

Facial Nerve Reanimation with Temporalis Muscle Lengthened By Temporalis Fascia

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Abstracts: Management of facial paralysis varies according to the cause, the extent and type of paralysis (total vs partial, unilateral vs bilateral) as well as the duration of paralysis. Facial nerve reconstruction including restitution of the facial symmetry and facial expression is a great surgical challenge. Considering the often disappointing results achieved with the currently available techniques, a continued search for alternative donor sites seemed appropriate. Numerous techniques for facial reanimation have been developed over time, with the ultimate goal being the restoration of both function and form. A case of post traumatic facial nerve palsy managed by reanimation with temporalis muscle lengthened by temporalis fascia is discussed. [Hallur N NJIRM 2014; 5(4) :105-107]

Key Words: Facial nerve palsy, Facial nerve reanimation, Temporalis fascia, Temporalis muscle

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Introduction: Facial paralysis refers to a condition in which all or portions of the facial nerve are paralysed. This in turn associated with significant psychosocial morbidity¹. Management varies according to the cause, the extent and type of paralysis (total vs partial, unilateral vs bilateral) as well as the duration of paralysis².

Various surgical techniques are available for facial reanimation, with specific indications. A number of donor nerve options are available, including cross – face nerve grafts, the hypoglossal nerve, and the spinal accessory nerve. However, considering the often disappointing results achieved with the currently available techniques, a continued search for alternative donor sites seemed appropriate.

Therefore, facial nerve reconstruction including restitution of the facial symmetry and facial expression is a great surgical challenge^{3,4}.

The goals of any successful facial reanimation surgery are to achieve (1) optimal functional rehabilitation by replacement, augmentation, or substitution of the deficient muscle groups (restoration of smile and symmetrical facial expression); (2) static suspension of lax supportive structures (corneal protection, nasal flow, fluid retention, improved chewing and speech patterns); and (3) restoration of aesthetic symmetry to the imbalanced face⁵.

In this case report we discuss dynamic reanimation of a case diagnosed with post traumatic facial

nerve palsy managed by reanimation with temporalis muscle lengthened by temporalis fascia.

Case Report: A male patient aged 24 years referred to Department of Oral & Maxillofacial Surgery with a history of assault on left side of face and primary suturing done in a local hospital 3 months back and complaining of facial nerve paralysis of the facial nerve branches namely temporal, zygomatic and buccal

Figure 1



Clinical examination, routine blood investigations and MRI was done and planned for facial nerve reanimation with temporalis muscle lengthened by temporalis fascia. Informed consent was obtained from the patient.

Under general anaesthesia with the patient supine, Popowich modification of Al-Kayat and Bramley incision was placed. Skin flap is raised superficial to the temporoparietal fascia and then the fascia is separated from the temporal muscle with careful dissection. A 4x12 cm temporalis fascia is separated from the muscle starting inferiorly and then sutured to the temporalis muscle near its origin at the temporal line. Then carefully the same length of temporalis muscle is separated from the temporal fossa starting from its origin inferiorly till the zygomatic arch. Then the whole length of this flap is divided into two slings each measuring 2x12 cm approximately attached at the inferior border.

Figure 2



An incision is now made at the site of the lateral canthus and nasolabial groove. A wide tunnel is created in the subdermal plane between the lateral canthus - preauricular incision and nasolabial incision – preauricular incision. Another tunnel is created from the nasolabial incision medially across the upper lip to a vertical incision just lateral to the contralateral philtral column. A third tunnel is created from the nasolabial incision medially in the lower lip to a vertical incision which lies again on the contralateral side of the midline. Similarly tunnels are created from the lateral canthus medially towards the upper and lower eyelid till the medial canthus.

The tail ends of the two strips of flaps are held with sutures, mobilized sufficiently to pass the beneath the tunnel and reach the new incision sites. Here

they are divided into upper and lower strips and sutured into upper and lower eyelids and lips respectively.

Figure 3



Then surgical drain is placed in the temporal fossa and the suturing done in layers. Extubation was uneventful and the patient shifted to recovery room. The follow up of the patient and physiotherapy was performed regularly and the functional outcome was successful.

Figure 4



Discussion: Numerous techniques for facial reanimation have been developed over time, with the ultimate goal being the restoration of both function and form. In early cases of facial paralysis,

when the ipsilateral facial muscles remain viable, reinnervation of the facial nerve is considered most desirable, either by direct coaptation of the transected nerve ends or by ipsilateral interpositional nerve grafting using autogenous neural grafts².

Gillies described turning down a section of the temporalis muscle from its origin across the zygomatic arch, and lengthening it with fascia lata to reach the modiolus and across the upper and lower lips to beyond the midline. As opposed to the Gillies technique and subsequent modifications, which mobilized the origin of the temporalis muscle, McLaughlin mobilized the insertion of the muscle via an intraoral approach with osteotomy of the coronoid process below the temporalis muscle insertion, the temporalis muscle was lengthened by fascia lata grafts attached to the coronoid process and passed deep to the zygomatic arch into the upper and lower lips⁶.

Adour, Lifchez and colleagues have reported grotesque spasms associated with eating or moving the shoulder after using the hypoglossal and spinal accessory nerves, respectively, for facial nerve reanimation.

The technique described for temporalis myofascial transfer is a modification of technique described by McLaughlin and Champion. The dissection is completely extraoral and the tendon of temporalis is stripped from its origin till the zygomatic arch. The zygomatic arch is not resected, and the procedure is a one stage operation.

The advantages of this procedure are (1) One motor for one action. (2) Immediate results. (3) Relatively small procedure, compared with other forms of temporalis transfer. (4) Restores facial tone, with symmetry at rest. (5) Restores active motion to the angle of the mouth. (6) Prevents pooling of food in the buccal sulcus. (7) Prevents stretching of the paralysed upper and lower lips. (8) Does not leave a cosmetic deformity in the temporal region.

Summary: A modified technique of the temporalis transfer procedure is presented with a more selective action to the eyelids and angle of the mouth, a more direct line of pull, minimal

secondary defect and improved emptying of buccal sulcus. This procedure involves less dissection (and thus morbidity) and is well tolerated by the patient.

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