

## **Evaluation of a new design contact lens fitting for corneal ectasia.**

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### **INTRODUCTION**

Corneal ectasias are noninflammatory, progressive, bilateral, asymmetric corneal diseases, and the most common is keratoconus. This disease involves most of the times the inferior paracentral two-thirds or of the cornea and causes thinning and protrusion, as well as irregular astigmatism that results in impairment of visual function <sup>(1)</sup>. The onset of the disease occurs at puberty and the rate of progression is variable. In earlier and moderate stages the management starts with spectacles correction and/or contact lens wear. The contact lens that uses to offer the best visual acuity is the rigid. It is available in different designs and has a good performance even in severe cases. Advanced corneal ectasia may require some contact lens with special design. The Rose K2 contact lens is a bicurve (Soper) variation and has a parabolic contour in its base curve with smaller optic zone. Rose K2 contact lens is made of Boston XO material (, DK 100 and its base curve ranges from 5,10 to 7,60mm (FIGURE 1). The smaller optic zone diameter is proportional to its base curve and is better to fit the cone contour. The standard lens diameter of 8,7mm. If needed, the edge lift can be increased or decreased. The purpose of this study was to evaluate our initial experience with Rose K2 contact lens fitting in corneal ectasias.

### **METHODS**

Fifty-five patients (80 eyes) fitted with Rose K2 contact lens at the Federal University of São Paulo Contact Lens Department, between January and December 2008, were retrospectively studied. The following parameters were analysed: age; gender; diagnostic; affected eye; keratometry; topography; lens previously fitted and the reason for changing it; visual acuity before and after fitting; fitting parameters (base curve, dioptric power, diameter and edge lift); complications and follow up. The diagnostic was made based on biomicroscopy findings (Vogt 's striae, Fleischer's ring and corneal thinning with or without stromal scars) and also with corneal topography. Fitting was made according to manufacturer. We calculated the average keratometry based on the topography, and chose a lens with a base curve 0,2mm steeper. There should be a 2–3mm apical touch with a fluorescent band (FIGURE 2).

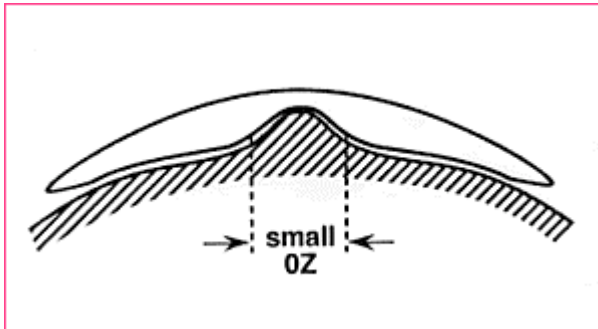


FIGURE 1. ROSE K2 CONTACT LENS DESIGN.

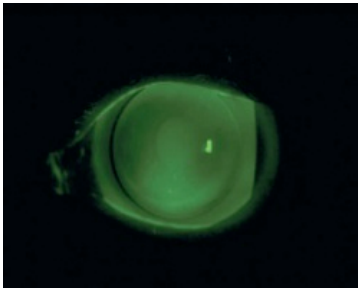


FIGURE 2. ROSE K2 CONTACT LENS FITTING.

## RESULTS

Fifty five patients (80 eyes) were studied, 28 (50,9%) female and 27 (49,1%) male. The age ranged from 11 to 64 years (average 31 years); 73 (91,25%) had keratoconus, 03 (3,75%) had pos LASIK ectasia and 4 (5%) had pellucid marginal degeneration (TABLE 1). Thirty six (45%) affected the right eye and 44 (55%) the left eye; 50 (62,5%) had central ectasia and 30 (37,5%) temporal inferior ectasia (TABLE 2). The visual acuity was better than 20/30 in 24 eyes (30%), in 41 eyes (50,1%) was between 20/30 and 20/40 and in 14 eyes (17,5%) was worse than 20/40 (20/50 to 20/70), and 1 did not have any improvement (20/400). The number of trials ranged from 1 to 10 (average of 4,3 trials). The base curve ranged from 5,1 to 8,2mm (average of 6,4mm), dioptric power from -1,25 to -28,25 (average - 11,4D). The edge lift was standard in 61 (76,25%), increased in 15 (18,75%) and decreased in 04 (5%). The follow up ranged from a week to 13 months. A patient had a 3 and 9h syndrome. In 76 (95%) the diameter was 8,7mm, and in 4 (5%) it was 9,2mm. After initial fitting, seven patients needed to change the contact lens to a steeper one (smaller base curve).

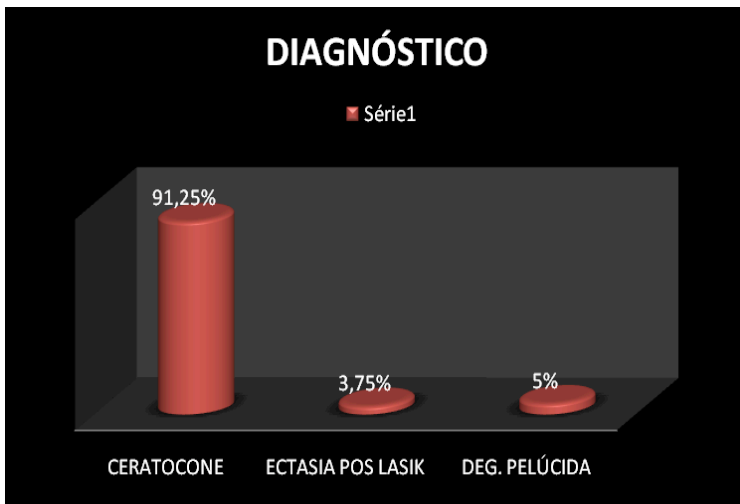


TABLE 1.

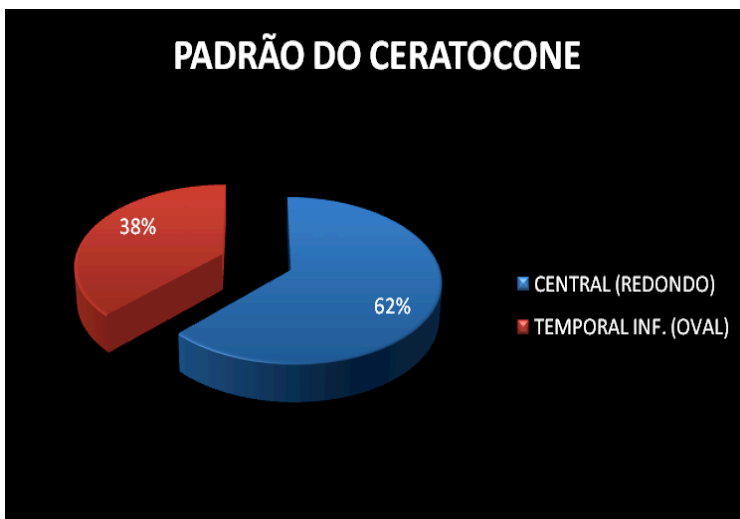


TABLE 2.

## DISCUSSION

The results in this study show that Rose K2 contact lens was successfully fitted in 80% of patients improving the visual acuity and comfort during its use. More than half of the sample studied (51,25%) were considered severe cases. In a similar study, Jain & cols. related a successfully Rose K2 fitting in 97% (38 eyes of 23 patients) in India using the same parameters <sup>(6)</sup>. Betts e cols. also showed visual acuity and comfort improvement in 43 eyes with moderate and 9 with severe keratoconus in 26 patients fitted with Rose K2 <sup>(7)</sup>. Earlier studies using moncurve and bicurve RGP contact lens showed that almost 50% of contact lens fitting were successful in eyes that had keratometry between 48,9D and 53,7D, but in corneas with Keratometry higher than 56,5D, this fitting was very difficult <sup>(8)</sup>. Bilgin & cols. evaluated 518 patients that had keratoconus in a retrospective study in Turkey during 30 years and obtained successful fitting in 98,9% using moncurve and bicurve RGP contact lens <sup>(9)</sup>. In Brazil, Ghanem

and Alves reported in a prospective study using 63 patients that bicurve contact lens had a better performance than monocurve contact lens in cases with severe and central keratoconus<sup>(10)</sup>.

**In conclusion,** the results in this study show that Rose K2 contact lens is one more option for patients with corneal ectasia, even in severe cases.

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