PRK-treated corneas in the clear at ten year's follow-up

Sibel Ozdogan MD

Roibeard O'hEineachain in Lisbon

THE results of a 10-year follow-up study indicate that PRK-treated eyes remain free from haze in the long term, and while the procedure can induce a significant long term reduction in keratocyte density of the anterior stroma, this phenomenon may actually improve corneal clarity, said Sibel Ozdogan MD, Gazi University, Ankara, Turkey.

Speaking at the XXIII Congress of the ESCRS, Dr Ozdogan presented the results of a confocal microscopy study that compared 24 eyes of 12 patients who had undergone PRK at least 10 years previously with 50 untreated myopic eyes of 50 patients.

The patients in the PRK group had a mean age of 38.7 years and underwent ablation with the Mel 60 laser 10 to 11 years previously to correct from –2.0 D to –17.0 D of myopia. The control group had a mean age of 34.7 years and myopia ranging from –2.50 D to –13.5 D.

Dr Ozdogan and her associates used integrated cell analysis software to count keratocytes in the stromal tissue after manually marking the nuclei of the cells. Endothelial cells were counted automatically. As an objective assessment of corneal healing and haze formation they used a special computer program that calculated the light reflection intensity of the subepithelial stromal layer.

Haze in only one PRK-treated eye

Clinically important haze was detected in only one of the PRK-treated eyes, she noted. Furthermore, the light reflection intensity of the subepithelial keratocyte layer seemed to return to normal levels in the remaining eyes, she said.

In fact, the mean reflection intensity was significantly lower in the PRK-treated eyes than in the untreated eyes. The lower rates in reflection intensity of post-PRK corneas appeared to be related to the decreased keratocyte density in the subepithelial area, she added.

She noted that at 5.0% stromal depth the mean keratocyte density was significantly lower in the PRK-treated eyes than in the control group, 675 cells/mm2 compared with 1198/cells/mm2 . The same held true at a stromal depth of 25%, with 675 cells/mm2 for PRK eyes compared with 940/cells/mm^2 in controls. However, at 50%, 75% and 95% of stromal depth there was no significant difference between the two groups.

Normal nerve morphology

There was also no statistically significant difference between the two groups in terms of sub-basal nerve fibre morphology and density, although there was a slight increase in nerve fibre density in the PRK group. Moreover, the mean endothelial cell counts of the PRK group and the control group were almost identical at 2793/mm^2 and 2724/mm^2, respectively.

Dr Ozdogan noted that the decrease of keratocyte density in the anterior stroma was similar in all of the PRK treated eyes and did not appear to correlate with the amount of myopia treated. She did not speculate as to what the change in keratocyte density might mean in terms of the long-term health of the cornea.

"Confocal microscopy demonstrates that keratocyte density of the anterior stroma is significantly lower than the control subjects even 10 years after PRK. However sub-basal nerve fibre regeneration was completed and light reflection intensity of the subepithelial keratocyte layer as an objective criterion of haze seems to return to preoperative levels," she concluded.

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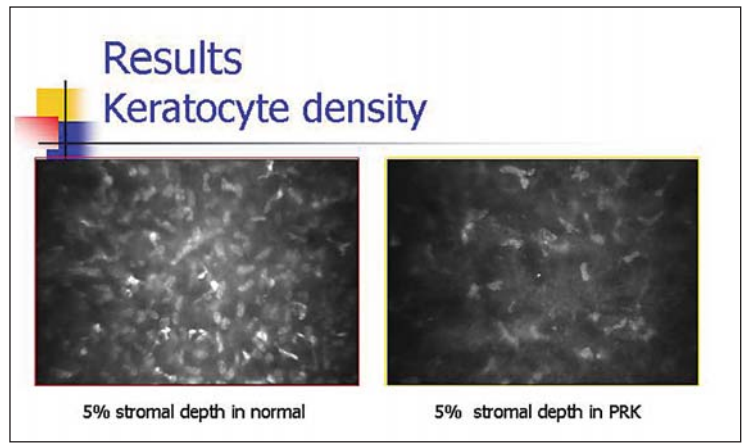
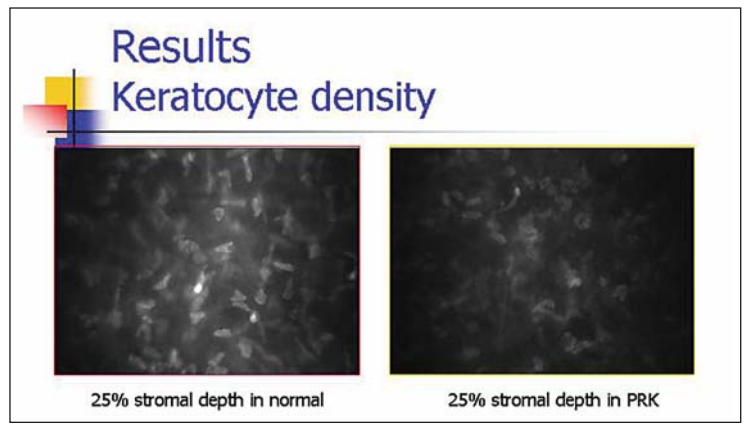
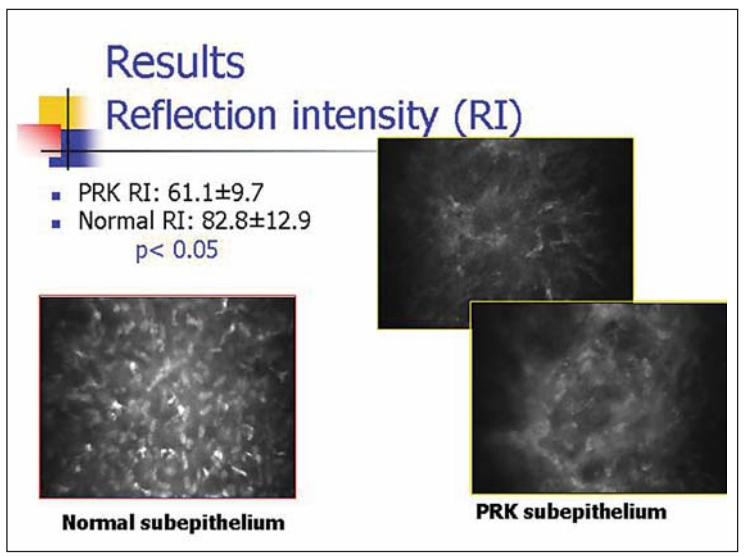
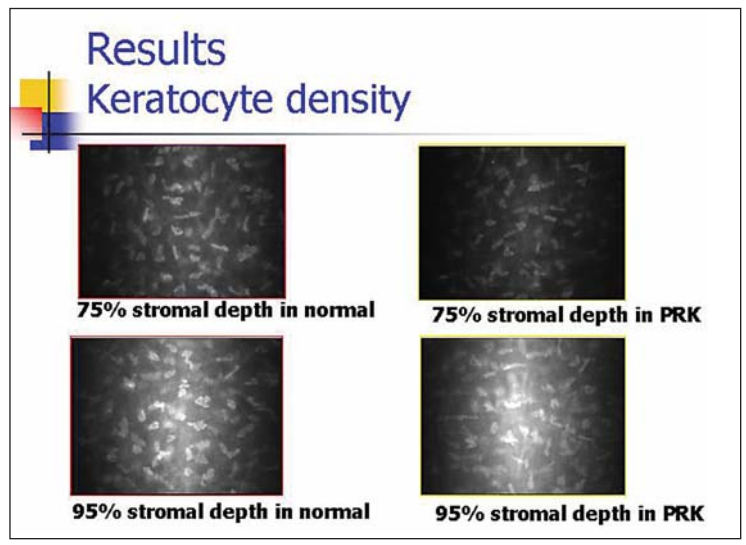
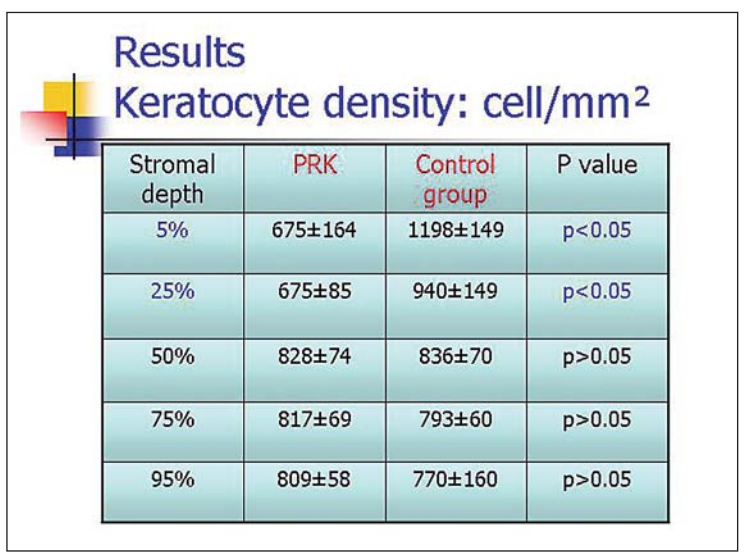


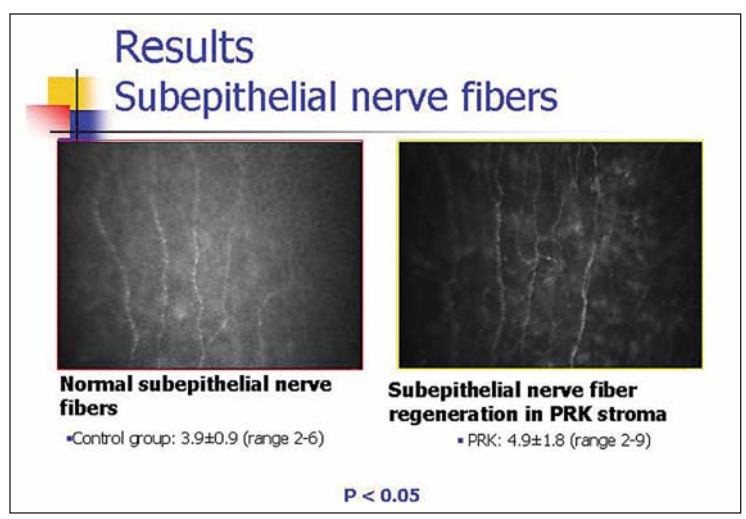








Stromal depth	PRK	Control group	P value
5%	675±164	1198±149	p<0.05
25%	675±85	940±149	p<0.05
50%	828±74	836±70	p>0.05
75%	817±69	793±60	p>0.05
95%	809±58	770±160	p>0.05



Courtesy of Sibel Ozdogan MD