Jaw-winking or the Marcus Gunn phenomenon (MGP), a congenital uncommon condition characterized by involuntary elevation of a drooping upper eyelid concomitant with various movements of the mandible, is well-documented in medical literature, but very little information is available in dental literature. This is an interesting case report of a 17-year-old female with MGP who reported for orthodontic treatment of her proclined upper anterior teeth, severe lower crowding, and mandibular micrognathia. Review of the literature revealed only two reported cases of dental anomalies in conjunction with MGP. The patient also gave a positive family history of MGP with a maternal cousin having a similar problem. Dentists and other oral health professionals can play a significant role in detection and diagnosis of this rare condition and should take protective measures during dental and oral surgical procedures.

Key words: Jaw winking, Marcus Gunn, ptosis

CASE REPORT

A 17-year-old female patient reported to the Department of Orthodontics for the treatment of her severely proclined upper anterior teeth. Growth and development were apparently normal. Medical history did not reveal any systemic disorder. No other family member was reported to have a similar malocclusion.

Extraoral examination revealed a hyper leptoprosopic facial form with mild facial asymmetry, increased lower anterior
face height, incompetent lips with excessive incisor display, convex profile, and steep mandibular plane. In rest position, there was blepharoptosis of the left upper eyelid [Figure 1]. However, when the mouth was opened, the left upper eyelid retracted suddenly, revealing sclera above the limbus [Figure 2]. The same phenomenon occurred when the mandible was moved to the contralateral side [Figure 3]. No retraction of the left upper eyelid was observed when the mandible was moved to the ipsilateral side [Figure 4]. The affected eyelid remained elevated while the mouth was held open or mandible moved to the opposite side and returned to its normal position only when the mouth was closed (the video file attached to this article shows ptosis and retraction of left upper eyelid with various mandibular movements — [Video File 1]). There was a full range of conjugate eye movements and visual acuity was 6/6 in both eyes.

Her mother reported that the condition had been present since birth and there was neither improvement nor worsening with age. She also reported that her nephew had a similar problem. As they lived in another state, we were unable to verify this.

Intraoral examination revealed a constricted maxillary arch with severely proclined upper anteriors, missing upper right lateral incisor, crowding of lower arch, and exaggerated curve of Spee. Molars were in Class II relationship with an excessive overjet of 15 mm, overbite of 1.5 mm, crossbite of 14.15 and marked deviation of upper midline to right by 2.5 mm and lower midline to left by 2 mm. Cephalometric analysis revealed a Class II skeletal base, with dimensionally small, retrognathic mandible, vertical growth pattern, and deficient chin button.

**DISCUSSION**

The Marcus Gunn jaw-winking syndrome is a rare problem varying in severity from a mild disorder to a significant cosmetic disability.

One of the characteristic signs of this phenomenon is blepharoptosis, which is present in the above case. There
are reports in the literature indicating a tendency for improvement of the disorder with age. However, the patient described here did not report any such improvement.

Although most cases of MGP are said to be congenital, acquired forms of this condition are also known to exist. MGP is said to have developed after eye surgery, syphilis, trauma, pontine tumors, etc.\[9,10\] The congenital forms of this condition will usually be present throughout life unless corrective surgery is done.

Various theories have been proposed regarding the etiology of this disorder. Dual innervation of the levator palpebrae superioris muscle from both the oculomotor nucleus and external pterygoid portion of the trigeminal nucleus\[1\] is one such theory. Normally, levator muscle is innervated by the oculomotor nucleus.

The second theory on innervation states that there is a reflex arc arising from the motor division of the trigeminal nerve to the gasserian ganglion, propagated along intraneuronal connections to the oculomotor nucleus and finally to levator muscle.\[2\] This theory is based on embryologic evidence as the motor nucleus of the two cranial nerves appear at the same time and are located in close proximity.\[11\] Kinematic and MRI findings point to a brainstem structural abnormality in familial MGP patients thus supporting the hypothesis of a neural misdirection of trigeminal motor axons to the elevator palpebralis muscle.\[12\]

The third phylogenetic theory of atavism relates this phenomenon to lower animals and fish, where retraction of the upper eyelid is associated with opening of the mouth. In general, these related movements become inhibited through an evolutionary process.\[11\]

Systemic anomalies in association with MGP are rare. However, a case in which this disorder was associated with ectrodactyly, bilateral pes cavus with ankle varus, foot deformities, spina bifida, and bilateral undescended testes has been reported.\[8\] Association of MGP with renal calculi and bilateral cycloid cleft lip and palate, congenital ptosis, and convergent strabismus in a case of MGP has been reported earlier.\[11\] This may be a variation of the MGP trait. Disabling of the involved levator muscle and unilateral or bilateral frontalis suspension are stated to be effective in the treatment of MGP. Eyelash ptosis and loss of eyelid crease were the most commonly reported complications, each occurring in 10% of the patients.\[20\]

**CLINICAL IMPLICATIONS FOR THE DENTAL SURGEON**

Any type of dental treatment for these patients would require the exercising of utmost care to prevent the potential risk of ocular damage, because mouth opening will lead to simultaneous lid retraction.

Protective eye shield wear is mandatory during routine dental procedures like cavity preparation, use of prophylactic paste, amalgam removal, etc. Special care and precaution must be exercised during orthodontic procedures using sharp instruments, while cutting wires, using fine ligatures, brackets, pins, and halogen/LED curing light as protective reflex closure of the eyelid is not possible for these patients. Furthermore, short appointments are preferable to reduce the problems due to prolonged exposure to the halogen/LED lights of the dental unit.

**CONCLUSION**

Patients with MGP may be more vulnerable to eye injuries during simultaneous lid retraction and opening of the mouth. Dental surgeons will need to handle such cases also while dealing with their oral health related problems. It is important for the dental practitioners to establish a tentative diagnosis, take adequate precautions, and refer suspected patients for ophthalmologic examination.

**REFERENCES**

6. Doucet TW, Crawford JS. The quantification, natural course, and surgical


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