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Successful surgical management of corneal squamous cell carcinoma in a pug using a platelet-rich fibrin membrane graft: A case report

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Abstract

An eight-year-old pug was presented to the veterinary clinical complex with a history of growth from the left eye for the past five months. On clinical examination, the mass was small, pedunculated and located at the centre of the cornea. Tentatively it was diagnosed as a tumour growth and surgical excision was planned. Haemato-biochemical assessment was done pre-operatively. Under general anaesthesia, Atropine and Xylazine for premedication, ketamine and diazepam for induction and maintenance with Isoflurane, the mass was excised by superficial keratectomy. An Autologous platelet-rich fibrin membrane graft was placed over the keratectomy site. The animal made an uneventful recovery following surgical correction. The excised mass was further subjected to histopathology, revealing it as a Squamous cell carcinoma.

Keywords: Autologous platelet-rich fibrin membrane, Squamous cell carcinoma, Superficial keratectomy

Introduction

Squamous cell carcinoma (SCC) is a neoplastic condition of squamous epithelial cells and is usually superficial in origin (Vail *et al.*, 2007)^[1], occurs as a nodular or erosive lesion showing red firm plaque to a cauliflower-like ulcerated mass. It may be seen in any organ of the body lined by epithelium-like skin, eye, oral and nasal cavities, tongue, oesophagus, lung, penis, vagina and footpad. In general, ocular SCCs affecting any structure of the eye globe and adnexa are less frequent in dogs (Montiani-Ferrira *et al.*, 2008)^[3]. Most of these tumours are benign and rarely metastasize to distant organs (Vail *et al.*, 2007)^[1]. Platelet-rich fibrin (PRF) is a therapeutic concept of the second generation of platelets concentrated in a fibrin membrane. The platelets regulate the healing process including cellular migration, proliferation, and angiogenesis; it also controls cell apoptosis and interaction with progenitor cells. Therefore, platelet-rich fibrin is considered a bioactive surgical additive, which has a crucial role in hemostasis and regulating inflammatory processes with accelerated wound healing and bone regeneration. Platelet is a highly specialized secretory cell that releases growth factors with cytokines to improve the healing process (Thanoon *et al.*, 2019)^[6].

Case History and Clinical Observations

An eight-year-old pug was presented to the veterinary clinical complex with a history of growth from the left eye for the past five months. On General examination, all the vital parameters were found to be normal. On Clinical examination, the mass was small, pedunculated and located at the centre of the cornea (fig.1). The animal had epiphora from the left eye.

Surgical Procedure

Pre-operatively, before sedating the animal, about 10 ml of venous blood was collected from the cephalic vein and immediately stored in 2 plain (anticoagulant-free) glass blood collection tubes 5 ml each. Both the tubes were centrifuged using a table-top centrifuge for 10 min at

3000 rpm. After centrifugation, the resultant blood samples were presented in three layers, the topmost layers consisted of acellular platelet-poor plasma. The middle layer consisted of PRF or fibrin clot (fig.3).

Ophthalmic examination	OD	OS
Menace reflex	+	+
Dazzle reflex	+	+
Pupillary light reflex	+	Not appreciable
Palpebral reflex	+	+
Corneal reflex	+	+
Cotton ball test	+	+
Obstacle test	NAD	NAD

The bottom layer consisted of red blood cells. Each fibrin clot will be gently removed from the test tube and any excess will be removed by using sharp scissor. The fibrin clot will be gently squeezed between two sterile pieces of gauze soaked in saline to squeeze out the serum to form the PRF membrane.

After preparing the graft, the animal was anaesthetized using, Atropine (0.02 mg/kg) and Xylazine (1 mg/kg) for Premedication. Ketamine (5mg/kg) and Diazepam(0.5mg/kg) for induction, and maintenance with Isoflurane 2%. The animal was placed on lateral recumbency keeping the affected eye on the top. The eye was sterilised with povidone-iodine 0.1% the following draping was done. The eye was fixed using stay sutures and then the mass was resected later on superficial keratectomy was done. The site was then managed with autologous platelet-rich fibrin membrane using stay sutures(fig.4). Finally, temporary tarsorrhaphy was done(fig.5). The animal made an uneventful recovery following surgical correction. The excised mass was then subjected to histopathology, which revealed that the neoplastic cells showed anisocytosis, anisokaryosis, and prominent multiple nucleoli with numerous mitotic figures suggestive of Squamous cell carcinoma.

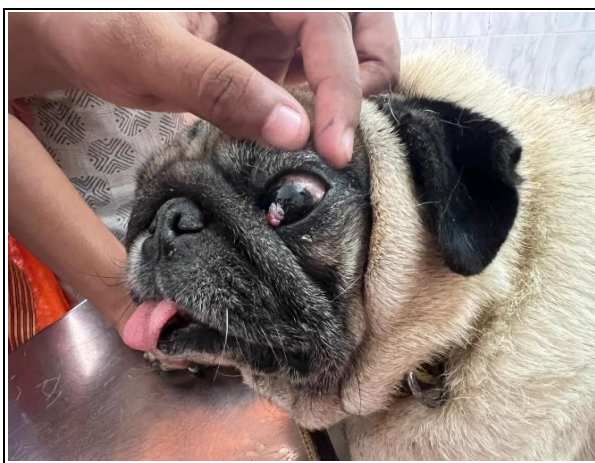


Fig 1: Pug with Ocular Squamous cell carcinoma

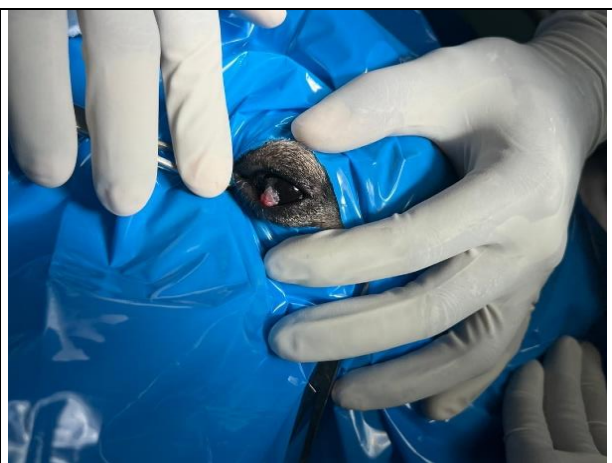


Fig 2: Surgical site preparation



Fig 3: Autologous platelet rich fibrin (PRF)

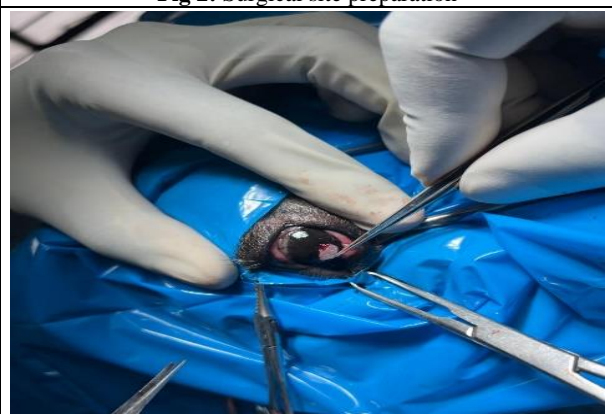


Fig 4: PRF graft placement



Fig 5: Temporary tarsorrhaphy

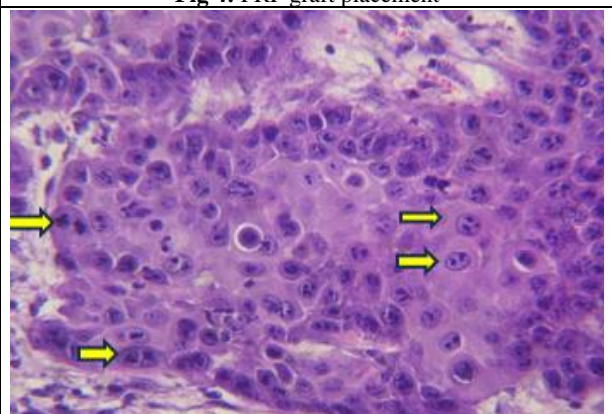


Fig 6: Histopathology, cells showing multiple nucleoli with numerous mitotic figure (arrow)

Discussion and Conclusion

Among all species, SCC may occur in young animals, but the incidence increases with age usually 9-14 years in cats and between 6 to 10 years in dogs (Dayananda *et al.*, 2009; Kashyap *et al.*, 2013)^[2]. Both in cats and dogs, the squamous cell carcinoma (SCC) tumour is believed to be caused due to increased exposure to solar radiation, lack of adnexal pigmentation, possibly chronic ocular surface irritation (microtrauma), viral agents, high expression of cyclo-oxygenase-1 (COX-1) and COX-2, hormonal, genetic and immunologic factors (Montiani-Ferrira *et al.*, 2008)^[3]. The present case with a history of ocular squamous cell carcinoma was successfully diagnosed and surgically managed. Autologous platelet-rich fibrin membrane augmented corneal healing faster and gave the animal an uneventful recovery following surgical correction without any complications in the vision.

Conflict of Interest

Not available

Financial Support

Not available

References

1. Vail DM, Thamm DH, Liptak JM. Withrow and MacEwen's Small Animal Clinical Oncology; c2007.
2. Kashyap DK, Tiwari SK, Giri DK, Dewangan G, Sinha B. Cutaneous and subcutaneous tissue neoplasms in canines: occurrence and histopathological studies. *Afr J Agric Res.* 2013;8(49):6569-6574.
3. Montiani-Ferreira F, Kiupel M, Muzolon P, Truppel J. Corneal squamous cell carcinoma in a dog: A case report. *Vet Ophthalmol.* 2008;11(4):269-272.
4. Samuel M, Khadr A, Koura AA, Madi AS. The effect of platelet-rich fibrin on angiogenesis during periodontal regeneration. *Alex Dent J.* 2017;42:182-186.
5. Jangid SK, Prajapat A, Meena S, Choudhary S, Kumar N, Gahlot RK, Kumari F, Yogi VK. Squamous cell carcinoma. *Int J Vet Sci Anim Husbandry.* 2024;9(1):403-405.
6. Thanoon MG, Eesa MJ, Abed ER. Effects of platelet-rich fibrin and bone marrow on the healing of distal radial fracture in local dogs: comparative study. *Iraqi J Vet Sci.* 2019;33(2):419-425.

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