THE COLLEGE OF OPTOMETRISTS

Orthokeratology

Orthokeratology (sometimes called OrthoK or corneal reshaping lenses) is a procedure where your contact lens practitioner uses specially designed rigid gas-permeable (RGP) contact lenses to alter the shape of your cornea to temporarily reduce or correct your short sight (myopia).

Orthokeratology can also be effective if you have a low degree of astigmatism as well as your short sight. You can tell if you have astigmatism by looking at your glasses prescription. The amount of short sight is written in the 'sph' box (with a minus if you are short sighted, and a plus if you are long sighted) and the amount of astigmatism is written in the 'cyl' box. In orthokeratology you wear the contact lenses at night so that you do not have to wear them during the day.

Who can have orthokeratology?

The procedure works better for people who are short sighted from -1.00 to -5.50 D, with no more than -1.500 of astigmatism. To see if you fall within these categories look at your most recent spectacle prescription. If you are short sighted the number in the 'sph' box will have a minus sign. If the number in the 'sph' box is 5.50 or less and the 'cyl' box is 1.50 or less you may be suitable for orthokeratology.

If you are interested in having orthokeratology we suggest that you consult your eyecare practitioner to discuss this procedure. How successful you will be with orthokeratology depends upon several factors including how strong your glasses are and it is important that you have a thorough examination before starting orthokeratology. If you are long sighted (up to +3D) or more short sighted than -5.500 you may be suitable for orthokeratology but this will be more complicated and it may not be as successful.

Does age matter?

If you are over the age of about 45 and are short sighted you may find that you need reading spectacles after your orthokeratology treatment. You may find that this is more inconvenient than simply removing your glasses to read. Your eyecare practitioner will advise you about this in more detail, and one of the advantages of orthokeratology is that it is reversible, so if you don't like the effect you can return to how you were before the treatment.

Can orthokeratology stop me becoming more short sighted?

The results of one of the latest studies show that orthokeratology can slow down and in some cases stop you becoming more short sighted.[1]

Is orthokeratology safe?

There have been several reports of people - often children - contracting sight threatening eye infections after they have worn orthokeratology lenses. Many of these reports are from Asia. These infections can occur because of contamination from water sources such as tap water, spa or swimming pool water. It is therefore vital that you do not let tap water come into contact with your lenses. Lens hygiene is very important and you should see your optometrist quickly if you have any blurriness, pain or redness in your eyes.[2]

A recent study[3] has found that more bacteria stuck to orthokeratology lenses than to conventional contact lenses that were made of the same material. This may mean that people who wear orthokeratology lenses are at an increased risk of an infection if appropriate conditions are present.

However, as we do not know the total number of people who are wearing orthokeratology lenses we cannot evaluate how likely you are to get an infection with orthokeratology lenses compared with wearing other types of contact lenses.

You should also be aware that just because these cases have been reported it does not necessarily mean that people who wear orthoK lenses are at an increased risk of eye infection compared with people who wear other types of contact lenses overnight. A review that was conducted in 2008 concluded that the prevalence and incidence of complications associated with overnight orthokeratology lenses have not been determined.[4]

Wearing any type of contact lens carries some degree of risk, but in general it is accepted that the risk of infection with overnight wear of RGP contact lenses is significantly less than it is with overnight wear of any other lens materials. If you wish to have orthokeratology treatment you should discuss this with your contact lens practitioner who can advise you on an individual basis.

How can I reduce my risk of getting an infection?

You must make sure that you clean your lenses and accessories as directed by your contact lens practitioner:

- Rub your lenses with cleaning solution before you store them;
- Rinse your lenses with saline or multipurpose solution before you put them into your eye;
- Store your lenses and their accessories in a clean environment (not near a toilet};
- Clean your lens cases daily and store them dry when not in use. Disinfect your lens case at least every week and replace it at least every month.

Can children wear orthokeratology lenses?

If children wish to undergo orthokeratology, it is essential that their parents are involved to make sure that the child looks after the lenses and follows the instructions given by their contact lens practitioner.

How often should I have check-ups if I have orthokeratology treatment?

It is essential that you have regular check-ups after the lens fit has stabilised. These would ideally be at least every 6 months. These aftercare examinations will include your contact lens practitioner looking at the condition of your contact lenses and lens case.

Further reading

Cavanagh,HD and Holden, B Corneal Reshaping: Where are we? Eye and Contact Lens 2005 31(5) 185

Eiden Band Davis RL et al The SMART study-Clinical evaluation of stabilizing myopia by accelerated reshaping technique, 2nd year results (published Jan 2010).

Lipson MJ Long-term clinical outcomes for overnight corneal reshaping in children and adults Eye Contact Lens 2008 Mar 34(2) 94-9

Mika R, Morgan B, Cron M et al Safety and Efficancy of overnight orthokeratology in myopic children Optometry 2007 Mat 78(5) 225-31

Shehadeh-Masha'our R, Segev F, Barequet et al Orthokeratology associated microbial keratitis Eur J Ophthamol 2009 Jan-Feb 19(1) 133-6

Walline, JJ et al The Current state of Corneal reshaping Eye and Contact Lens 2005 31(5) 209-214

1 The 2nd year results of the SMART study show that the overall mean prescription change from baseline in the control group (soft contact lens wearers) was almost 0.80, whereas there was no statistically significant change in the test group (orthoK lens wearers).

2 It should also be noted that at the time when these infections occurred the regulation of this modality in Asian countries was limited with tap water sold as a multipurpose contact lens care solution (Watt 2007)

3 Choo JD.Holden BA,Papas EB etc Adhesion of Pseudomonas aeruginosa to orthokeratology and alignment lenses Optom VIs Sci2009 Feb 86(2) 93-7

4 Van Meter WS, Musch DC, Jacobs OS et al Safety of overnight orthokeratology for myopia: a report by the American Academy of Ophthalmology 2008 Dec 115(12) 2301-2313 e1

Watt. K and Swarbrick, HA MicrobialKeratitis in Overnight Orthokeratology: Review of the First 50 Cases Eye and Contact Lens 2005 31(5) 201-208

Watt KG and Swarbrick HA Trends in microbialkeratitis associated with orthokeratology Eye Contact Lens 2007 Nov 33(6 Pt2) 373-7

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