**BiOptics for High Hypermetropia**

**What is BiOptics?**

BiOptics is a method of refractive surgical correction using a combination of lens implantation and excimer laser surgery. It combines the advantage of the wide range of optical power that can be corrected through lens implantation, with the precision and accuracy of the refractive correction that can be obtained by LASIK.

**How is BiOptics Performed?**

BiOptics is carried out in a step-by-step fashion. Firstly, LASIK flaps are created (but no excimer laser treatment is given, so there is no change in the vision at this stage). Secondly, lens implantation is carried out in each eye, and this will usually be as two separate operations, because these are intra-ocular procedures. Finally, the original LASIK flaps are lifted and the excimer laser surgery performed, in order to achieve the definitive optical outcome. So in total, for most people, this will mean four separate surgical sessions.

**Why is BiOptics necessary?**

It might seem like a lot of work to achieve refractive correction! LASIK alone can be used to correct low levels of hypermetropia or astigmatism, but the problem of trying to correct higher degrees of hypermetropia is that for some people the cornea just does not tolerate the degree of change in shape that is theoretically necessary to achieve the desired optical outcome. On the other hand, lens implants can be used to correct high levels of optical defect, and with toric lenses, both high hypermetropia and astigmatism can be corrected together. However, the extremes of the range of lens implant power often have to be manufactured to individual order, with high cost and long delivery time. In addition, the lens must then be implanted, and remain stable, in exactly the correct orientation to fully correct the astigmatism. So sometimes, despite the potential to fully correct the optical defect with a toric lens implant, a full correction is not achieved. Furthermore, for optical reasons, it is preferable that the defective shape of the cornea, which creates astigmatism, is rectified by restoring it to a spherical shape, rather than indirectly compensating for the distortion induced by the cornea with a toric lens implant.

So for all these reasons, it is often a better plan when trying to correct high hypermetropic astigmatism to tackle it in stages, eliminating the hypermetropia with a standard spherical lens implant, and then eliminating the astigmatism, as well as fine tuning the overall optical outcome, with laser correction.

**Why do the LASIK flaps first?**

When performing LASIK, a thin flap is cut across the surface of the cornea so that the laser can be applied beneath it. The flap may be cut with a femto-second laser, or with a mechanical microkeratome, but whichever device is employed, it is necessary to apply a suction ring to the eye to stabilise the cornea whilst the flap is being cut. This is well tolerated in an eye that has not had previous surgery, but following a lens implant operation, the surgical wound takes many months to become secure enough to withstand the pressure of the suction ring, and this is the reason why we recommend to cut the LASIK flaps as a preliminary procedure.