

KERATOCONUS – NOVEL TREATMENT FOR DIFFICULT EYE DISORDER

The cornea, which forms a clear dome over at the front of the eye, is amazing as it not only provides structural integrity and is the most important part of the focusing mechanism of the eye, but it is also amenable to a number of corrective procedures to improve a person's eyesight. Yet it can also cause difficulties for a person's ability to see well. One of the latter is caused by a condition called keratoconus (derived from Greek: kerato- cornea and konos – cone). In this condition there is a progressive change in from the normal gradual curvature of the cornea to a more conical shape associated with thinning of the tissue.

Typically this condition starts in adolescence and becomes more severe as a person ages. Early on there are few if any symptoms but as it progresses frequently multiple 'ghost' images occur. Instead of a single image of a point, a multitude of images are created and spread out in a chaotic pattern. Due to the irregular and frequently shifting cone shape of the cornea, glasses or regular contact lenses are generally of little help. Special 'hard' contact lenses that flatten out the cornea will be the only practical visual aid, though over time they'll often have to be 'piggybacked' on top of soft contact lenses.

Keratoconus though frequently is asymmetrical and at times minimally progressive in at least one of the eyes. Still up to 25% of people with the condition will eventually require a corneal transplantation, a serious though reasonably successful procedure. Rarely does the cornea thin to the extent that it spontaneously ruptures requiring emergency surgery. At times a partial corneal transplantation or the placement of artificial ring segments into the cornea can stabilize the condition.

Starting more than 10 years ago, at first at the Technische Universität Dresden, Germany and later at the IROC in Zurich, Switzerland, Prof. Theo Seiler and coworkers developed the novel treatment of 'crosslinking' Collagen fibers within the cornea. This addresses the underlying problem of progressive weakening of the links between those Collagen fibers and instead creating a multitude of novel and much stronger links. This causes an exponential increase in strength and stiffness of the cornea and flattening of the cone. It alone can reduce a person's visual error by up to 40%. This treatment has the potential to drastically reduce the need for corneal transplantation in persons with this condition and improved the quality of their vision dramatically. As so often in life, it is most effective if utilized relatively early once a progressive nature of the condition has been established.

This is relevant against the background that there is a significant genetic connection to keratoconus. This is reflected by the fact that it occurs more frequently in people with certain ethnic backgrounds. Typically it is said that keratoconus is found in 1/2000 people of the population average. At least some studies have been it to be 4.4 times more common in persons of East Indian background and possibly less common in people of East Asian heritage.

This is very relevant as excellent diagnostic devices have improved the earlier recognition of this problem greatly. The earlier an intervention is undertaken, be it a 'therapeutic' contact lens to 'crosslinking' the less the probability of debilitating progression to serious visual problems and the need for latter serious eye surgery.

In particular, should there be a history of keratoconus in the family, you should consult with your eye care professional and/or attend one of the several diagnostic keratoconus clinics available in the GTA area.