Dynamic Facial Reanimation Surgery with Temporalis Facial Sling
Dr. Saptarshi Chandar*

Abstract
Face is one of the most important part of our body. So a person with facial deformity due to Facial nerve paralysis has to suffer a miserable social life. This troublesome condition can be managed very effectively by Dynamic Facial Reanimation Surgery using Temporalis fascial sling. As an Otorhinolaryngologist, it is our priority to help these patients by improving their quality of life and increasing their social productivity, which can be done by this method to be discussed.

Keywords: Facial nerve paralysis, Dynamic Facial reanimation surgery, Temporalis fascial sling, Otorhinolaryngology.

Introduction:
Facial nerve paresis not improving with time can be addressed with reanimation surgeries. Therefore proper selection of patients for such procedures is of utmost importance. In this report a classic case of dynamic facial reanimation surgery with temporalis fascia sling in a middle aged patient with unresolved idiopathic facial paresis has been illustrated.

Case Discussion:
A 55 years aged male, from Chhapra, Bihar presented with complaints of deviation of his mouth towards right and inability to close his left eye completely for the last 6 months. He is a known hypertensive and known diabetic but under control with medications. On examination it was revealed that there was paresis of the left sided facial muscles i.e. orbicularis oculi, orbicularis oris, buccinator etc suggestive of Grade IV Facial nerve palsy left side. NCV test of the facial nerve done which revealed left sided facial nerve was inexcitable.

According to the patient he was apparently well 6 months back. Since then he has gradually developed deviation of the angle of mouth towards the right side. This was immediately followed by his inability to close his left eye completely.

Otoscopically Bilateral Tympanic membranes were intact, showing no abnormality. No granulation tissue or polyp or any other disease of middle ear were found at any side. Pure Tone Audiometry was done showing 21.35 dB hearing loss at left and 25.67 dB loss at the right. The patient was a known diabetic and hypertensive but was under control with Oral hypoglycaemic agents and Antihypertensives. There was no history of any symptoms suggestive of any viral infections in recent past.

Surgical Detail Proper:
Patient’s Position- Supine with head rotated towards right side.
Anaesthesia- Done under General Anaesthesia.
Incision- Coronal incision was made at left side.
Procedure- Exposure of temporalis muscle with its fascia done up to the superior nucheal line above and zygoma below, preserving the superficial temporal artery and its branches.
Fascial slings were made by making incisions over the temporalis fascia 1 cm. apart in breadth, based superiorly. Incision made over pericranium above the superior nucheal line to elevate the temporalis muscle from superior aspect of temporalis facia.
Suturing of fascial slings to temporalis muscle done (Anchorage).
Rotation of temporalis muscle over the zygomatic arch done so as to bring the fascial slings in alignment with the upper & lower palabrae and upper & lower labia and commisure.
Tunnel formation for each of the slings done. Four ports are made around the orbit and three around the orbicularis oris. Narrow gazed rubber catheter was introduced into the tunnel and fixation of fascial slings with the rubber catheter was done so as to insinuate them along the tunnels to the desired sites of insertion i.e. medial canthus, philtrum region of orbicularis oris and corresponding lower lip region, modiolus of commisure.
Checking the length of the temporalis muscle/slings whether they can reach their respective destinations done without tension (shortening) viz. Lengthening the short arm with the remaining accessory sling done.
Trifurcation of the belly of the temporalis muscle bulk done without jeopardising its vascular supply to assist in fascial slings insertion.
Suturing the respective slings to their corresponding insertion points done and inspection of passive movements of the orbicularis oculi and orbicularis oris done, revealed to be satisfactory.
Cloure- Closure of coronal incision done and suction drain inserted in the temporal fossa. Immediate and delayed follow up of the patient was done- revealed to be satisfactory.

Discussion:

a) Facial Reanimation Surgery:-

Numerous reanimation techniques are available to restore the functions of the facial nerve and are based on the cause, type of injury, its location and the anticipated duration. These methods are broadly classified in 4 types:

1) Neural methods
2) Musculofascial transposition
3) Microneurovascular transfer
4) Facial plastic procedures and
5) Prosthetics.

The most desirable procedure to re-establish the mimetic control of the face are based on a sequence of operations.

Dynamic procedures are as follows:
1) Direct facial nerve anastomosis
2) Interpositional grafts
3) Anastomosis to other motor neurons
4) Dynamic musculofascial transpositions
5) Dynamic free flap reconstruction

Static procedures are as follows:
1) Static musculofascial transposition
2) Facial plastic procedures

Dynamic procedures aim to restore some voluntary movements and thus are more desirable especially for young patients below 55 years of age. Free flap reanimation and static procedures are reserved for patients whose motor end plates are not viable typically from congenital syndromes or after long term denervation. Combination of the above procedures may be appropriate depending upon the circumstances. Choice of reanimation procedure is dictated by the duration of paralysis and the status of the mimitic musculature's motor endplates. Neural procedures are indicated if the duration of paralysis is less than 24 months and the electromyography (EMG) shows fibrillations, indicating denervation with intact motor endplates. If the motor endplates are not viable (electrical silence on EMG) or immediate restoration of some movement is desirable, muscle transposition techniques should be considered.

b) Patient election:

Patient selection for the aforesaid procedures is of utmost importance. Usually young patients below 55 years of age with satisfactory muscle elasticity are chosen for this Dynamic procedures. Long term follow up is necessary in a 3, 6, and 12 months interval. So the patient should be counselled previously about that.

c) Brief Literature review:

Exner K et al shows that the long term follow-up of 93 patients in whom Dynamic facial reanimation surgery was done with Gillies procedure of transpositioning the temporal muscle with two strips of its own fascia performing a dynamic support of the upper and lower eyelid and 180 patients in whom the surgery was done with Mcloughlin’s muscle support gives a sound base for decision making in case of facial reanimation surgery in the favour of Dynamic techniques.1

Hu ZQ et al shows that using temporalis muscle, fascia and galea together for the reconstruction of long standing facial palsy has shown excellent results in 87% patients among 38 patients. The oral commissure on the affected side maintained a favourable position and almost complete symmetry of expression was attained.2

Ravenaugh PC et al shows that patients undergoing extirpation of malignant tumours requiring facial nerve sacrifice, can undergo immediate free tissue contour reconstruction and facial reanimation procedures with no additional morbidity.3

Sidle DM et al shows that when temporalis tendon transfer is indicated for facial reconstruction, the modern operation offer a refined technique that produces an aesthetically acceptable outcome.4

d) Importance of such procedures in a general Otorhinolaryngology settings:

In a otorhinolaryngology setting of a Government run tertiary level health care facilities, patients with facial nerve palsy due to congenital, acquired or iatrogenic causes following mastoid or parotid surgeries are very common. So this kind of reconstruction surgeries have a very good prospect in this field. But as the majority of the patients presenting here, belong to lower socio economic group, long term follow-up which is essential for this procedure is very difficult to perform.

e) Multidisciplinary approach:

According to "Pubmed", in the last five years
maximum studies on this topic have been conducted by the fellows from cosmetic surgery. So at this point of time, are we equipped enough in terms of expertise and knowledge, or should we associate ourselves with other surgical disciplines for better outcome of the patient? Answer is yet to be known and the onus lies on us, the Otorhinolaryngologists, to equip ourselves in managing such cases, especially finding suitable candidates for Dynamic Facial Reanimation Surgery, motivating them and to master in the related surgical technique.

References: