient Facial symmetry with ocular occlusion handling and oral commissure management, it must be performed before the year of nervous insult.

Facial nerve rehabilitation needs a multidisciplinary team and the permanent collaboration of the patient to achieve the proposed objectives.

Declarations

The authors declare that they have no conflicts of interest, that the work has been approved by the ethics committee responsible in the workplace, and do not declare means of financing of the work carried out.

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