

# CROSS-LINKING

Epithelium-conserving collagen cross-linking technique better for patients' recovery

by Roibeard O'hEineachain in Dublin

**A** new technique for facilitating the passage of riboflavin into the cornea through the epithelium in collagen cross-linking procedures appears to be effective in the treatment of keratoconus and causes less pain and allows faster recovery than the conventional epithelial debridement approach, Patrick Condon FRCS, Waterford, Ireland, told a conference of the Irish College of Ophthalmologists.

The new approach to the application of riboflavin to the cornea is called the epithelial disruption technique. It involves first making numerous small perforations in the epithelium with a device designed by Sheraz Daya MD, FACP, FACS, FRCS(Ed). That allows the riboflavin to penetrate into the cornea at a very high dosage, Dr Condon said.

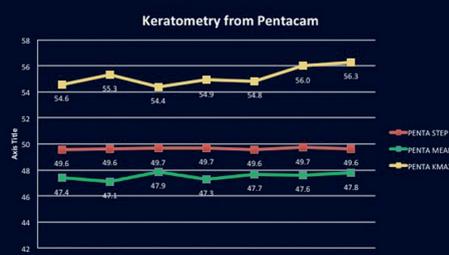
After applying the riboflavin for 45 minutes, he and his associates check at the slit lamp to make sure that the penetration of the agent is complete, he said. They then expose the cornea to ultraviolet light with a variable aperture for up to 30 minutes and then place a bandage contact lens on the cornea which is removed after 48 hours, Dr Condon noted.

## Daya Epithelial Disruptor (Duckworth & Kent, UK)



CENTRE  
FOR  
SIGHT

## Keratometric Evolution (Pentacam)



CENTRE  
FOR  
SIGHT

**“In summary, we feel that the epithelial disruption technique is an effective technique for cross-linking, gives a faster recovery, less pain, less discomfort...”**

Patrick Condon FRCS

“Riboflavin is a large molecule which doesn't penetrate the epithelium very well, so the traditional method of performing corneal collagen cross-linking has been to remove the epithelium completely. To reduce the amount of pain that patients experience, Roberto Pinelli in Italy has devised a transepithelial approach using mixtures of different kinds of riboflavin to enhance the passage of riboflavin into the cornea. However, Dr Daya and I have been using an epithelial disruption technique for several years,” Dr Condon said.

He presented a retrospective study with up to four years of follow-up involving 111 consecutive eyes of 72 keratoconus patients who underwent collagen cross-linking with the epithelial disruption technique. The patients included those treated by Dr Condon and his associates in Waterford and those treated by Dr Daya's team at the Centre for Sight in London over a four-year period.

He noted that there was a general improvement in uncorrected and best-corrected visual acuity and astigmatism, and there were no instances of persistent epithelial defects, infectious keratitis or sterile infiltrates. In addition, although patients reported pain, it was significantly less than that associated with removal of epithelium, Dr Condon said.

Furthermore, the mean spherical equivalent refraction improved from a preoperative value of around -4.0 D to -2.0 D at a year's follow-up, indicating a flattening of the cornea postoperatively. Similarly, the mean refractive astigmatism improved from -4.0 D preoperatively to -3.0 D during the first postoperative year.

He noted that a common side effect of the treatment is a line of anterior corneal haze, visible under the slit-lamp and by OCT imaging, which persists for about a month or two postoperatively. In this particular series it occurred in 61 per cent of eyes, he added.

“In summary, we feel that the epithelial disruption technique is an effective technique for cross-linking, gives a faster recovery, less pain, less discomfort, and there is not much of a change in the mean K or steep K readings after two years. There is a tendency to improve in both the uncorrected and the best corrected visual acuity and we feel that further long-term analysis is required,” Dr Condon concluded.

### contacts

Patrick Condon – pcondon@eircom.net  
Sheraz Daya – sdaya@centreforsight.com

## REACHING NEW HEIGHTS IN CORNEAL CROSS-LINKING



Prof. John Marshall Hosts:

**“New Developments in  
Accelerated Cross-linking”**

A series of small group discussions during ESCRS, Milan, Italy

September 8-10, 2012

To register visit:

[www.avedro.com/milan](http://www.avedro.com/milan)

or Scan QR Code:



**avedro**

[www.avedro.com](http://www.avedro.com)

1.781.768.3400 | [info@avedro.com](mailto:info@avedro.com)

The KXL™ System for performing Accelerated Cross-linking is not for sale in the United States. MA-00188 Rev A