

Orthokeratology on patient with ectatic cornea

Ortoceratologia no paciente com córnea ectásica

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ABSTRACT

A 26-year-old man, single, business student, reveals a ectatic cornea during corneal topography exam. Among some procedures, the patient chose Orthokeratology to do a corneal reshape and got successfully a good visual acuity, going against the most authors guidance.

Keywords: Keratoconus/diagnosis; Orthokeratologic procedures; Orthokeratology; Ectatic cornea

RESUMO

Estudante de 26 anos, masculino, estudante de economia, apresentou ao exame topográfico de córneas, ectasia corneal. Dentre todos os procedimentos apresentados, optou pela ortoceratologia para o remodelamento corneal, e obteve sucesso com melhora da acuidade visual, indo contra a orientação da maioria dos autores.

Descritores: Ceratocone/diagnóstico; Procedimentos ortoceratológicos; Ortoceratologia; Córnea ectásica

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INTRODUCTION

Overnight Orthokeratology (Ortho-K), corneal reshaping or vision-shaping treatment (usually generically referred to as simply orthokeratology) all refer to the technique that utilises reverse-geometry rigid contact lenses to change the shape of the cornea.⁽¹⁻⁷⁾ This is a temporary, reversible technique.⁽⁸⁾ Currently is most commonly used to flatten the central corneal curvature temporarily and reduce the corneal eccentricity and with it the patient's myopia⁽⁸⁾ and with-the-rule astigmatism.⁽⁶⁾ Keratoconus is a non-inflammatory, often progressive, corneal disease that makes the cornea thinner and modifies its normal curvature, leading to poor visual acuity.⁽¹⁾ The cornea often acquires anomalous conical shape, from which comes its name.⁽¹⁾ This corneal clinical condition has always been considered as an impediment to the orthokeratology technique.⁽³⁾ It affects approximately one person in every two thousand people worldwide, causing visual impairment and usually develops up to the age of 40 years. There are some techniques and conducts in the management of keratoconus, among them corneal crosslink, corneal contact lens adaptation and scleral lenses, intracorneal ring implantation, and corneal transplantation. The need for adaptation of corneal or scleral lenses after surgical procedures is relatively common, even if this procedure is minimally invasive, which is not well received by patients, who hoped to avoid or reduce the need for use of these lenses. In terms of diagnosis, the advent of corneal topography, and more recently corneal tomography, has increased the ability of ophthalmologists to identify corneal ectasia at a much earlier stage than was previously possible. The surgical treatment was the only solution for severe ectasia. Alternative procedures as Orthokeratology could treat Keratoconus making a reshaping of cornea (Figures 1,2). The purpose of this is report a case of a patient with keratoconus, with treatment of Orthokeratology, as well as describe its outcome.

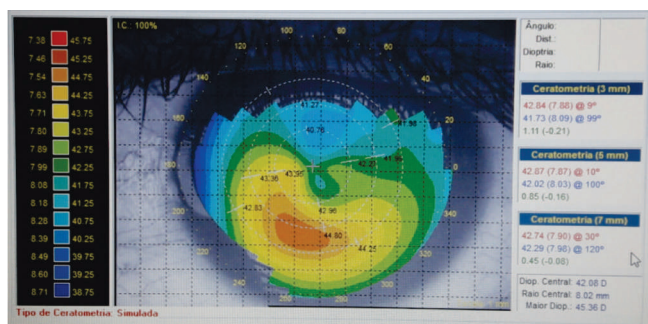


Figure 1: Topography pre ortho-k

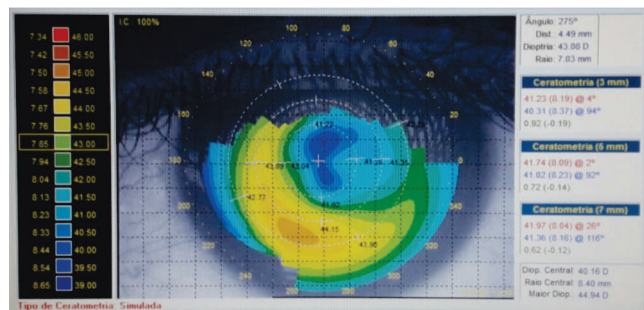


Figure 2: Topography post ortho-k

Why Orthokeratology has been forbidden for ectatic cornea?⁽¹⁻⁷⁾ That's the question. If we avoid a touch on the surface of the cornea apex, perhaps it will be possible to have a good result in some cases. Nowadays, the most of the industries do not work with special designs for ectatic corneas Ortho-K. But we can order a special design for any patient in some industries, in generally, the best ones. Different than others contact lenses fitting, Ortho-K needs some more information, as sagittal depth of the cornea (Figure 3) and horizontal visible iris diameter, HIVD (Figure 4).

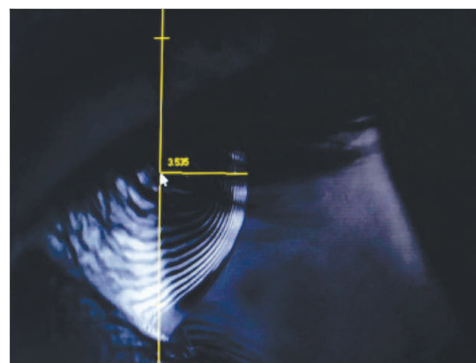


Figure 3: Corneal sagittal depth

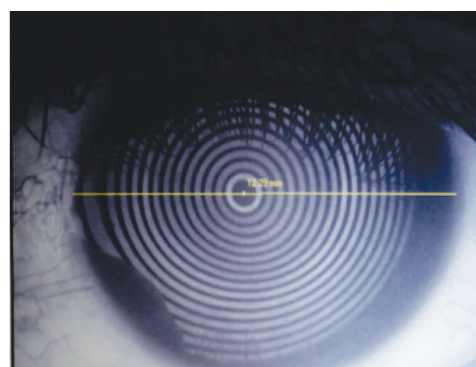


Figure 4: White to white measure (HVID)

CASE REPORT

A 26-year-old man, single, business student, one brother with keratoconus and another one with atopic symptoms. Topography with ectatic cornea aspect (figure 1), Corneal Endothelial Specular Microscopy (CSM) right eye (OD): 1864 cells/mm², left eye (OS): 2388 cells/mm²; Pachymetry OD: 540 micra, OS: 542 micra; the Visual Acuity (VA) using prescription glasses is OD 20/20, OS 20/40. Intra Ocular Pressure (IOP) is 10mmHg in both eyes, all time long. Posterior segment is without disease, with normal retinal nerve fiber layer thickness, however the optic nerve is excavated: 0,6x0,6 in both eyes. We tried to first fit H XMJ 41.75 -3.00 11.6 Blue lens OD and H XMJ 42.00 -3.00 11.6 Grey lens OS. 18 day after the first fit, we've changed the lens on the OS to G XMJ 41.50 -3.00 green 11.6 Over Target +1.25, and patient got 20/20 on this eye too.

DISCUSSION

Orthokeratology, also named as refractive therapy, has been always avoided for patients with ectatic cornea, as keratoconus.⁽³⁻⁵⁾ But no author has written exactly why it's not good for this cases.^(4,5)

In our mind, we thought that the problem was contact lens design, because it was not designed for ectatic cornea. And more: in our mind, only ectatic cornea with the apex on the bottom of the topography map is possible to response well for orthokeratology.

CONCLUSIONS

Patient selection is an extremely important part of the fitting exam. Finding the right patient for this procedure decreases the chance of disappointment and also decreases the risk of adverse events, and it builds confidence on the part of the practitioner and the patients. The suitability of patients for orthokeratology depends on many variables, we strongly have to consider the anatomical/physiological and pathological considerations of the eye. Orthokeratology is one of possibilities that may be offered to the patient with ectatic cornea who seeks freedom from spectacles or conventional contact lenses. It is a minimally invasive, reversible technique to be considered. However, they always need to be reminded that the effects of orthokeratology treatment are not permanent and that lens wear and care are required on a frequent basis for the effects to be sustained. Observing the ability to reshape the cornea with keratoconus, in some initial cases it is possible to make a discreet change in the technique and in the way of adapting the orthokeratology lens, achieving in some cases good visual acuity of these patients without the necessity of using corneal contact lenses or scleral lenses during the day. The application of this variation of the orthokeratology technique allowed, in these selected cases of ectatic cornea, the improvement of the visual acuity of the patient during the day, making unnecessary the use of rigid contact lenses.

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