Traumatic *Streptococcus viridans* Endophthalmitis After Penetrating Ocular Injury From Orthodontic Headgear

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**INTRODUCTION**

Traumatic endophthalmitis usually carries a grave visual prognosis. The commonly used orthodontic extraoral traction devices may, on rare occasions, cause severe penetrating ocular injury with resulting endophthalmitis. We describe such a case in a teenage girl.

**CASE REPORT**

A 12-year-old girl had been wearing an orthodontic extraoral traction device (headgear) for 1 year. On the day of admission, while playing with the device and pulling it forward, it dislocated and slipped out of her mouth, snapping back against her face and striking the right eye. Initially, she noticed some discomfort, but only after 5 hours did she attend the emergency department, complaining of blurred vision in the right eye. On examination, the visual acuity was counting fingers OD, and 6/6 OS.

There was a central self-sealing corneal laceration in the right eye, without uveal prolapse, and the anterior chamber was deep, with cell +2 and flare +2. The lens was intact, and intraocular pressure was 13 mm Hg OD and 11 mm Hg OS. The vitreous and retina appeared grossly normal. The left eye had a linear lower lid abrasion.

Under general anesthesia, the anterior chamber of the right eye was irrigated with balanced salt solution and the corneal wound was sutured. Intracameral cefazolin and gentamicin were injected, and intravenous cefazolin, metronidazole, and gentamicin were started. Gram's stain of the aqueous did not reveal organisms.

Twelve hours later, a dense inflammatory membrane developed in the anterior chamber, precluding visualization of the iris. Visual acuity was light perception with uncertain projection.

Gram's stain from purulent conjunctival secretions showed gram-positive cocci. Ultrasonography revealed a dense infiltration of the vitreous by an inflammatory process. An anterior chamber washout was done, followed by a pars plana vitrectomy and lensectomy. Intravitreal vancomycin and ceftazidine were injected. Cultured vitreous grew *Streptococcus viridans*, which was sensitive to vancomycin.

Fourteen days later, a retinal detachment developed. A third operation was performed, including removal of preretal membranes and injection of silicone oil into the vitreous cavity. The retina flattened but remained atrophic.

Three years after the injury, the patient's visual acuity is hand motion OD, 6/6 OS, the intraocular pressure is 8 mm Hg OD and 12 mm Hg OS, and the retina remains attached.

**COMMENT**

Orthodontic extraoral traction devices (orthodontic headgear) are commonly used among children and adolescents. Their intraoral part is shaped as a metallic bow with pointed ends, designed to fit into narrow sockets attached to the teeth. The extraoral part of the device is pulled by elastic bands, exerting constant traction. Dislocation of the device out of the mouth, while still pulled by the elastic bands, may cause injuries to the patient's
face, including the eyes.

The fact that the distance between the two ends of the intraoral bow is approximately equal to the interpupillary distance makes a bilateral ocular injury possible.

Fortunately, our patient had only a superficial lid abrasion to her left eye. The rich oral flora that is carried on the instrument’s sharp tips may cause severe endophthalmitis, as in the case described here.

Such accidents are rare despite the widespread use of orthodontic headgear, and only five cases have been reported so far.\textsuperscript{1,2,3} However, most of those patients developed devastating endophthalmitis, which can be explained by the contamination of the headgear by saliva.

We suggest that such injuries be treated urgently and aggressively, with early vitrectomy and intravitreal antibiotic injection at the earliest clinical sign of endophthalmitis. Orthodontists, as well as pediatric ophthalmologists, should caution patients wearing headgears against pulling the device out of their mouth before releasing the elastic head-straps.

**REFERENCES**