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Original Research Article

Management of Lagophthalmus in Hansen's Disease by Temporalis Muscle Transfer along with Palmaris Longus Tendon

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Abstract: Loss of eye closure (Lagophthalmus) is a common sequelae of Hansens disease (leprosy) leading to corneal damage and loss of vision. Here two sleeves of Palmaris longus tendon is used along with transfer of temporlis muscle. Post-operative follow up with physiotherapy of eye closing exercises resulted in excellent closure of the eye, thereby avoiding exposure keratitis and its complications.
Keywords: Hansen's disease, exposure keratitis, lagophthalmous, Palmaris longus, temporalis.

INTRODUCTION

Leprosy (Hansen's disease) is a chronic granulomatous disease caused by *Mycobacterium leprae*. The main dangers for the eye in leprosy are lagophthalmos, corneal hypesthesia and iridocyclitis[1,2]. Lagophthalmos can be found in all types of leprosy. Most of the cases spectrum nerves are damaged by direct infiltration by *Mycobacterium leprae*. In the tuberculoid type of leprosy the nerve damage is caused by granulomatous inflammation. In a significant number of cases there occurs involvement of seventh cranial nerve leading to paralysis of *orbicularis oculi* muscle leading to lagophthalmous and its various complications leading to loss of vision[3,4].

The prevalence of Leprosy is high in costal Odisha specially in its southern zone.. Here, we attempts are made to utilize Palmaris longus tendon with temporalis muscle to close the eye. The temporalis muscle is detached from its insertion at the coronoid process of the mandible, re-routed sub cutaneously to lateral canthus of eye. The Palmaris longus tendon is harvested and sutured to the temporalis muscle tendon and passed through the eye lids and finally fixed to nasal bone. There by clinching of teeth causes eye closure. In due course of time eye closure becomes spontaneous and effortless and thus further ocular complications are avoided.

MATERIAL AND METHOD

The leprosy patients attending outdoor with inability to close the eyes were included in the study. They were admitted to the indoor for about three weeks. The period of study was for three years i.e from December 2012 to November 1015.Total number of patients were 8, out of which male 6 and female 2. All were unilateral lagophthalmus, Rt eye 5 cases and Lt eye 3 cases .The ocular finding were as follows-

No corneal lesion—4
Inferior punctuate epitheliopathy—2
Corneal ulcer—2

After the routine investigations surgery was undertaken in local anaesthesia i.e xylocaine 2%and Bupivocaine with intramuscular pentazocine and phenergan sedation. General anaesthesia is not given, since the patient is asked to clinch to identify the temporalis muscle at its insetion at coronoid process of the mandible and also during the surgery he is directed to close the eye several times to adjust the tension of the tendon graft with in the eye lids. Parentral antibiotics (Cefoperazone and Salbactum) is given three hours before surgery .Shaving of the temporal area and clipping of eye lashes were done just before bringing the patient to operation theatre.

With all aseptic measures proper draping of eye and forearm were done. The Palmaris longus tendon measuring 10cms was harvested and kept reserved being wrapped in normal saline gauze. We preferred tendon graft from left forearm as it is the non dominant hand. The ipsilateral temporalis muscle is identified by asking the patient to clinch the teeth and the tendon is felt as it becomes taught. The tendon is

exposed by a small transverse incision of 2 cm long. A part of the tendon of one cm breadth was separated from the parent muscle and secured by 2.0 silk suture. It was delivered through the incision. The Palmaris longus tendon was sutured to the temporalis tendon by fish mouth technique and then it was split longitudinally to two equal halves and crossed over each other.

Then attention is given to eye lids. A small incision of 1cm is made at the outer canthus of the eye, A subcutaneous tunnel is made at the margins of each eye lid. One strand of the graft is passed through each tunnel and pulled out through an incision 0.5 cm medial to medial canthus of eye .By gently pulling the graft ends just apposition of the lid margins is achieved .The patient is asked to open and close the eye and the palpebral opening can be adjusted by changing the the tension in the grafts. Finally the ends are secured to bone by suturing to periostium of nasal bone by 2.0 silk sutures. Wound closure and dressing were done.

Dressing is changed after 72 hours and clinching of teeth encouraged. There by the eye closes with every clinch of teeth. The assistance of the physiotherapist in the rehabilitation unit is very helpful for day to day post-operative management. Parenteral antibiotics were continued for 5 days and there after switched over to oral antibiotics along with anti-inflammatory, analgesics and other ancillary drugs. Patients were followed up weekly for 3 wks, there after fortnightly up to 3 months, then trimonthly for at least 2 years. In every visit they are examined for eye closure, status of the eye, conjunctiva, cornea and vision were recorded.

Fig-1: Harvesting the Palmaris Longus tendon

Fig-2: Tendon split to two halves

Fig-3: Final fix to Nasal bone

RESULTS

At final follow-up at 2years 6 patients were able to close the eye spontaneously synchronous with the other eye. There was absence of full closure in 2 patients but however the corneas are well protected under upper eye lid. The ocular pathology e.g inferior punctuate epitheliopathy disappeared but corneal ulcer continued as an opacity, the other patient had adherent leucoma.

DISCUSSIONS AND CONCLUSION

Palmris longus muscle transfer and use of its tendon is an established procedure in several surgeries[5,6,7]. Here this tendon along with part of Temporalis muscle is used. For transfer the muscle is re-routed subcutaneously along with Palmaris longus tendon, passed through eye lids and anchored to nasal bone. After this with every clinch of teeth the eye closes. In due course of time the part of this muscle contracts spontaneously along with blinking of the other eye and the whole process becomes involuntary without conscious effort. This is supposed to be due to myoneuritization. There by it avoids exposure of cornea and prevents further ocular complications.

This is a very encouraging procedure. However more research in this field is required to establish its efficacy.

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