PSEUDOPHAKIC IRIS CHAFING SYNDROME AND ENDOPHTHALMITIS AFTER CATARACT SURGERY FOLLOWED BY ACRYLIC LENS IMPLANT IN A POODLE TOY: CASE REPORT

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Purpose:
With the advanced techniques used for treating cataracts in dogs, especially the phacoemulsification followed by acrylic lens implant, the results became much better as for the vision quality and longterm results. This article intends to describe a rare complication after phacoemulsification followed by acrylic lens implant in a Poodle Toy called pseudophakic iris chafing syndrome and endophthalmitis.

Methods:
Cataract is defined as any loss of transparency of the lens and/or its capsule, leading to visual deficits, astigmatism and commonly blindness.

Generally behavior changes associated with cataracts are not noted until we have 40 to 50% of lens opacity and usually bilateral. When the opacities are localized in the visual axis, the behavior changes are much more evident. The basic mechanism of cataract formation is due to protein disarrangement and among the mainly causes one can point out heritage, diabetes, intraocular inflammation, traumas, retinal diseases (progressive retinal atrophy), radiation and toxic substances. Cataract is more prevalent in dogs than in cats and among the predisposed breeds are Poodle Toy, Cocker Spaniel, Schnauzer, Pekinese and Dachshunds. Phacogenic uveitis, glaucoma and phthisis bulbi are major complications of untreated cataracts. The only treatment for cataract is its surgical removal being phacoemulsification the recommended technique. The modern phacoemulsification surgery was developed by Charles Kelman in 1967 and it was a big evolution in the treatment of cataract. In 1949, Dr. Harold Ridley invented the first intraocular lenses (IOLs), based in the studies of airplanes pilots that sustained eye injuries during the World War II caused by the explosion of the cockpits that were made of acrylic. He found out that this material had a high refractive power and was inert in the intraocular media. Those first lenses were heavy and were associated with a lot of complications. Ten years went by and Cornelius Birkhorst upgraded the Ridley's model and the technique for its implantation. Nowadays the intraocular lenses have an advanced design and technology and can be implanted through a very small incision (foldable) and one can find different types specially made for dogs, cats and horses with formidable outcomes. The pseudophakic iris chafing syndrome is a very rare complication of the lens implantation after cataract surgery utilizing the phacoemulsification technique. This is a case report of one case followed by a severe endophthalmitis in a dog.

Case report:
A 3.5 Kg, 5-year-old, castrated female Poodle Toy presented with the complaint of vision loss and white opacity in both eyes was referred to the Vetweb Veterinary Ophthalmology service in south Brazil. At the initial exam after pupil dilation a bilateral mature cataract was diagnosed and further exams were proposed in order to schedule the surgery. Blood work was normal and electroretinogram using the bpm-200 retinograph was normal on the right eye and negative (no waveforms) on the left eye, probably due to severe lens induced uveitis (LIU). After LIU was controlled the surgery was schedule. The dog was fasted for 12 hours prior to surgery and pupil dilation was initiated 3 hours before the procedure using tropicamide every 15 minutes, 1% atropine sulfate every 20 minutes and sodium diclofenac every 25 minutes. One hour prior to surgery Gatifloxacin drops were administered every 10 minutes. General anesthesia was induced with ketamine (10 mg / Kg) and diazepam (0,5 mg / Kg) and maintained with isofluorane. Central positioning of the globe was achieved using periconal (peribulbar) four point block (3, 6, 9 and 12 o’clock) with lidocaine 2% and bupivacaine 0.5% mixed in the same syringe at the ratio of 1 : 4 (for example 0.5 ml of lidocaine with 2 ml of bupivacaine). The side port incision was made with a 1 mm sapphire scalpel at 11 o’clock and 0,2 ml of trypan blue was injected into the anterior chamber in order to stain the anterior capsule and facilitate its opening. A 3.2 mm disposable scalpel at 3 o’clock was used for the main incision and dispersive viscoelastic solution was injected in order to protect the corneal endothelium and to produce a better mydriasis. After the capsulorhexis and hydrodissection nucleus fragmentation was achieved using the “divide and conquer” technique with a 30° flared phaco tip. The intraocular lens (IOL) used was a foldable acrylic four haptics with 6.5 mm in the optic zone and 12 mm of total diameter. During the implantation one of the haptics fractured and the fragments were removed but the IOL was left in place (in the bag). For suturing the cornea three interrupted sutures using a 9.0 nylon were used and right after the procedure was finished 0,3 ml of betamethasone dipropionate subconjunctivally was done. The post-operative medication consisted of artificial tears TID for 30 days, atropine sulfate 0,5 % BID for 12 days, prednisolone acetate 1% TID for 25 days, ketorolac trometamol BID for 25 days and gatifloxacin TID for 15 days. No systemic drugs were utilized. Two weeks followed up microhyphemas, pigment dispersion was observed and intraocular pressure was oscillating from 26 to 33 mmHg. One month after the procedure corneal edema and a significant amount of fibrin started building up into the anterior chamber that could not be controlled with topical drugs so an anterior chamber lavage was performed and the a ciclitic membrane was removed and synechias broken down. During the procedure an IOL tilted and decentration was observed but it was left in place due to the important adherence present. The dog was put under broad spectrum topical and systemic antibiotics and anti-inflammatory drugs. After 60 days of the surgery the patient presented with total cornea degeneration and eye rupture. After removing the globe we observed that the ruptured haptic was totally inserted into the posterior iris face causing the chafing syndrome and leading to the severe endophthalmitis.
The management of cataract in animals utilizing surgery, mainly the phacoemulsification technique, has showed a lot of progress in the past decade and the success rate of the procedure is very high when compared to the old extracapsular extraction. With the acrylic foldable IOLs specially made for animals the results became much better and the so dreamed state of emetropia can be achieved. Another advantage of the IOL implant is diminished posterior capsular opacities and decreased incidence of long time glaucomas. The majority of the IOLs adapt very well to the capsular bag and very rare complications are described on short and long term. The first case of pseudophakic iris chafing syndrome in humans was described in 1986 as a complication of sulcus-fixated IOLs. As the haptics of the sulcus-fixated IOL are in direct contact with the posterior part of the overlying iris they create focal iris atrophy and pigment dispersion. It is very important to do a good follow up in the dogs that underwent cataract surgery and check them for microhyphemas, intermittent spikes in intraocular pressure and pigment dispersion. All those could indicate the presence of pseudophakic iris chafing syndrome, mainly in those cases where IOL fractures had occur during the implantation causing decentration and continuous iris damage. In vitro evaluation of iris chafing protection have showed a reduction in abrasive insult to the external iris basement membrane and underlying pigmented epithelium by the hydrophilic surface modification of the polymethylmethacrylate intraocular lenses and the results are consistent with a major reduction in corneal endothelium damage as well. IOL fractures occur more frequently at the haptic zone due to incorrect folding and accommodation of them into the cartridge and depending on the type of fractures the IOL should be replaced. When the plate shaped IOLs where used no fractures where reported considering the more robust design they have. The earlier the diagnosis the better one can manage those patients and prevent vision loss.