pISSN 1598-298X / eISSN 2384-0749
J Vet Clin 34(1) : 58-60 (2017)
http://dx.doi.org/10.17555/jvc.2017.02.34.1.58

Journal of Veterinary Clinics
www.ksvc.or.kr

Intraocular Foreign Body Entering the Anterior Chamber Through the Mouth: A Case Report

Joon-Young Kim, Kyung-Hee Kim* and Soon-Wuk Jeong*[1]

Veterinary Teaching Hospital, KonKuk University, Seoul 143-701, Korea
**College of Veterinary Medicine, KonKuk University, Seoul 143-701, Korea*

(Received: May 18, 2015 / Accepted: October 17, 2016)

Abstract : An 11-year-old, castrated Maltese dog presented with a 3-week history of periocular swelling, epiphora, and intermittent strabismus. On examination, a foreign body was observed in the anterior chamber, along with orbital cellulitis. Severe gingivitis and plaque accumulation were also diagnosed. The foreign body was surgically removed, and dental prophylaxis and dental extraction were performed. The foreign body entrance could not be found intraoperatively, and the foreign body, later identified as a feather, was removed through a clear corneal incision. The right maxillary molar, which had periodontal inflammation, was also extracted. One day postoperatively, severe hypopyon developed, although the periocular swelling was reduced. These signs persisted despite topical and systemic antibiotic and anti-inflammatory therapy; therefore, the right eye was enucleated 1 week later. Intraoperatively, a fistula was found connecting the orbital medial wall, right maxillary molar root, and sclera. The fistula entered the dorsomedial sclera approximately 7 mm behind the limbus. Enterobacteria were cultured from the area. Foreign bodies can enter the anterior chamber not only through the cornea, but also through the mouth. Therefore, when the entry point cannot be found in the cornea, a careful dental examination is required, and the foreign body must be removed through the sclera rather than the cornea.

Key words **:** intraocular foreign body, anterior chamber, periodontal inflammation, orbital cellulitis, uveitis, feather foreign body.

Introduction

Intraocular foreign body (IOFB) is relatively rare in dogs (1,2,4,6,7,11,13). Among the reported cases, IOFB penetrating through the cornea into the anterior chamber is the most frequent presentation. Anterior chamber IOFB originating from the dental structures has not been reported. Dental disease and dental extraction surgery can cause orbital cellulitis and abscessation (10,12). A previous report described five cases of porcupine quills originating from the oral cavity that embedded within the posterior ocular and orbital structures, and another case report described a IOFB, likely a grass awn, that migrated through the posterior segment (4,6). There are no known reports of IOFB migrating through the posterior segment other than these two reports. Generally, IOFB in the anterior chamber is caused by a penetrating foreign body such as a sewing needle or gunshot.

Herein, we report the clinical findings in an unusual case of an anterior chamber IOFB originating from the teeth.

Case

History and ophthalmic examinations

An 11-year-old, castrated male Maltese dog presented for examination of the right eye. The eye reportedly developed periocular swelling, a protruded nictitating membrane, severe discharge, and exophthalmos. The owner reported that the dog frequently raided the garbage. Beginning 3 weeks previously, the right eye showed conjunctival hyperemia, intermittent strabismus, and mild discharge; severe periocular swelling and exophthalmos began 2 days previously. On ocular examination, the right eye was extremely painful. The menace response and dazzle reflex were positive, but the pupillary light reflex (PLR) was negative and the eye severely miotic. Chemosis, conjunctival hyperemia, and a protruded nictitating membrane were also observed. The intraocular pressure (IOP) was normal at 19 mmHg. A foreign body was observed in the anterior chamber at the 1 o'clock position using a slit lamp biomicroscope (Fig 1). However, the foreign body entrance could not be found. Severe gingivitis and dental plaque were also noted on oral examination.

Based on these examination results, the dog was diagnosed with an IOFB and periobital cellulitis.

Surgical treatment and postoperative care

The IOFB was surgically removed under general anesthesia. A 3-mm clear corneal incision was made at 10 o'clock position and the anterior chamber accessed. Viscoelastic material (Hyal Plus Inj., LG Life Sciences, Korea) was injected to maintain the shape of the anterior chamber. The foreign body was removed with capsulorhexis forceps (Fig 2), and the anterior chamber was aspirated and irrigated using a phacoemulsification machine (Millenium, Bausch & Lomb surgical Inc., USA). The corneal incision was closed with 8-0 polyglactin 910 (Vicryl®, Ethicon®, UK). Dental prophy-

[1]Corresponding author.
E-mail : swjeong@konkuk.ac.kr

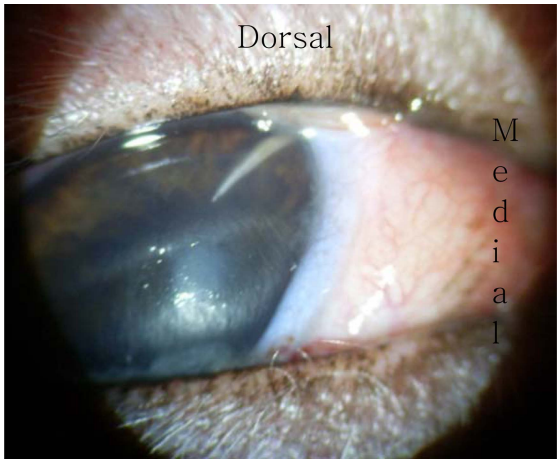

Fig 1. Initial examination of the right eye in an 11-year-old, castrated male Maltese dog. A foreign body was identified in the anterior chamber.

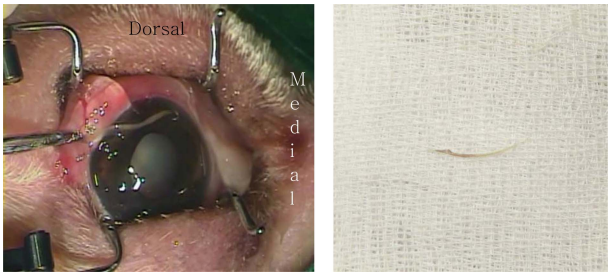

Fig 2. Surgical removal of the foreign body. Intraoperative view (A) and the foreign body (B) postoperatively.

Fig 3. The right maxillary molar root after surgical extraction.

laxis and extraction of the right upper molar were also performed (Fig 3).

Topical ofloxacine (Effexine®; Ildong Pharmaceuticals Co. LTD., Korea) and prednisolone (Pred-forte®; Allergan, Inc. USA), and oral antibiotics and prednisolone were administered postoperatively. The foreign body was subsequently identified as a feather. It was almost 1.4 cm long (Fig 2). The owner reported that the dog had recently rummaged through the garbage, which contained numerous feathers. Two days

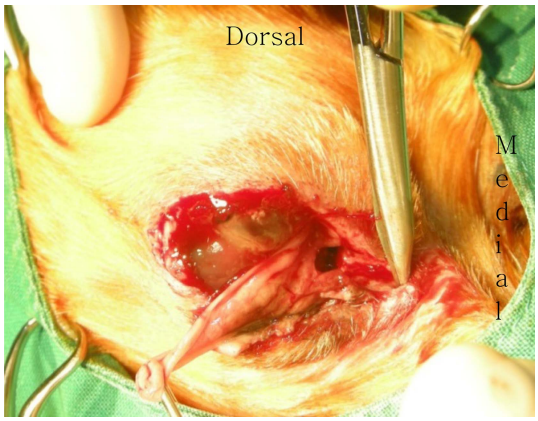

Fig 4. Enucleation of the right eye in an 11-year-old, castrated male Maltese dog. A fistula connecting the maxillary molar and orbit was found near the nictitating membrane.

Fig 5. Enclueated right eye. A hole was identified in the scleral postoperatively.

postoperatively, the periocular cellulitis was decreased, but severe hypopyon was observed. After 3 days postoperatively, the periocular swelling decreased only a slight bit further, and the severe hypopyon persisted. Therefore, we prescribed an additional oral antibiotic (cephalexin, 30 mg/kg) and non-steroidal anti-inflammatory medication (meloxicam, 0.1 mg/kg). Topical opthamalmic neomycin, polymyxin B, and dexamethasone (Maxitrol®; Alcon-Couvreur, Puurs, Belgium) were also prescribed. However, his clinical signs persisted despite aggressive therapy; therefore, we elected to enucleate the right eye.

During the enucleation, a small wound was found near the root of the nictitating membrane (Fig 4). The wound continued into the oral cavity via the maxillary molar roots and connected to the medial globe (Fig 5). Between the opening site of eyeball and oral cavity, a fistula was detected. The opening site of eyeball originated in the dorsomedial sclera, approximately 7 mm behind the limbus. The site was cultured, and *Enterobacteriaceae* were identified.

Following enucleation, the orbital cellulitis completely

resolved, and patient recovered well without any complications.

Discussion

IOFBs are characterized by a range of clinical signs. The variability of the presenting signs reflects the type, size, location, point of entry, and the severity of the initial trauma (11). The cornea is the most common entrance for IOFBs in humans, and the foreign body typically penetrates into the vitreous chamber (8). The presentation is thought to be similar between dogs and humans. In veterinary patients, most intraocular foreign bodies are plant material, wood splinters, glass, gunshot pellets, metallic fragments, and porcupine quills (13). These foreign bodies enter through the eye and are typically retained in the anterior segment. Occasionally, foreign bodies are found in the posterior segment (4).

Ophthalmic disorders may occur in dogs and cats as a complication of dental disease due to the close proximity between the posterior maxillary teeth and the orbit (9,10). Untreated dental disease may cause irreversible vision loss or loss of the globe (10). If abnormalities are identified in the orbit or globe in patients with maxillary dental disease, then therapy should include treatment of both the primary dental disease and the secondary ophthalmic disorder (3,5,9,10). Diseased maxillary teeth must be carefully examined because periodontal disease can cause significant ocular complications (15).

Imaging often plays a key role in the diagnosis of odontogenic orbital cellulitis (5). The most common imaging modality for apical abscesses is periapical radiography; however, computed tomography (CT) is commonly used to image orbital infection (5). CT was not possible in the present case. Because this patient showed orbital cellulitis with uveitis, periapical radiography and CT may have been appropriate. During extraction of teeth with periodontal disease, orbital penetration can occur, leading to ocular trauma (12). In this case, we observed severe periodontitis and found a fistula between the orbit and oral cavity. We suspect that the fistula was caused by periodontitis and enabled the linear foreign body to enter the orbital cavity. Upon arrival into the orbit, the foreign body made small fistula between orbit and orbital cavity and it was able to puncture the sclera and enter the globe. Because the end of feather was pointed and the feather was sharp and elastic, it could move though the orbital tissue. Although the foreign body remained within the globe, the eye developed mild uveitis because the foreign body blocked the entrance to the fistula. During removal of the removing foreign body, oral bacteria were able to enter the globe, causing severe uveitis to develop. Based on the existence of the fistula connecting the oral cavity, orbit, and sclera, we suspect that the endophthalmitis was exogenous rather than endogenous (14).

In previous reports, IOFBs were typically glass, wood, or metallic fragments (4), or porcupine quills (6). In this case, the intraocular penetration was caused by a feather foreign body entering through the posterior sclera. We surmise that the feather originated come from a goose or duck down parka. That a feather can penetrate the sclera via an oral-orbital fistula is remarkable and has not been reported until now.

References

1. Brennan KE, Ihrke PJ. Grass awn migration in dogs and cats: a retrospective study of 182 cases. J Am Vet Med Assoc 1983; 182: 1201-1204.
2. Brightman AH, McLaughlin SA, Brogdon JD, Ream VB, Szajerski ME. Intraorbital foreign body in the dog: a case report. Vet Med 1985; 80: 45-48.
3. Bullock JD, Fleishman JA. Orbital cellulitis following dental extraction. Trans Am Ophthalmol Soc 1984; 82: 111-133.
4. Bussanich MN, Rootman J. Intraocular foreign body in a dog. Can Vet J 1981; 22: 207-210.
5. Caruso PA, Watkins LM, Suwansaard P, Yamamoto M, Durand ML, Romo LV, Rincon SP, Curtin HD. Odontogenic orbital inflammation: clinical and CT findings--initial observations. Radiology 2006; 239: 187-194.
6. Grahn BH, Szentimrey D, Pharr JW, Farrow CS, Fowler D. Ocular and orbital porcupine quills in the dog: a review and case series. Can Vet J 1995; 36: 488-493.
7. Hendrix DVH. Diseases and Surgery of the Canine Anterior Uvea. In: Veterinary Ophthalmology. (ed. Gelatt KN). 4th ed. Ames: Blackwell. 2007; 812-858.
8. Lit ES, Young LH. Anterior and posterior segment intraocular foreign bodies. Int Ophthalmol Clin 2002; 42: 107-120.
9. Niemiec BA. Periodontal disease. Top Companion Anim Med 2008; 23: 72-80.
10. Ramsey DT, Marretta SM, Hamor RE, Gerding PA Jr, Knight B, Johnson JM, Bagley LH 2nd. Ophthalmic manifestations and complications of dental disease in dogs and cats. J Am Anim Hosp Assoc 1996; 32: 215-224.
11. Schmidt GM, Dice PF, 2nd, Koch SA. Intraocular lead foreign bodies in four canine eyes. J Small Anim Pract 1975; 16: 33-39.
12. Smith MM, Smith EM, La Croix N, Mould J. Orbital penetration associated with tooth extraction. J Vet Dent 2003; 20: 8-17.
13. Tovar MC, Huguet E, Gomezi MA. Orbital cellulitis and intraocular abscess caused by migrating grass in a cat. Vet Ophthalmol 2005; 8: 353-356.
14. Westermeyer HD, Ward DA, Whittemore JC, Lyons JA. Actinomyces endogenous endophthalmitis in a cat following multiple dental extractions. Vet Ophthalmol 2013; 16: 459-463.
15. Zachariades N, Vairaktaris E, Mezitis M, Rallis G, Kokkinis C, Moschos M. Orbital abscess: visual loss following extraction of a tooth--case report. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2005; 100: e70-73.