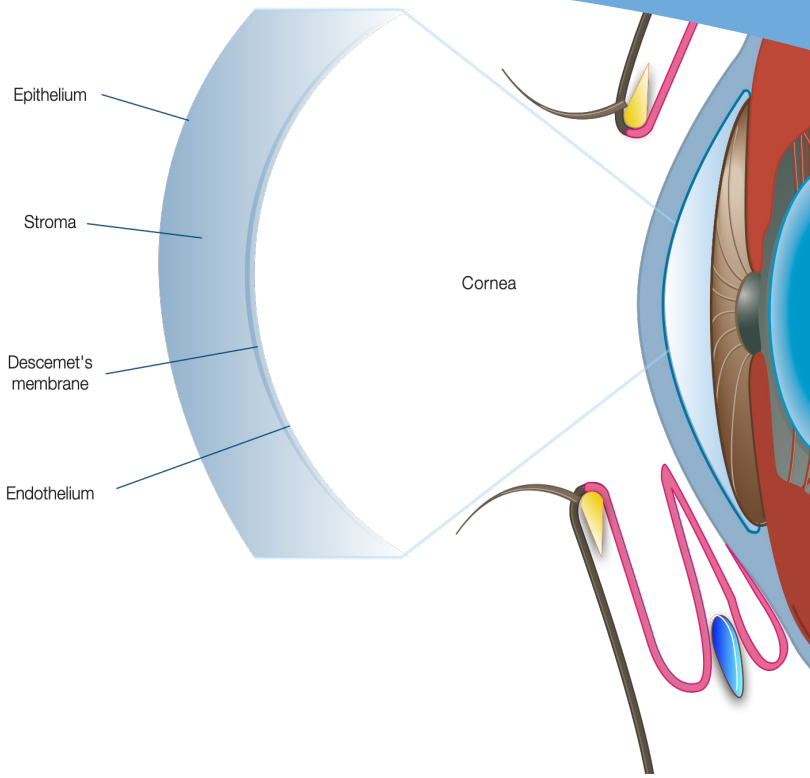
FACTSHEET

CORNEAL ENDOTHELIAL DEGENERATION

What is the Cornea?

The cornea is the transparent tissue at the front of the eye, allowing light to pass into the eye. The cornea forms a barrier against debris and infection, but is only half a millimetre in thickness. The cornea is not a single solid piece of tissue, but is composed of layers with differing properties. There are three main layers, the outermost is the epithelium and is in direct contact with the tears. The middle layer forms the bulk of the cornea and is called the stroma and the very thin inner layer is called the endothelium.



What is corneal endothelial degeneration?

The endothelium is responsible for pumping water out of the cornea and into the eye. In cases of endothelial degeneration the pump mechanism fails and excess water is retained within the cornea making it appear a cloudy blue colour. The retention of water within the cornea is known as corneal oedema.

What causes corneal endothelial degeneration?

The endothelial cells responsible for pumping water cannot replicate and there is a natural cell loss with increasing age. If a dog is born with a low number of cells or if the cells are damaged during life, the total number remaining may not be able cope with the demand to pump water and corneal oedema appears.

Are particular breeds at risk?

This is generally a disease in older dogs and we have seen this in many breeds and cross-bred dogs. Particular breeds that are over-represented in the UK include: Boston Terrier, English Springer Spaniel, Chihuahua, Boxer and Dachshund.

What are the signs of corneal endothelial degeneration?

The cloudy blue colour change can progress gradually and this will affect vision. As the condition develops, small bubbles form within the cornea, and these can erupt on the surface of the eye as tiny blisters. The eruption of the blisters creates uncomfortable corneal ulcers and can allow bacteria to enter the middle corneal layer.

What are the treatment options for corneal endothelial degeneration?

Unfortunately there is no treatment option available to replace the missing endothelial cells. We will often recommend the use of concentrated saline eye-drops to draw the excess water out of the cornea, increasing transparency. The medication must be administered on a very regular basis to prevent the build up of corneal oedema.

In severe or rapidly progressive cases we may offer corneal crosslinking to limit repetitive ulceration, or graft surgery to bring blood vessels into the water logged cornea. A corneal graft is sutured (stitched) into the tissues of the cornea and the positioning will depend on the size and location of the corneal oedema. The blood vessels within the graft help to remove the excess water, increasing corneal transparency and decreasing the risk of ulceration.

What complications could occur with corneal surgery?

There is always a degree of anaesthetic risk with any surgical procedure, and we aim to minimise this as far as possible. Infection must be avoided during the healing process and we will normally prescribe a course of topical antibiotics. Rubbing or scratching should be avoided and we will often recommend the use of an Elizabethan collar to prevent suture failure.