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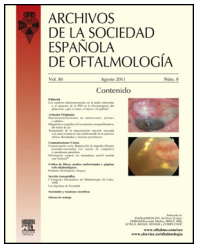

Original article

Post-lasik corneal ectasia in patients with significant differences in keratometry readings between both eyes☆

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ABSTRACT

Objectives: A study is made on the incidence of corneal ectasia after laser in situ keratomileusis (LASIK) in patients with large differences in mean keratometry (MK) readings between both eyes (OU). Visual outcomes were also evaluated.
Methods: The medical records of 164,603 patients (315,259 eyes) who underwent LASIK from January 2003 to December 2011 were reviewed in order to identify patients with a difference in MK of ≥1.25 D between OU. The main outcome measures were incidence of ectasia after LASIK, and visual outcome.
Results: A total of 35 eyes that met the inclusion criteria were found. Functional and visual results were those expected for myopia studies. After a minimum follow-up of 2 years, no corneal ectasia was found in 3 eyes (2 patients).
Conclusions: The possibility of finding a patient with an asymmetry in MK and normal topography is low (0.021%), and it does not seem to be a contraindication of LASIK. Although no corneal ectasia was found in this case series, and as it is a potentially sight-threatening complication, patients with very different MK between OU should be studied carefully before undergoing LASIK.

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Ectasia corneal post-LASIK en pacientes con diferencias significativas en las lecturas queratométricas de ambos ojos

Palabras clave:
LASIK
Queratometría
Ectasia corneal
Complicaciones
Topografía corneal

R E S U M E N

Objetivos: Investigar la incidencia de ectasia corneal tras queratomileusis *in situ* asistida porláser excímer (LASIK) en pacientes con diferencias significativas en la lectura queratométrica media (KM) entre ambos ojos (AO). Además se evalúan los resultados visuales.
Métodos: Se han revisado las historias clínicas de 164.603 pacientes (315.259 ojos) intervenidos con LASIK de enero de 2003 a diciembre de 2011 para identificar pacientes con unadiferencia de KM $\geq$ 1,25 D entre AO. Además de este criterio, debían ser pacientes miopescon topografía corneal normal. Las principales variables de estudio fueron la incidencia deectasia tras LASIK y el resultado visual.
Resultados: Un total de 35 ojos de 20 pacientes cumplieron con los criterios de inclusión y exclusión. Los resultados funcionales y visuales fueron los esperados para las refracciones estudiadas. No se encontraron ectasias en la serie estudiada tras un seguimiento mínimo de 2 años.
Conclusiones: La posibilidad de encontrar en un paciente asimetría de KM y topografía normales pequeña (0,021%) y no parece ser una contraindicación para realizar LASIK. A pesar de noencontrarse ectasias en la serie estudiada, ya que esta es una complicación potencialmente grave para la visión, los pacientes con elevadas diferencias en la KM entre AO deben ser estudiados cuidadosamente antes de ser intervenidos mediante LASIK.

Introduction

Laser excimer (LASIK) assisted keratomileusis provides fast visual acuity recovery with low incidence of complications. However, corneal ectasia can appear, mainly after the treatment of high myopic refractive errors, high manifested astigmatisms, high corneal curvature, thin corneal pachymetry and irregular astigmatisms.[1,2] As only 50% of post-LASIK keratectasia appear in the first year after surgery, this complication must be analyzed in a longer term.[3] The objective of this study is to assess the incidence of corneal ectasia and long-term visual and refractive results after LASIK in patients with a mean central keratometry reading difference (KM) between both eyes (BE) of $\geq$ 1.25 diopters (D).

As the frequency of corneal ectasia (and that of other post-LASIK complications) is low, analyzing long series of a single institution can provide more data on clinically relevant parameters and enable more efficient management of said complications. A series of a single institution provides incidence data in an environment in which many of the possible variables are controlled due to compliance with action protocols for surgeons and patients before, during and after surgery. Likewise, as the incidence of keratectasia is low, a large sample is required to obtain relevant conclusions and these samples are very difficult to find in a single center.[4]

This study presents a broad series of patients with significant differences in KM between BE, with all the procedures being carried out in the same institution using the same microkeratome. A retrospective review of cases was carried out to provide information on the incidence of ectasia and risk factors in order to improve knowledge on said entity.

Patients and methods

A review of 35 eyes of 22 patients in a series of patients consecutively operated in our institution between 2003 and 2011. Said series comprised over 30,000 annual refractive procedures in 19 centers carried out by 84 surgeons.

The inclusion criteria were: myopic refractive error (defined as negative spherical equivalent [SE]), normal presurgery corneal topographic and KM difference $\geq$ 1.25 D between BE, measured by means of an autorefractor keratometer and confirmed (at least 1.00 D) by means of Orbscan II device (Bausch & Lomb, Claremont, California, USA).

The exclusion criteria included hypermetropia (positive SE), insufficient follow-up (<2 years) and abnormal presurgery corneal topography. All the patients exhibited stable refraction at least in the year prior to the procedure. None referred significant ocular or systemic disease or family history involving keratoconus.

The pre- and post-surgery examinations included uncorrected distant visual acuity (UDVA), corrected distant visual acuity (CDVA), refraction, cycloplegic refraction, slitlamp biomicroscopy assessment, intraocular pressure, indirect ophthalmoscopy, keratometry, and pachymetry Orbscan II corneal topography. Emmetropia was sought in all cases. To obtain the average post-surgery CDVA, the Snellen visual acuities were converted to their log-MAR equivalents to calculate the final mean visual acuity. The corneal ectasia diagnostic was based on topographic findings. The statistical analysis of data was performed using SPSS for Windows (version 17.0. SPSS Inc., Chicago, USA).

Data collection complied with national data protection laws. No special informed consent was included due to the retrospective nature of the study.