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Clinical Management of Hyper Matured Cataract in a Labrador Dog

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A B S T R A C T

A 5 years old female Labrador retriever dog was presented for treatment of blindness. From history it was known that the animal progressively developed gradual loss of vision since last one year to complete blindness. Upon physical and clinicalexamination, it revealed bilateralcataract and was confirmed by ultrasonography examination and referred for cataract surgery by small incision cataract surgery (SICS) technique. After removal of cataractous lens one rigid polymethylmethacrylate (PMMA) 41 Diopter (D) intra-ocular lens (IOL) was implanted and the animal regained normal vision after 7days.

Introduction

Eye is one of the most important sense organ of body. Among different parts of eye, the lens is an exceptionally living ocular tissue, which is usually well defined, transparent biconvex biological objective. The lens when loses its transparency and power of accommodation, the image formation on fovea of retina is greatly hampered and animal suffers from blindness. Cataract is the opacity of lens and its capsule (Orfi, 2017). The primary cataract occurs due to diabetes, chemicals, radiation, electricity and trauma whereas secondary cataract occurs due to uveitis, progressive retinal atrophy and glaucoma (Bath and Dua, 2006). The preferred choice of treatment of cataract is surgical removal of affected lens under general anesthesia.

Case history and examination

One female Labrador retriever dog of 5 years age, weighing 33 kg body weight, was presented for treatment of blindness in both the eyes. From history, it was known that the animal progressively lost its vision since one year. The colorations of interior of eye had changed from haziness to lime white. The animal was examined under daylight and inside dark room. Apart from blindness, therewere no remarkable abnormalities on both the eyes. On physical exam, there was no pathological condition of eyes except bilateral cataract. The menace test (0), catoptrics test

(0), pupillary light reflex (+) and tapetal reflex (0) showed negative while maze test (+++) and obstacle test (+++) were positive on 0 to 3 scale basis of measurement. On clinical examination with Schirmer's tear test, it was 14 mm/min in right and 15 mm/min on left eye and intra-ocular pressure (IOP) by digital tonopen28 mm Hg in right and 26 mm/min on left eye. Then it was examined by portable hand held slit lamp bio-microscope in dim light. The corneal layers of both the eyes showed clear and normal consistency, but both the lens were totally opaque and no part of light beam was passing through the opaque lens. No part of posterior segment was visible with the aid of indirect ophthalmoscope/ fundus camera. So neither optic disc nor tapetum was seen. On ultrasonography, the case was diagnosed as a case of bilateralhyper matured cataract. On haemato-biochemical exam it was seen that parameters such asHb, TEC, TLC, DC, CT, BT, and serum glucose, total protein, albumin, globulin, BUN and creatinine values were within normal range. With the consent of owner it was decided to go for cataract surgery of one eye (right eye)by small incision cataract surgery (SICS).

Surgical technique

Four drops of Tropicamide eye drop (Auromide®, Aurolab India) was instilled on right eye as mydriatic for 3 times at 30 minutes interval prior to surgery. Intramuscular injection of meloxicam (Melonex®, Intas Pharmaceuticals, India) @ 0.4 mg/kg body weight (BWT) and injection Ceftriaxone Sodium + Sulbactam (Monocef-SB® 500 mg, Aristo Pharmaceuticals, India)@ 15 mg/kg BWT was administered before anaesthesia. As preanaesthetics, injection Glycopyrolate (Pyrolate®, Neon Laboratories Limited) was given subcutaneously @ 0.01mg/kg BWT 20 minutes before induction. Injection butorphanol (Butodol®, Neon Laboratories Limited) @ 0.2 mg/kg BWT and midazolam (Mezolam, Neon Laboratories Limited) @ 0.3 mg/kg BWT were given intravenously followed by Injection Propofol (Neorof®, Neon Laboratories Limited) @4mg/kg BWT I/V for induction and maintained by Propofol@ 1mg/kg BWT.

The operative procedure was conducted as per SICS technique. For this the animal was kept on left lateral recumbency with head resting over cloth roll to the position of operation for right eye. Oxygen connecting tube was attached to the nostril. The site around eye ball was applied with povid one iodine five times on different directions. The fornices were cleaned with povidone iodine dipped sterile buds. The sterile drape having window was covered over the head and body parts keeping window slit at eye ball. Then another disposable sterile drape was covered over the first drape. Both the eye lids were opened and fixed using appropriate sterile eye speculum. Topical anesthetic eye drop of proparacaine (Aurocaine®, Aurolab, India) was instilled on eye.

At 10 to 12 o'clock position of limbus, the bulbar conjunctiva was incised and reflected. The bulbar bleeding was controlled by using bipolar electro-cautery. Then 2 mm away from limbal margin a semilunar incision was given extending from 10-12 o'clock position using BP handle (No.3) fitted with 15 number blade. Then using crescent, one tunnel was prepared through the previously made incision by giglis movement. Then holding the limbus by Lim's forceps, keratome was taken through the crescent made tunnel and incised the cornea. Then at 9 o' clock position one port was made on limbal junction using MVR blade (Myringovitreoretinal).Simcoe's 2 way cannula was attached to the anterior chamber (AC) and irrigated using Ringer's Lactate solution (RL). Then at 3'o clock

position another port was made on cornea just above the limbus. Throughout the surgical procedure RL was sprinkled over cornea to keep moist.

At 3 o'clock port one air bubble was injected below cornea and at the same time Trypan blue solution was sprinkled over anterior capsule of lens by a cannulated syringe. Through 3 o'clock port the previously prepared 26 gauge capsulorrhexis needle was introduced and the anterior capsule was wounded and reflected. Through flushing the excised capsular material was removed using flushing syringe. The site was thoroughly flushed using hydro-dissection cannula fitted with 10 ml syringe having RL so as to dislodge the lens from capsular bag. The cataractous lens was over matured and was there like chalky materials. Hence these white chalky materials were irrigated, flushed and aspirated using Simcoes'2 way cannula.Repeated flushing was done so as to remove the remnants of dissolute lens materials. Viscoelastic substance was pushed into AC and flushed using RL. Then polymethylmethacrylate (PMMA) intra ocular lens (IOL) (Aurolens®, Aurolab, India) of 41 Diopter was placed into the capsular bag. Using Dialer, the haptic of IOL was adjusted inside the lens capsular bag properly so as to remain in correct position. Then the AC was thoroughly irrigated and flushed to remove the remnants of viscoelastic substance. Then one large air bubble was pushed to the AC so as to remain elevating the cornea in its normal shape.

The 3 and 9 o'clock ports were sealed by hydration method using RL in pressure through cannulated syringe. The 10 to 12 o' clock tunnel was sutured using 10-0 nylon. The injured conjunctiva was dragged and covered at the incised site and was plugged using bipolar electrocautery. Injection dexamethasone (Dexona®, Zydus-Cadila, India) 0.2 ml was injected into sub-conjunctiva at lower bulbar region. Povidone iodine eye drops were instilled. Both the eyelids were closed and padding was applied. The owner was advised to instill eye drops of Ofolxacin and prednisolone 5 times a day and the prednisone should be used with tapering doses as advised with use of Elizabethan collar (E-collar). It was applied with used socks on its paws in order to prevent scratching and soiling the operative site.

After 5 days of operation the tarsorrhaphy sutures were removed. The operated eye was slightly congested but the animal was able to visualize the surrounding objects. Eye was cleaned with luke warm saline and povidone eye drop instilled. The owner was advised to continue the eye drops regularly with use of Elizabethan collar for another week.

Results and Discussion

The dog recovered well and regained its vision after a week. It was able to resume activities like movement, running, taking food, identifying the articles, responding to call from a distance henceforth. For doing cataract surgery, Young, *et al.,* (1991) had used anaesthetic regimes using propofol as an induction agent to thiopentone because of reduced recovery time during anesthetic period. It was further reported that the globe can be physically moved to a central position for intraocular surgery by using stay sutures or clips. In this case we have used eye speculum of appropriate size and cloth was kept below the head to keep in position.

Gilger (2003) performed intracapsular/ extracapsular lens extraction in dogs to treat cataract by dorsal limbal incision. Garcia-Sanchez *et al.,* (2005) treated a case of bilateral senile cataract in an 11 year old female miniature poodle by phacoemulsification with intraocular lens

implantation. Ramani, *et al.*, (2005) performed lens extraction and intraocular lens implantation without any major complications.

Jorge (2017) had performed phacoemulsification for removal of cataractous lens in 15 dogs and implanted intra ocular lenses. They reported that, all the eyes were visual 90 days after surgery. Ganesan and Ramani (2018) implanted a suitable 37–41 diopter multifocal plate haptic single-piece hydrophilic 2-hydroxy ethyl methacrylate (HEMA) IOL through the extended (3.5–4.0 mm) main incision into the capsular bag in twelve eyes after phacoemulsification. In our case, the poly methyl methacrylate (PMMA) IOL of 41 D was used for implantation in doing the SICS as it was not suitable for phacoemulsification owing to its hypermaturity.

Fig.1 Labrador Retriever, showing Bilateral cataract (OU)

Fig.2 Showing Color Doppler Ultrasonography of Cataract

Fig.3 Showing Limbal incision on bulbar conjunctiva

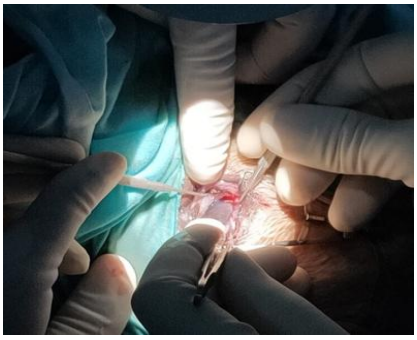

Fig.4 Showing eye after irrigation of anterior chamber after IOL implantation

Nasisse, *et al.,* (1990) reported that poor postoperative vision was caused mostly by inadequate pupil size and clarity, which were threatened consistently by miotic effects of postoperative uveitis. Klein *et al.,* (2011) reported vision retention in 90% of eyes with a median of 302 days of follow up in 103 dogs or 179 eyes. Guimarães, *et al.,* (2017) studied the surgical outcome and postoperative complications in 182 dogs. The presence of intraocular lens did not have any detrimental effect on postoperative outcome or the frequency of postoperative complication.

Gaiddon *et al.,* (2000) reported mild inflammation, characterized by congestion of episcleral vessels, corneal edema and protein within the anterior chamber after surgery for cataract and intraocular lens implantation, which resolved by day 8. In the present case there was only slight inflammation with bulbar congestion, which reduced after removal of tarsorrhaphy sutures and instillation of eye drops.

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