

Candidates detected by Computer Assisted Corneal Topography (CACT)

Anthony B. Nesburn, M.D. (1, 2)

Yaron S. Rabinowitz, M.D. (1, 2)

Shidfar Bahr M.D. (1)

James Salz, M.D. (1, 3)

Ezra Maguen, M.D. (1, 2)

John Hofbauer, M.D. (1, 2)

Michael Berlin, M.D. (1, 2)

Jonathan I. Macy, M.D. (1, 2, 3)

Abstract

Computer assisted corneal topography screening of 146 normal myopic eyes of 91 consecutive patients, candidates for PRK, identified 6 patients with unsuspected corneal shape abnormalities. Mild keratoconus may be more prevalent than expected in the myopic population. Such screening prior to PRK seems warranted.

Background

To obtain a fair evaluation photorefractive keratectomy (PRK in normal myopic eyes), patients with corneal shape abnormalities should be excluded. We tested the hypothesis that computer assisted corneal topography screening would detect individuals with significant subclinical

corneal abnormalities including keratoconus, who would otherwise be classified as normal by conventional techniques.

Methods

We screened 146 normal myopic eyes (-1 to -7D with less than 1.5 D of cylinder) of 91 consecutive patients who were candidates for PRK. Patients without signs of corneal disease were screened by computer assisted corneal topography to rule out corneal shape abnormalities. Computer assisted corneal topography indices reported by Rabinowitz, et al were used as an aid for identifying mild keratoconus (I-S value of 1.60 D or greater indicates possible keratoconus).

⁽¹⁾ Ophthalmology Research Laboratories, Cedars-Sinai Medical Center.

⁽²⁾ Dept. of Ophthalmology, UCLA School of Medicine.

⁽³⁾ Dept. of Ophthalmology, USC School of Medicine, Los Angeles, CA
Supported in part by The Discovery Fund for Eye Research, the Laser Education Fund, the Eleanor and Arthur Ellis Eye Center, Cedars-Sinai Medical Center, Los Angeles, CA

Presented in part as posters at Association for Research in Vision and Ophthalmology Meeting 1992, Sarasota, Florida and at the American Academy of Ophthalmology Meeting 1992, Dallas, Texas

Results

In 6 of 91 patients, unsuspected corneal shape abnormalities were detected by computer assisted corneal topography. Five had mild keratoconus in one or both eyes as evidenced by inferior corneal steepening (I-S values ranging) from 1.62 D to 6.20 D) and one patient had early pellucid marginal degeneration.

Conclusions

(1) Computer assisted corneal topography

screening before PRK is an effective means of identifying corneal abnormalities which escape detection by routine clinical examination. Its use for preoperative screening seems warranted. (2) Mild keratoconus detectable by computer assisted corneal topography may be more prevalent than expected in the myopic population. (3) Patients with keratoconus and related ectasias, which may respond differently from normal to refractive surgical procedures, should be identified preoperatively, and if operated should be followed separately.