Intracorneal ring segments useful in post-LASIK ectasia

Dermot McGrath in Paris

PATIENTS diagnosed with corneal keratectasia after LASIK may benefit from the implantation of intracorneal ring segments (INTACS, Addition Technology) to stabilise the instability of the biomechanical forces of the cornea, resulting in post-LASIK ectasia. Dr Colin said that there is still a lot of speculation about the pathogenesis of the disease.

“We still don’t fully understand why the cornea changes its shape so radically in patients with post-LASIK ectasia. Is it because the corneal tissue is abnormal? Is it due to abnormal cross-linking of collagen or is there perhaps a loss of the structural integrity of Bowman’s layer during the LASIK procedure? Or is it perhaps due to keratocyte apoptosis, perhaps stimulated by some sort of ocular trauma or persistent eye rubbing?” he said.

Dr Colin cited a study by Perry Binder MD published in the JCRS in December 2003, which focused on the characteristics of corneal ectasia after LASIK for myopia. Dr Binder’s multicentre retrospective review evaluated 85 cases of post-LASIK ectasia, excluding cases of keratoconus or forme fruste keratoconus. Residual myopia in the ectasia group was -3.69 D and was significantly greater than the comparison group (-0.38 D). After surgery, eyes with ectasia had increased corneal toricity (2.87 D) with increased oblique astigmatism (1.3 D) relative to eyes in the comparison group (0.00 D), and a loss of two lines of best spectacle-corrected visual acuity. Dr Colin noted that 35% percent of reported cases resulted in subsequent corneal transplantation.

“Avoiding complications through patient selection”

Dr Colin said that while it was difficult to establish the true incidence of post-LASIK ectasia, a study of the literature suggested an incidence of between one in 300 and one in 10,000 LASIK procedures depending on which inclusion criteria were used. “We see a lower rate of about one in every 10,000 procedures if patients have been carefully screened for predisposing factors, while the higher rate of one in 300 procedures applied if everyone is considered a candidate for the surgery,” he said.

“Postoperative characteristics of corneal ectasia include myopic refractive error with increased astigmatism, worse spectacle-corrected visual acuity, increased corneal toricity with topographic abnormality and progressive corneal thinning.”

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He cited thin corneas, defined as those with a thickness of less than 500 microns, as a known risk factor as well as higher myopic corrections and those with a family history of keratoconus. It was also vital to look for corneal topography data suggestive of pre-keratoconus (forme fruste). “We have to appreciate that if we perform LASIK on an eye with keratoconus or pre-keratoconus, then the risk of ectasia is very high. By removing more tissue with LASIK the cornea can become destabilised.”

Reviewing the current therapeutic options for post-LASIK ectasia, Dr Colin said that INTACS might provide a minimally invasive alternative to non-surgical approaches such as spectacles and hard contact lenses or corneal grafts in the case of more advanced ectasia. Dr Colin concluded by informing delegates that the Cornea Clinical Committee of the ECRS is currently conducting an epidemiological survey on corneal ectasia following excimer laser surgery. “In Europe we have no data at all on this. The survey’s aims are to discover the incidence of the complication and the risk factors associated with it and I would urge all colleagues to report any incidence of the disease using the form on the ECRS website,” he said.

Survey on Corneal Ectasia: http://www.escrs.org/Corneal_Ectasia.asp