SAFETY AND EFFICACY OF HYPOTONIC RIBOFLAVIN ASSISTED CORNEAL COLLAGEN CROSS LINKING IN KERATOCONUS PATIENTS WITH THIN CORNEAS (< 400 MICRONS )

ABSTRACT

Purpose of the Study: This study was designed to evaluate the effectiveness of hypotonic riboflavin assisted corneal collagen crosslinking procedure on the stabilisation of the progression of keratoconus with thin cornea (<400 microns) and to evaluate the safety of hypotonic corneal collagen cross linking

Outcome Measures:

Primary Outcome Measures: To evaluate the change in Mean K value and thinnest corneal pachymetry measured by PentacamScheimplug imaging preoperatively and postoperatively after the procedure at 6 months.

Secondary Outcome Measures: Complications associated with hypotonic corneal collagen crosslinking with respect to endothelium, postop infection and stromal scars.

Methods: It is prospective non randomized interventional study conducted at Aravind Eye Hospital, Madurai over period of 12 months (± 15 days) from July 2014 to August 2015.

Results: A total of 21 eyes of 21 patients with preoperative thinnest pachymetry measured by PentacamScheimplug imaging < 400 microns were included in my
study as per the study protocol. There has been a significant improvement in logMAR BCVA (mean ±SD) at 6 months postop from 0.41(±0.21) preoperative to 0.26(±0.28) at 6 months postop with a p value of (0.0337). There was no significant decrease in refractive astigmatism, spherical equivalent from the preoperative values to at 6 months postop. There has been a significant decrease in K-Mean (mean ±SD) from 56.51D(±5.3) preoperatively to 54.52D(±5.9) at 6 months postop with a p value of (0.0070). There was no significant change in keratometricastigmatism. There was a significant decrease in thinnest pachymetry from 377.62 (±13.8) microns preoperatively to 308.86(±48.5) microns at 6 months postop with p value of (0.0001). With respect to intraoperative pachymetry there was an increase in the stromal thickness following the instillation of distilled water followed by hypotonic riboflavin after epithelial debridement but it was not significant. There was no significant change in the specular count of the eyes that could be measured preoperatively and at 6 months of postoperative follow up. The Median days of epithelial healing was 3 days and it ranged between 3 to 7 days. At 6 months of postoperative follow up 14 (66.7%) eyes had stromal haze, 3(14.3%) eyes had nebular opacity and 4 (19.1%) eyes had stromal scar.

**Conclusion:** Hypotonic corneal collagen crosslinking is relatively asafe and effective procedure in arresting the progression of keratoconus in thin corneas
with thinnest corneal pachymetry between 350 microns to 400 microns. The presence of postoperative stromal haze did not affect the visual outcome of the patients in our study.

**Key words:** Hypotonic corneal collagen crosslinking, keratometric astigmatism, intraoperative pachymetry, K-Mean, thinnest corneal pachymetry, specular microscopy.