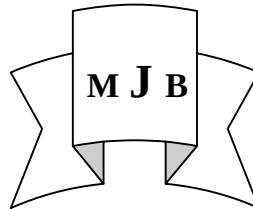


The Use of Chemically Treated Dermal Collagen Strips for Facial Suspension in Patients with Facial Palsy

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Abstract

Different techniques can be used to repair facial paralysis, in longstanding cases. Reconstruction is achieved by dynamic suspension methods, microsurgical procedures or static slings. In this study 11 patients with unilateral facial palsy were reconstructed by static slings using fascial substitute which is a chemically treated dermal collagen strips. In 9 patients the results were satisfactory for the patients. Complications included detachment of the strip, undercorrection and scarring. No rejection reaction or infection were recorded.

الخلاصة

هناك العديد من الطرق المستعملة في تقويم تأثيرات شلل العصب الوجهي (او العصب السابع) في الحالات المزمنة . هذه الطرق تشمل على التعليق المتحرك للوجه او التعليق الثابت وطرق الجراحة المجهرية . في هذه الدراسة تم علاج ١١ مريض مصابين بشلل العصب السابع لجهة واحدة من الوجه بأستعمل طريقة التعليق الثابت بأستخدام بدائل صناعية للانسجة الطبيعية المستخدمة بشكل روتيني في علاج مثل هذه الحالات وهذه المادة تسمى كولاجين الادمي المعامل كيميائياً . في ٩ مرضى كانت النتائج مرضية للمريض والمضاعفات اشتملت على انفصال الشريط النسيجي المستخدم في التعليق ، وتعليق غير تام وتليفات. لم تسجل اية حالة رفض الجسم للمادة المستعملة.

Introduction

Facial paralysis is a severe disability that often produces major ocular disorders, cosmetic deformities and in many cases, functional incapacity of something as characteristic of human beings as facial expression [1] .

Studies showed that major psychosocial impacts of paralysis appear common and underestimated and the region of the face that is most disturbing is the mouth[2] . Reconstruction of a natural, spontaneous, symmetrical smile and symmetry at rest remain the ultimate goals of reanimation of the mid-face after facial paralysis [3] However, there are other problems associated with the paralysis of the oral musculature like drooling and

difficulties with speech and articulation. The flaccid lip and cheek soft tissues also lead to some difficulties with chewing food, cheek biting, and pocketing of food in the cheek and buccal Sulcus [4].

Different techniques can be used to repair paralytic labial commissure, in cases in which the patient is not suitable for muscle reinnervation because of long standing paralysis and subsequent atrophy of myoneural junctions, reconstruction is achieved ideally by dynamic suspension methods or microsurgical procedures to correct the kinetic paralysis [3,5,6] but in certain patients (elderly subjects, poor general health or precarious postsurgical rehabilitation) such operations may represent an

excessively aggressive procedure and the use of static slings can be beneficial[7].

Facial suspension by static slings is used to achieve symmetry at rest without providing animation .It can be used alone or as an adjunct to nerve grafting or free muscle transfer to provide immediate support while awaiting muscle reinnervation.

Several techniques for static suspension of soft tissues in facial paralysis are available. Autologous or synthetic materials are commonly used. Facial strips harvested from the thigh (tensor fascia lata)[4,8],temporalis muscle fascia or tendon grafts have been used most frequently Inorganic (alloplastic) implants include the use of silastic rod, polyethylene or Teflon tapes, Dacron or polypropylene meshes or Gore-Tex [9-11].

In this study we used the dermal collagen strips as a fascial substitute (biological implant) for static suspension of the lips and oral commissure.

Materials and Methods

Eleven patients (7 females and 4 males) with unilateral facial nerve paralysis (5 left. 6 right side) were studied in the period from March 1998 to March 2001 in Al-Wasity Teaching Hospital for Reconstructive Surgery, their ages ranged between 34 to 62 years. All of them were treated

by static suspension of the mouth using fascial substitute which is a chemically treated dermal collagen strips (ETHNOR) of 1.5 cm width and 0.6 mm thickness.

Operative Procedure

The operations were done under general anesthesia, with the head extended and turned to the side, 4 incisions were made, the first one in the temporal area 1 cm behind the hair line and 4 cm in length, the other one in the nasolabial crease and 2 cm in length and two stab incisions were done at the contralateral philtral ridge of the upper lip and at the opposite area in the lower lip (i.e. crossing the midline). The incisions were connected by subcutaneous tunnels through which the strips were threaded .One sling is attached superiorly by weaving it into the temporal fascia and sutured by permanent sutures (Prolene 4/0) and inferiorly to the modulus. Two other strips were attached to the orbicularis muscle through the lip incisions and both are sutured to the main strip superiorly through the nasolabial incision (Figure 1). Intra- and postoperative parenteral antibiotics were given.

The patients were followed for a period of 1 year and information was recorded about the symmetry achieved, patient satisfaction and development of any complications.

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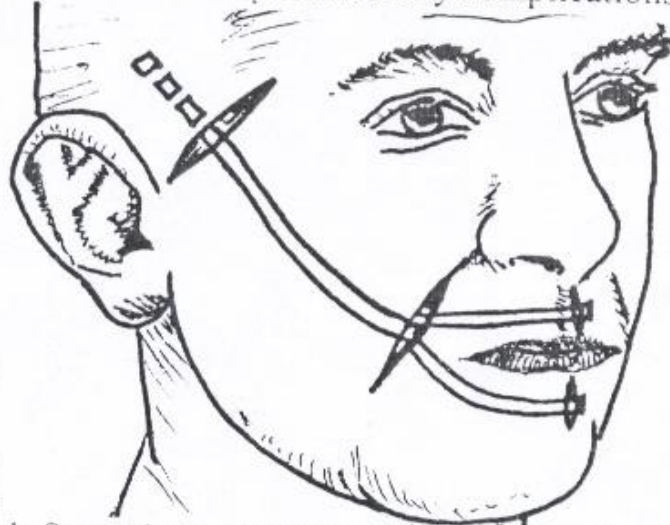


Figure 1: Static sling suspension by strips of fascial substitute

Figure 1 Static sling suspension by strips of fascia/ substitute (illustration by Dr. Redha)

Results

From a total of 11 patients, 9 patients (5 females and 4 males) were satisfied about the results and accepted facial symmetry was obtained at rest.

In one patient there was undercorrection and inadequate lift of the oral commissure. Another patient developed detachment of the main strip

from the two lower strips resulting in recurrence of the facial asymmetry 10 days after the operation, the strips were removed later and new strips were used. No history of immunological rejection or infection was recorded. The complications encountered are summarized in the Table 1 .

Table 1 Complications after facial suspension

Complication	No. of cases
Detachment	1
Inadequate suspension	1
Unacceptable scarring	3
Transient swelling	2
Total	7

During the period of follow up (1 year), no recurrence due to degeneration or relaxation of the facial suspension was recorded.

Discussion

Although dynamic reconstructive procedures are preferred for treating patients with complete facial

paralysis, static procedures are useful for various conditions (e.g. precarious post surgical rehabilitation). In general our patients have unrealistic expectations about the outcome of dynamic reconstructive procedures, and being a somewhat complicated surgery with donor site deformity, we chose the least aggressive method of

reconstruction (i.e. static slings). Currently, one of the commonly used alloplastic materials for static suspension is the Gore-Tex (polytetrafluoroethylene) which is a substance used extensively in vascular surgery and has become very popular in the face, it encourages tissue attachment and infiltration [12,13], but the inflammatory response produced by it and its susceptibility to infection detracts from its usefulness. On the other hand, autografts are used since along time, like fascia lata slings, but they are liable for stretching and the donor site scar may be.

In the current study we used an organic implant which is a strip of chemically treated dermal collagen as a fascial substitute. It has many advantages in comparison to autogenous fascia or inorganic implants, these include: no donor site scarring, reduced operative time, adequate length can be obtained, adequate strength, easily manipulated, soft pliable texture and resistance to stretching with time. Biological implants induce an acute rejection reaction and collagen implants may cause an acute allergic reaction, surprisingly, in this study no acute inflammatory reaction was recorded apart from mild edema in the first week in 2 cases without redness or tenderness and subsided gradually within two weeks.

Collagen implants are commonly liable for absorption, some authors reported early fragmentation and disintegration when used lyophilized fascia as a static slings [10], the static suspension used in this study remained without obvious relaxation during the period of follow up and this may be explained by the fact that alloplastic grafts may act as a template for autogenous proliferating fibrous tissue which replaces the graft and acts as a tethering fibrous slings. However, other studies are needed to show the histological changes that

occur with time and the fate of the fascial substitute

Wong GB reported that endoscopically assisted facial suspension obviates the need for a counterincision at the oral commissure to distally inset the fascia lata graft as described in the standard technique. The endoscopic technique is simple allows secure placement of perioral fascial strips and can be performed as an outpatient surgery. Accordingly, the use of the fascial substitute that is easily manipulated, soft and pliable can be very advantageous if performed endoscopically without the need for external lip incisions and scarring.

Some authors used more than one sling to suspend the lips and oral commissure, in this study we found that the use of a single strip that is attached superiorly to the temporal fascia has similar results providing that the sling is attached to other smaller slings to connect it to both lips and the commissure. Circumoral strips are not preferred now because they prevent wide opening of the mouth.

Conclusions

- 1-Dermal collagen is safe and can be used instead of other materials.
- 2-In this method we decrease donor site morbidity.
- 3- This material can be adopted in treatment of facial palsy.

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