

## Disease of the corneal endothelium

The cornea is the clear window at the front of the eye. It does most of the focusing for the eye and it must stay transparent for good vision to occur. The inner most layer of the cornea is comprised of a layer of cells (the endothelium). These cells sit on a membrane (Descemet membrane). If this layer of cells does not function properly they can produce deposits which impair vision. The cornea can also swell and go cloudy. The swelling can also result in painful blisters on the surface of the eye. Defective endothelial cells can be due to inherited diseases (such as Fuchs endothelial corneal dystrophy), aging, trauma, or previous surgery.

If vision is reasonably good then endothelial disease can be left alone. Sometimes salt water drops/ointment or cold air from a hairdryer can be used to try and keep swelling to a minimum. However for a long term solution, a partial thickness corneal transplant is the best option.

Prior to the development of partial thickness transplants (about 10-15 years ago) patients with endothelial disease underwent a full thickness transplant. However visual recovery took a long time (at least a year) and often good vision could not be obtained without a hard contact lens.

Of the partial thickness techniques **DMEK** gives the best visual results, the fastest return to good vision, and the lowest rejection rates.

In **DMEK** surgery the abnormal endothelium is removed, then transplanted endothelium is inserted into the eye. The transplanted tissue comes from a local eye bank where it is stored. It is donor tissue from someone who has died and donated their eyes.

With **DMEK** surgery there are no stitches holding the transplant in place. It sticks to the back of your cornea by natural adhesion. However for this adhesion to occur gas is put in the eye to push it in place. After surgery you will need to spend time on your back looking at the ceiling so the gas bubble floats to the front of the eye and pushes the transplant in place. It is not uncommon for patients to have to return to the operating room to have more gas put in the eye in the week or two after surgery.

Usually there will be an improvement in vision within the first month but it may take longer, up to 3 months. However this is better than the older style full thickness transplants that could take years! Vision may not return to normal levels if there is scarring of one of the other corneal layers, or if another eye disease is present.

There is a lifelong risk of rejection and the Specialist may want you to stay on eye drops for life to try and prevent this. Even with drops rejection can still occur, so it is important to report immediately to the eye clinic or your optometrist if vision becomes blurred or the eye becomes red or painful.

