

REFRACTIVE LASER

NO-TOUCH PRK

Removing epithelium with laser speeds healing and reduces pain of corneal surface ablation

by Roibeard O'hEineachain in Paris

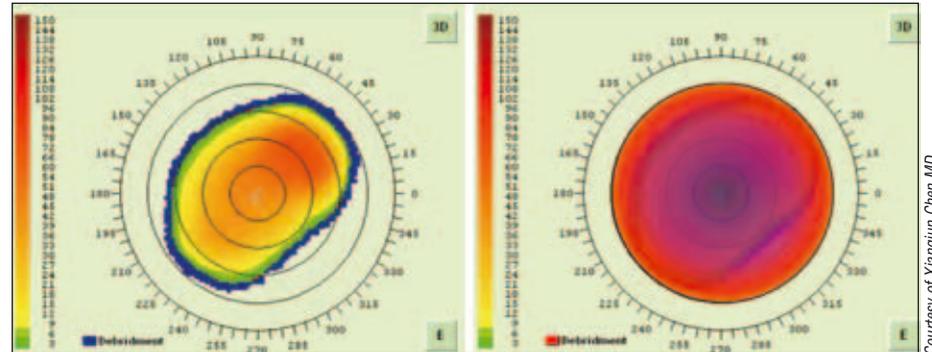
A CORNEAL surface ablation technique called cTEN™, which removes the epithelium with an excimer laser, appears to provide visual outcomes comparable to those of PRK, but with less postoperative pain and faster re-epithelialisation, according to the results of a study presented at the XXVIII Congress of the ESCRS by Xiangjun Chen MD, Oslo, Norway.

The prospective study involved two groups of 40 myopic patients. One group

underwent custom trans-epithelial ablation with iVIS-Suite 1000 Hz laser (iVIS technologies), with de-epithelialisation integrated within excimer laser ablation and the other group underwent PRK with WaveLight Allegretto 400 Hz laser (Alcon) using an Amoils brush for de-epithelialisation. The mean preoperative spherical equivalent was -2.90 D in the trans-epithelial ablation group and -3.06 D for the conventional PRK group.

“For PRK we perform a mechanical removal of the epithelium first followed by a refractive ablation of the stroma. The Custom trans-epithelial no-touch ablation consists of two components: one transforms the corneal shape with an aspheric curvature and the other adds the stratified epithelial thickness to the ablation plan. This is done with one single procedure,” Dr Chen said.

She noted that trans-epithelial ablation requires a fast 1000 Hz laser because the volume of epithelium to be ablated is typically four to six times larger than the refractive ablation volume. However, unlike standard epithelial removal techniques it does not require removal of a circular



Different area required between the cTEN and mechanical deepithelialisation. Left: deepithelialisation area with cTEN technique fits the exact outer edge of the custom ablation (blue line). Right: mechanical deepithelialisation scrapes a larger area of epithelium (orange area) than the custom ablation

area with a diameter equal to the widest meridian of the area to be ablated, she said (see figure above).

“With the cTEN procedure we can limit the de-epithelialisation to the area of the refractive ablation, which theoretically will lead to faster re-epithelialisation,” she said.

The cTEN™ module of the iVIS technologies laser suite incorporates the epithelial ablation profile with a topography-guided custom aspheric ablation profile provided by CIPTA software, she added.

Dr Chen noted that the duration of surgery was more than a minute longer in the PRK group, lasting 4.90 minutes compared to 3.88 minutes in the trans-epithelial ablation group. The de-epithelialisation area was 8.0mm x 8.0mm in the PRK group, compared to 7.72mm x 7.76mm in the cTEN group.

Moreover, the subjective pain score,

which was measured each day until re-epithelialisation was complete, was significantly lower in the laser de-epithelialisation group (p=0.01), she pointed out. The mean re-epithelialisation time was slightly faster in the laser de-epithelialisation group and took 2.63 days, compared to 2.9 days in the conventional PRK group (p= 0.07).

Visual outcomes were similar in the two groups, Dr Chen noted. The mean postoperative UCVA was 0.95 at one week and 1.17 at one month in the laser de-epithelialisation group, and 0.83 at one week and 1.07 at one month in the mechanical debridement group.

“The advantages of custom trans-epithelial custom ablation include shorter surgery time, smaller de-epithelialisation area with faster re-epithelialisation less pain and reduced risk of infection as a result,” Dr Chen concluded.



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Xiangjun Chen MD

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