

# Treatment of traumatic infra orbital nerve paresthesia

Departments of Oral and Maxillofacial Surgery, Indira Gandhi Government Dental College, Jammu, <sup>2</sup>Oral and Maxillofacial Surgery, KG Medical University, Lucknow, India

Parveen Akhter Lone, R. K. Singh<sup>1</sup>, U. S. Pal<sup>1</sup>

## ABSTRACT

This study was done to find out the role of topiramate therapy in infraorbital nerve paresthesia after miniplate fixation in zygomatic complex fractures. A total 2 cases of unilateral zygomatic complex fracture, 2-3 weeks old with infra orbital nerve paresthesia were selected. Open reduction and plating was done in frontozygomatic region. Antiepileptic drug topiramate was given in therapeutic doses and dose was increased slowly until functional recovery was noticed.

**Key words:** Paresthesia infraorbital nerve, topiramate, zygomatic complex fractures

### Address for correspondence:

Dr. Parveen Akhter Lone,  
Department of Oral and Maxillofacial Surgery, Indira Gandhi Government Dental College, Amphalla, Jammu, India.  
E-mail: parveen.lone@yahoo.com

## INTRODUCTION

The purpose of this study was to find out the supplemental value of topiramate, after miniplate fixation of infraorbital nerve results from compression of the nerve due to entrapments, as it leaves the infra orbital foramen. The surgical management of infra orbital nerve injury requires decompression of nerve by reduction of zygomatic complex fracture and sometimes mobilization of nerve, surrounding soft-tissue and help in early recovery of sensory function.

Smith-Swintosky claimed that topiramate help in nerve regrowth and enhanced the recovery of facial nerve function after injury when administered orally at therapeutically relevant doses, and significantly increased neurite outgrowth in cell cultures derived from fetal rat cortical and hippocampal tissues.<sup>[1,2]</sup>

Zygomatic complex fractures are one of the most common facial injuries. Sakavicious reported a 64.4% incidence of infra orbital nerve injury of zygomatic-complex fracture.<sup>[3]</sup> Schilli reported that in 95% cases of Zygomatic Complex fractures, the fracture lines involve the infra orbital foramen and may cause

some degree of sensory disturbances.<sup>[4,5]</sup>

## LITERATURE REVIEW

Topiramate is a compound with a broad spectrum of antiepileptic activities in proving clinically. The main pharmacological action of this compound has been identified and responsible for its anticonvulsant action as it reduces the duration and frequency of action potentials within spontaneous epileptiform bursts of neuronal firing it has neuroprotective activity reported in rodent models of cerebral ischemia brain injury, stroke, epilepsy, etc., It can be prescribed in dosages 50-400 mg daily in divided dosages. Dosages can be increased by 25-50 mg/day each subsequent week as tolerated.

Peak plasma concentration can be achieved in 2 h following a single 400 mg oral dose. The plasma half life is 21 h after single loss, etc.

Symptoms of nerve injury may be varied from paresthesia, numbness at the site of the nose, upper lip. Several methods of sensory testing have been applied, i.e., Gross mapping of altered areas of sensation. The conventional mechanical tests including two-point discrimination light-touch pinprick and sharp-blunt discrimination.<sup>[6,7]</sup> Usually sensory disturbance examination of one site is sufficient. Few studies have suggested that the treatment of isolated zygomatic complex fracture with open reduction and mini plate fixation, yields better recovery of sensory function.<sup>[8]</sup>

Undisplaced zygomatic complex fracture can be treated

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conservative method successfully. Generally open reduction and miniplate fixation gives better results than transosseous wiring or conservative methods. Gabapentin single or combination, topiramate and carbamazepine have also been used in post traumatic neuropathic pain. Various studies have been reported about the beneficial effects of this antiepileptic drug in post-traumatic nerve injury without affecting the final size of the traumatic lesion.<sup>[1,9]</sup>

## CASE PRESENTATION

Two cases were selected in this study, who were reported after 2-3 weeks of injury. Chief complaints of the patients were altered sensation in the distribution of infraorbital nerve. On clinical examination step deformity and tenderness was present at the infra orbital margin and frontozygomatic region. Infra orbital nerve paresthesia was tested with two-point discrimination test and cotton wick test. On percussion affected teeth demonstrated heaviness. Conventional X-rays (Occipetomental and Submento vertex view of the skull) were advised to rule out the involvement/entrapment of infra orbital nerve. Patients were operated under general anesthesia. Gilli's temporal approach and intraoral buccal incision was given to exposed fracture sites. The surgical decompression of the nerve was achieved by fracture reduction and single miniplate fixation was done at fronto zygomatic region. The mouth opening more was achieved. The wound was closed in layers. Postoperative antibiotic, supportive therapies were advised for 7 days. The initial dose of Topiramate was 25 mg/day administered for the 1<sup>st</sup> week at night and the dosages had to be increased to 50 mg/day in the 2<sup>nd</sup> week. Postoperatively patients were assessed clinically and radiologically. The patients were recalled after 7 days to check up and suture removal. The patients showed mild improvement in sensory function and but teeth heaviness was present. Dose were increased to 50 mg twice daily and further dose titration advised as to increase by 25 mg twice daily and minimum dose was maintained. A minimum of 6 months follow-up was chosen in both the patients. The patients were responding well with complete functional recovery and remission of symptoms. Two-point discrimination and cotton wick test showed improvement of nerve sensory function. There was no heaviness or pain during chewing.

## DISCUSSION

Zygomatic complex fracture commonly involves infra orbital nerve injury in the majority of cases. Patients complain about loss of sensation/heaviness pain on chewing. Antiepileptic drug like Topiramate was supplemented post miniplate fixation in infra orbital

nerve injury cases for early nerve recovery as reported in the literature. Results were encouraging as Rafael, *et al.* reported, study of the 30 subjects in highly significant beneficial effect on nerve function, Champy, *et al.*, De Man and Bax and Zingg, *et al.*, stated that reduction and fixation are important factors in the recovery from sensory disturbances of the nerve. Above mentioned studies of the miniplate fixation at fronto zygomatic region have shown the evidence of nerve recovery. Patients were supplemented with Topiramate 25 mg to 50 mg twice daily, which helped in early recovery of sensory nerve function. Drug supplementation showed early improvement in nerve function as reported, but takes the longer period for complete recovery. This combination therapy showed an early improvement in infraorbital nerve function. This may be explained on the basis that a surgical exploration/reduction of fracture fragments prevents further damage to the nerve and drug therapy helps in nerve regeneration as reported by many studies.

## CONCLUSION

From our study, we recommend an open reduction with miniplate fixation at fronto zygomatic region supplemented with Topiramate in therapeutic dosages provided early recovery of sensory function of infra orbital nerve.

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