

BCLA Orthokeratology Factsheet

Introduction

Orthokeratology (ortho-k) involves the use of rigid lenses of a special design worn overnight only to adapt the shape of the cornea (the window of the eye) to allow perfect sight during the day. It is generally only for short-sighted (myopic) individuals who require a corrective lens of up to -4.00D (ask your eye-care practitioner if you are unsure).

Myopia results from excessive axial growth, leading to a mismatch between the optical power and the length of the eye [1, 2] (Figure 1). Ortho-k is a convenient method of refractive correction, which aims to eliminate or reduce myopia to a sufficiently small degree that the patient can function without spectacles or contact lenses for most of the waking day. This is achieved by reducing the power of the cornea so that the optical power of the eye and the axial length match (Figure 2).

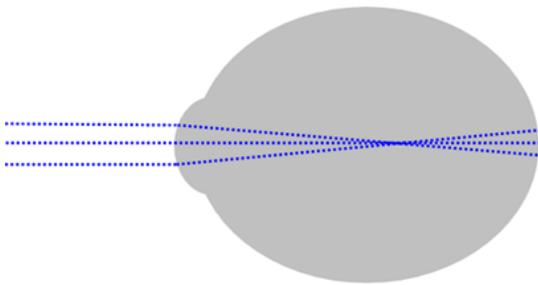


Figure 1: Schematic representation of the myopic eye (where the rays of light focus in front of the retina, leading to blurred vision)

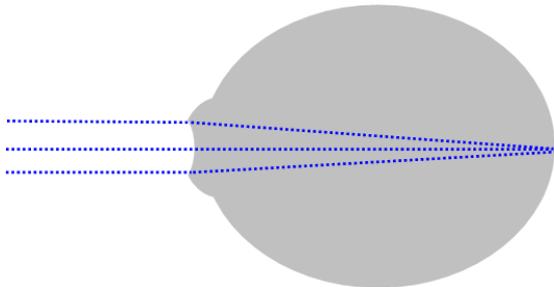


Figure 2: Schematic representation of the myopic eye corrected using ortho-k (where the power of the central cornea has been reduced in order to eliminate the myopic refractive error)

Myopia Progression

Although ortho-k was originally designed for the correction of the myopic refractive error [3-5], it has been shown, in recent years, to be effective in the prevention of myopia progression [6-11]. It is currently one of the most effective optical myopia control intervention methods, along with centre-distance multifocal and dual-focus soft contact lenses [6-13]. Only pharmaceutical intervention with

low-dose (0.01%) atropine is more effective [14], however, it is not commercially available in the UK. For more information, please see the Myopia Control Advice factsheet.

Ortho-k is a particularly convenient method of myopia control in children because the lens wear and handling takes place in the family home, under parental supervision. The child is then free from spectacles and contact lenses during the day, which is ideal for active lifestyles and participation in sport. This also justifies the additional cost of ortho-k (compared to single vision spectacles/soft contact lenses) as there are two clear benefits: 1) convenient refractive correction; 2) prevention of myopia progression.

Follow up

Follow up is more often than with traditional soft contact lenses, usually after 1 night, 1 week, 2 weeks, 1 month, 3 months and 6 months of overnight orthokeratology lens wear [15]. The first follow-up will occur the next morning following the first night of overnight wear, as early as possible, in order to determine your response to orthokeratology. You should wear the lenses to this appointment and a lens-fitting assessment and prescription check will be performed. Thereafter, the lenses must be removed and a thorough slit-lamp examination and eye shape evaluation performed. You will be asked how you are coping with the lenses and reassured that the lenses may not yet be working to their full potential. If you are moderately myopic, it is likely that orthokeratology effect following one night of wear will not have eliminated the need for refractive error correction. You may be provided with daily disposable lenses to see you through to the next appointment (as your spectacles will no longer be helpful), or you could wear the orthokeratology lenses during the day if they are comfortable enough.

Complications

Although rare, complications can occur and any change in vision, the eyes looking red or feeling uncomfortable after the initial fitting period should be reported straight away to your eye care practitioner. Attending all your aftercare appointments is essential, as is following the instructions you are given on the care of your lenses.

In conclusion, orthokeratology is a technique that can be offered in clinical practice to correct myopia and slow its progression. With adequate compliance it has a low risk to patients and has the advantage of allowing the parents to insert and remove the lenses and undertake the care/maintenance as the lenses are only worn overnight.

References

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