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## **INDOLENT CORNEAL ULCERS**

### **What is an indolent corneal ulcer?**

An indolent corneal ulcer is a superficial break in the corneal surface that refuses to heal. The cornea (the clear surface of the front of the eye) is covered with epithelium similar to the skin that covers the rest of the body. An ulcer is a break in the epithelium that exposes the underlying tissue (corneal stroma). An ulcer is similar to a scrape or abrasion of the skin. Fibronectin is a similar substance to a scab that forms across a corneal ulcer immediately after wounding and it serves as a base for epithelial cells to migrate over and heal the wound. As the epithelial cells migrate across, the fibronectin is removed by a series of enzymes. If the fibronectin is removed prematurely by excessive enzyme production or fails to be removed due to a lack of enzymes the corneal ulcer fails to heal. One theory of why an indolent corneal ulcer fails to heal is there is either excessive enzyme production or diminished enzyme production. It appears that approximately 80% of indolent ulcers are secondary to excessive enzyme production with about 20% due to little enzyme being produced.

### **How is an indolent ulcer diagnosed?**

An indolent corneal ulcer is diagnosed by its appearance and history of failure to respond to proper medical therapy. Generally corneal ulcers heal very rapidly and often do not require any treatment. A common example is the animal that goes out in the morning, injures its cornea, and is seen by the owner rubbing the eye and tearing. Owners often in a morning rush plan to take the animal to their veterinarian after work only to find the animal normal by that afternoon because the ulcer has already healed. Some ulcers require treatment such as antibiotics and atropine. Usually a routine corneal ulcer will heal within 7 to 10 days on conventional therapy. When an ulcer fails to heal and demonstrates a characteristic appearance it is diagnosed as an indolent or non-healing corneal ulcer.

### **How are indolent corneal ulcers treated?**

Once an ulcer has failed to respond to conventional therapy and has been diagnosed as an indolent ulcer there are medical and surgical alternatives. The majority of indolent corneal ulcers appear to be secondary to excessive enzyme production, whereas there is a medical therapy to decrease the enzyme levels. We prescribe PSGAG (polysulfated glycosaminoglycan), a serine protease inhibitor. The drop is applied three times daily for up to two weeks. Generally this medical therapy will succeed in healing 80% of indolent corneal ulcers. When an ulcer fails to respond to medical therapy we recommend surgery. The surgery we suggest to treat an indolent corneal ulcer is a lamellar keratectomy. In this surgery a superficial layer of cornea is removed that incorporates the ulcerated area. Surgery is over 99% effective in healing an indolent corneal ulcer. There are other therapies for treating indolent corneal ulcers but these methods have proved most effective in our practice. Following surgery the animal is treated with conventional ulcer therapy for 7 to 14 days.

### **Can these ulcers return?**

Yes. An indolent corneal ulcer occurs because of a defect in the healing process. If the cornea is reinjured at a later date a failure to regulate the healing process may occur again. We have found that most eyes that heal with medical or surgical therapy generally will not have another indolent ulcer in that same eye, but the other eye is a risk of ulceration.