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## Short communication

# Fuchs' dystrophy associated with radial keratotomy: Lamellar or perforating keratoplasty? ☆



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### ABSTRACT

**Case report:** A 70 year-old male patient with a history of radial keratotomy suffering from Fuchs' dystrophy and a cataract. The patient received a two-step surgery: lens phacoemulsification and intraocular lens implant, followed by descemet stripping automated endothelial keratoplasty in both eyes, four months later. There were no complications apart from a recurrent cystoid macular edema in both eyes. The best corrected visual acuity was 20/40 both eyes, and the patient was satisfied.

**Discussion:** Descemet stripping automated endothelial keratoplasty may be considered as an alternative to penetrating keratoplasty in the case of endothelial dysfunction and radial keratotomy in patients with no corneal ectasia or significant stromal opacity.

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## Distrofia de Fuchs asociada a queratotomía radial: ¿queratoplastia penetrante o lamelar?

### RESUMEN

**Caso clínico:** Paciente de 70 años que acude con queratotomía radial, signos de distrofia de Fuchs con edema central y catarata. Se realiza cirugía en 2 tiempos: facoemulsificación e implante de lente intraocular y 4 meses después DSAEK (*descemet stripping automatized endothelial keratoplasty*) en ambos ojos sucesivamente sin complicaciones, salvo edema macular cistoide recurrente en ambos ojos. La agudeza visual corregida final es 20/40 en ambos ojos y el paciente se encuentra satisfecho.

#### Palabras clave:

Queratotomía radial

Queratoplastia endotelial

automatizada con pelado de la

Descemet

Distrofia corneal de Fuchs

Disfunción endotelial

Edema corneal

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Discusión: Ante coexistencia de queratotomía radial y disfunción endotelial, la DSAEK constituye una alternativa a la queratoplastia penetrante si no se detecta ectasia corneal ni opacidad estromal significativa.

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## Introduction

Radial keratotomy (RK) is a refractive cornea procedure that was last applied in the late 1990s and consisted in deep radial incisions in the corneal stroma to flatten the central cornea and diminish its dioptric power. The case of a patient is presented that exhibits the coexistence of RK, endothelial dysfunction and cataracts in both eyes (BE).

## Clinic case report

Male, 70, who visited the practice in 2012. He had undergone surgery 28 years before (1989) with RK (RE:  $-4$  diopters with 4 incisions; LE:  $-6$  diopters with 6 incisions) and referred satisfactory vision up to 10 years ago. Corneal thickening could be observed with brushed metal appearance of the endothelium and nucleocortical cataract in BE (Fig. 1). Baseline best corrected visual acuity was 0.2 RE ( $+0.75 -0.50 \times 103$ ) and 0.1 LE ( $+2.50 -1.50 \times 100$ ). In Visante-Omni<sup>®</sup> (Carl Zeiss Meditec, Jena, Germany) and Pentacam<sup>®</sup> (Oculus, Wetzlar, Germany) (Fig. 2A and B), oblata cornea was observed with diffuse thickening due to edema, with anterior and posterior surfaces matching the usual RK profile and without ectasia data in wavefront in 2012.

Due to the progressive worsening of the condition, the authors discussed with the patient the advantages and drawbacks of penetrating versus lamellar procedure and opted for Descemet stripping automatized endothelial keratoplasty (DSAEK) with prior lens surgery, warning the patient about possible refractive surprises. The lens was calculated in agreement between IOLmaster<sup>®</sup> (Carl Zeiss Meditec, Jena, Germany) and ASCRS Calculator on the basis of baseline topographic data and the data obtained in the baseline 4 mm

data of Pentacam<sup>®</sup>. Phacoemulsification was performed with hydrophobic lens (RE 26 D and LE 24.5 D Alcon SN60WF) and  $-1.50$  D objective (offsetting post-DSAEK hypermetropia), and performing 4 months later DSAEK, LE in 2014 and RE in 2015, with precut lamella from the eye bank. The button implant was made with a Busin slider in a 4 mm incision. No complications arose in relation to the radial keratotomies.

After DSAEK, the cornea exhibited a temporary flattening with diminished pachymetry and without significant final curvature and aberration changes against preop values (Fig. 2C and D). The only complication was a recurrent cystoid macular edema, with final uncorrected visual acuity being 0.3 in BE and best corrected visual acuity 0.50 in BE, with spherical equivalent of  $+0.50$  in RE and  $+1$  in LE, stable as of month 6 (Fig. 3).

## Discussion

Patients who underwent RK frequently exhibit fluctuating visual acuity and refraction, although endothelial damage after RK is infrequently described, to the point that some operated corneae were apt as endothelium donors.<sup>1,2</sup> On the other hand, Moshirfar et al. reported 13 eyes of 7 patients with late endothelial dysfunction after RK which they postulated as being directly related to surgery because a patient with unilateral surgery had a healthy endothelium in the eye that was not intervened.<sup>3</sup> Biomicroscopy of the present patient suggested belated Fuchs dystrophy,<sup>4</sup> as his 14-year-old son exhibited signs of the same disorder.

In what concerns the technique to be chosen, penetrating keratoplasty seemed to be the best option in the presence of altered stroma and endothelium. Diminished vision 10 years ago was explained by the corneal edema and cataracts. The vulnerability of 360° perforating incisions, sutures and slow

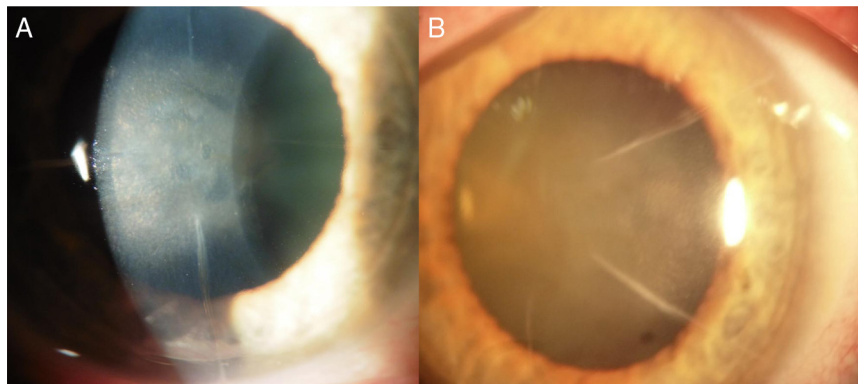


Fig. 1 – BMC 2012: radial keratotomy, central edema and senile cataracts. In RE, 4 incisions for  $-4$  sph. (A) and in LE 6 incisions for  $-6$  sph. (B) Pachymetry 620  $\mu$ m RE, 650  $\mu$ m LE.

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