



## Correction of Sequela on Facial Paralysis by Facial Threads and Hyaluronic Acid: Our Experience

María Luisa Navarrete<sup>1\*</sup>, María Gabriela López<sup>1</sup>, Lluïsa Torrent<sup>2</sup>, Daniela Issa<sup>2</sup>, Carmen Fernández<sup>1</sup> and Ignacio Quintero<sup>1</sup>

<sup>1</sup>Department of Otorhinolaryngology, Vall d'Hebron Hospital, Autònoma University of Barcelona, Spain

<sup>2</sup>Rehabilitation Service, Vall d'Hebron Hospital, Autònoma University of Barcelona, Spain

### Abstract

We present in this work our results on repair treatment of sequela as consequence of facial palsy using a static suspension technique as adjuvant to facial palsy's lesions treatment by Polydioxanone tensor threads (PDO) and Hyaluronic Acid (HA).

This technique was used as a treatment in four patients with sequela of facial palsy due to several etiologies. We expose the peculiarities of each case, their personalized treatment and the results that we have obtained so far.

Our patients present an improvement of their facial aesthetic as well as their pronunciation, chewing capacity and eyelid closure. Therefore, they developed a better functional and psychological adaptation to their residual sequela due to severe facial palsy.

**Keywords:** Facial palsy; Static technique; PDO threads; Hyaluronic acid

### Introduction

The static facial suspension procedure stabilize the hemifacial palsy and contributes to facial symmetry, better aesthetic appearance, better chewing capacity and pronunciation in speech in patients with facial paralysis [1]. The new generations of PDO threads for tissue suspension contribute to a new form of facial traction. This polydioxanone suture allows tissue growth in situ, and consequently a greater suspension force.

This technique is an effective alternative to the use of allografts or autografts for facial suspension, since these techniques have their limitations and partial outcomes. Additionally, it could be an adjuvant technique for other static or dynamic treatments in patients with complete facial palsy. By using suspension threads it is possible to lift the descended facial portion and correct asymmetry that results as sequels of facial repair surgery. It allows as well, other sequela corrections such as synkinesis in patients with or without previous repair surgery.

In our attempt to implement and optimize the effectiveness of repair surgery in residual facial palsy, we expect to incorporate the use of different tensor threads with 4D PDO technology, in which its safety has being proved due to its broad use in aesthetic surgery, aiming for more functional and long-lasting results.

These tensor threads are reabsorbable and present multidirectional spicules. These spicules can distribute, press and hold in place the subdermic soft tissue of face and neck. The thread's design allows performing a complete treatment of the affected area, using a minimally invasive procedure threads are inserted in the facial areas tributary of lifting using microincisions. The treatment usually consists in implantation of, approximately, five threads in the paralyzed hemi face. In some cases, where there is excessive skin, one or two more threads are required in order to maximize correction. Suspension threads with 4D technology are approved by EC (European Community) with ISO (International standards organization) 13485:2003.

Ocular closure and lagophthalmos treatment, using upper eyelid gold weight and canthopexy, could be partially resolute. In order to treat these defects, as well as elevate or modify the descended facial area and correct asymmetry we use a reticulate Hyaluronic acid implant. These implants already have being proved of safe use due to their application in aesthetic surgery [2].

Hyaluronic acid implant is a synthetic, non-allergenic, injectable material that allows performing

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#### \*Correspondence:

ML Navarrete, Department of Otorhinolaryngology, Vall d'Hebron Hospital, Autònoma University of Barcelona, Spain,

E-mail: [mlna@telefonica.net](mailto:mlna@telefonica.net)

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a treatment in the affected area using a minimally invasive procedure. It is inserted in the desired area using preformed vials that have different reticulations that are chosen depending on the expected outcome. HA implants are approved by EC.

The inclusion of this material to other therapeutic procedures that we can offer to our patients, improves facial correction as well as the contracture and synkinesis post paralysis that can result so disabling.

**Case Series**

**Case 1**

Eighty four years old female patient, with a previous right tympanoplasty surgery in 2012, performed in other hospital due to an ipsilateral cholesteatoma with a secondary flaccid facial paralysis. The patient came to our service in 2015, when then, she underwent surgery due to a cholesteatoma recurrence on the same ear, performing also a canthoplasty, a nasogenian sulcus and supraciliary plasties in the same surgical procedure. In 2021, we proposed facial thread lifting and palpebral injection of Hyaluronic acid, with a subsequent articulation and mastication improvement after three weeks until the current day (Figure 1).

**Case 2**

Seventy years old male patient, with a previous right flaccid facial palsy due to ipsilateral Ramsay Hunt syndrome, 25 years ago. He underwent a facial nerve decompression at the time in other hospital, also a facial lifting on the same side in 2016 with autologous static technique and gold upper eye lid weight. In 2021, facial threads lifting and palpebral injection of Hyaluronic acid were performed in our center. After 2 weeks, patient refers articulation, mastication and facial asymmetry improvement, as well as full amelioration of eye discomfort (Figure 2).



Figures 1: Before and after.



Figure 2: Before and after.

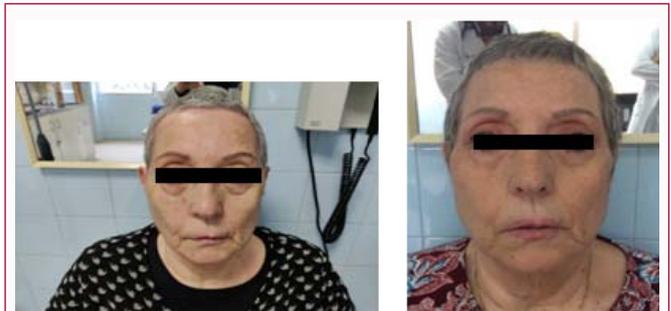


Figure 3: Before and after.



Figure 4: Before and After.

**Case 3**

Sixty eight years old female patient with facial palsy at age 4, of idiopathic cause. No posterior surgical intervention was performed. She underwent facial threads lifting with facial aesthetic improvement after three weeks of the procedure (Figure 3).

**Case 4**

Seventy years old female patient with a previous vestibular neurectomy in 2019, performed in other hospital, due to vestibular Schwannoma with secondary post-surgical facial palsy. In 2019, facial lifting, lipofilling, sural nerve cross-face and mastering nerve transfer were performed, also a gold upper eye lid weight. At last, in 2021 the patient came to our center, and there underwent right facial threads lifting with inferior palpebral injection of Hyaluronic acid, showing articulation, mastication and ocular improvement after follow up at three weeks (Figure 4).

**Discussion**

Facial palsy can be consequence of diverse procedures and interventions, with different clinical presentations. In this case report study, we present only facial palsy with the maximum degree of facial degeneration, with no posterior facial movement recovery due to spontaneous reinnervation. In these cases, reconstructive surgery is the treatment.

Repairing techniques divide in: Dynamic, in which the patient can be able to recover some grade of facial movement, specially smiling; and static, which pursues facial suspension in the most natural possible way [3,4].

Dynamic techniques are based on nervous or muscle grafts, according to the time facial nerve injury occurred. Neurorraphy and neural grafts techniques are indicated when nervous anatomical discontinuity or total irreversible loss is present, but nonetheless,

there are still functional distal neural tubes and facial muscles aren't atrophied [5,6].

On the other hand, static techniques, allow facial symmetry improvement at rest. They can be performed in either patients not candidates for dynamic techniques (age, comorbidities, etc.), such as in those who are not willing to undergo these invasive procedures.

Facial lifting, thread lifting with grafts, myotomies, etc. are included in these static techniques. Both techniques have advantages and disadvantages, but neither one allows optimal facial movement recovery. In our attempt to optimize the multidisciplinary treatment efficacy of the aesthetic and functional sequela in these patients, we introduce the use of facial thread lifting and Hyaluronic acid implants, with previously proven safety use in aesthetic treatments. Our objective is to obtain more functional and long-lasting results in patients with facial palsy sequela secondary to facial nerve section or aberrant reinnervation within complete recovery.

Indications for these and other type of facial palsy repair techniques are previously discussed in the Facial Palsy Unit of our University hospital, which is formed by many different clinical and surgical specialties, which treat each of these patients from their own case.

Incorporation of this material has been motivated by the need of our Facial Palsy Unit to keep working on the therapeutical improvement in these techniques, and hence, offer the best possible outcome for our patients [7-9].

And so, we propose minimally invasive surgery procedures to obtain more acceptable aesthetic and functional results, in patients with severe facial palsy sequela with or without previous facial nerve surgical repair.

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