New Technique INTACS® for Keratoconus and Ectasia

Sickest axis incision to control astigmatism and create an aspheric cornea

Mark A. Swanson M.D. Swann Instituto. Agua Prieta Sonora, México.

RESULTS

A total of 118 surgeries were performed with this technique the longest follow up was 11 months and the shortest was 1 month. Keratoconus Patients Uncorrected Visual Acuity improved to 20/40 or better in 100% of the mild cases and 55% in the moderate to severe cases. Uncorrected visual acuity improved to 20/20 or better in 62% of the mild cases and 20% of the moderate to severe cases. BSCVA improved to 20/30 or better in 100% of the mild cases, 90% of the moderate cases and 62% of the severe cases. One hundred percent (100%) of the patients gained (1 or more) lines of vision while 70% of the severe cases gained 3 or more lines of vision. Stage III keratoconic patients appeared to be the group that benefitted most from the procedure, however 100% of the patients experienced improved visual function.

The improvement on the topographic maps were quite remarkable demonstrating a normalizing effect on the corneal surface in 90% of the mild cases and flattening the curvature and displacing the cone centrally on 100% of the cases.

On Surgical Ectasia Patients the cornea stabilize on 100% of the cases, the refractive results where variable since we included all types of Surgical ectasia, the more normalizing effect was on Postlasik Ectasia Patients. Some of the patients (60%) required some type of refractive correction, and were easily fit with soft contact lenses or spectacles, being able to perform with this type of correction as a normal ametropic patient.

MECHANISM OF CORRECTION

INTACS inserts exert forces on opposite sides of the cone, displacing the thinnest area toward the center and thereby creating a more regular and smooth refractive error, making the incision on the steepest axis, using 150° arc length Inserts with different sizes (0.250, 0.300, 0.350, 0.400, & 0.450 mm) according to a nomogram designed for this technique using the INTACS Instrumentation (10-Step Prosile System instruments (0.9 mm Corneal Separators, Procedure Marker, Symmetric Glide etc.) from Addition Technology, Inc. (Formerly KeraVision, Inc.)

The surgery was performed on Post surgical Ectasia, Patellar Marginal Degeneration and Keratoconus patients with mild to severe forms (Stage I, Stage II and Stage III), excluding the patients with Central Corneal Searing, Hydrops, and Severe Thinning of the cornea (100 microns or less).

A very careful manifest and cycloplegic refraction must be obtained preoperatively. Please keep in mind that is very difficult to refract a Keratoconic patient, and, as each assessment of the refractive axis must be very accurate as the topographical and keratometric data occasionally do not correlate with one another.

Mechanical Forces Acting on the Cornea

Mechanical forces acting on the cornea to create a more regular and smooth refractive error on opposite sides of the cone, displacing the thinnest area toward the center and thereby creating a more regular and smooth refractive error, making the incision on the steepest axis, using 150° arc length Inserts with different sizes (0.250, 0.300, 0.350, 0.400, & 0.450 mm) according to a nomogram designed for this technique using the INTACS Instrumentation (10-Step Prosile System instruments (0.9 mm Corneal Separators, Procedure Marker, Symmetric Glide etc.) from Addition Technology, Inc. (Formerly KeraVision, Inc.)

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CONCLUSION

This new technique placement changes the architecture of the cornea to a more prolate aspheric shape, decreasing or eliminating aberrations and the refractive error, stabilize and adds rigidity to the cornea, creating a better optical surface thereby improving both the quality of vision and the quality of life of these patients.