Thoughts on the treatment of short-sighted children by eye specialists

"WE SHOULD OFFER THE MANAGEMENT OF SHORT-SIGHTEDNESS IN CHILDREN TO PARENTS AS THE STANDARD, NOT AS SOMETHING THAT WE ARE STILL TESTING"

This statement, made by an esteemed colleague of mine a few weeks ago, made me think. Are we really at the point where we can offer myopia control as the standard in optometry or specialist opticians’ practices? Do we have enough evidence and is doing nothing really irresponsible?

MYOPIA CONTROL AS A STANDARD SERVICE
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MyopiaCare is a standardised risk analysis questionnaire for short-sighted children and an information platform about myopia management for parents and eye specialists. The website contains references, a blog and marketing support to support the communication with parents.

On the matter of evidence
In recent years, we have greatly expanded our knowledge by means of fundamental research and studies. This resulted in a comprehensive overview of white papers published by the International Myopia Institute a few months ago, which included contributions from more than 83 experts from all over the world [1].

In the countries in which I have personally worked the most on this topic (Germany, Austria and Switzerland), we are already seeing progress. The ophthalmological community in Germany – DOG (German Ophthalmological Society) and BVA (Association of German Ophthalmologists) – issued a statement on the treatment of progressive myopia in children in early 2019 [2]. The Swiss Academy of Ophthalmology published an explanatory leaflet on this topic in March 2019 [3]. And in parts of Austria, the Austrian Ophthalmological Society have worked together with health insurance companies to help them add Ortho-K and soft defocus lenses for children with progressive myopia to their list of approved treatments.

This provides us with a solid foundation with which we can, and more importantly should, provide targeted support to short-sighted children. Possibly these developments in the German speaking countries have led to the fact that in a recently published study of Naton Efron and the International Contact Lens Prescribing Survey Consortium, these three countries were among the top four countries worldwide prescribing contact lenses for myopia control [4].

A very important point is that we do not need to immediately provide specialised myopia care to each short-sighted child at all costs. Offering myopia management as a standard service for short-sighted children also includes offering myopia control to individual children in a responsible and sensible way.

Responsible and sensible consultations

The interest in this subject among eye specialists has increased substantially in the past few years. There is hardly a conference these days that does not discuss the subject of myopia control. New articles and stud-

ies are published in quick succession and nearly every manufacturer of contact lenses offers an individual solution with a CE marking or off-label.

To implement myopia management in your own practice, it is necessary to offer a more in-depth consultation to parents and children. This is a decision that can affect the entire practice concept by turning every employee into a contact partner responsible for the child and his or her visual development.

In addition to measuring refraction, the consultation should also include several optometric measurements and an assessment of risk factors for the individual child. The DOG recommends to diagnostically eliminate the impact of accommodation for a few hours as part of the initial examination before therapy and later during follow-up examinations using cycloplegic eye drops. This helps avoid incorrect measurements that make the short-sightedness or other defect appear more severe than it is [5]. An interdisciplinary collaboration between the optometrist, an eye doctor and an orthoptist is therefore important to ensure comprehensive care during the child’s adolescence. [*]

The most important point is the assessment of the progression, i.e. the advancement, of the child’s myopia. This is because we can only implement myopia control in cases of progressive myopia.

In the February 2019 issue of Der Ophthalmologe (‘the Ophthalmologist’), Dr L. Joachimsen and Dr W.A. Lagrèze recommend that the detected progression should be ≥0.5 dioptre/year to indicate a therapy that reduces progression [6]. This means that it is not always necessary or possible to start a therapeutic measure upon the first visit without previous knowledge of the progress of correction.

The child’s first visit in an optician’s or optometrist’s practice in German-speaking countries is not a conventional contact. We should first compile the necessary information at their leisure in their own home. Providing suitable information material, preferably with independent and relevant references, helps parents re-engage with the subject and the newly acquired knowledge at their leisure in their own home.

This consultation lays the foundation for the follow-up appointment six months later. If the myopia has progressed at this point, the recommendations mentioned at the previous appointment can be put into practice. This consultation thus leads to a sale in a completely natural way.

When should myopia management be stopped?

A Comet study shows that the eye’s axial length naturally increases less quickly with age and usually reaches its full length around the age of 20. After the age of 14, a quick progression of more than half a dioptre per year is rather unusual. At that point, myopia management may no longer be necessary, and it should be considered whether it needs to be discontinued [7].

The choice of myopia management solution

Ultimately, we always discuss solutions to correct ametropia, and I therefore exclude atropine from this discussion. All optical correction options can be used synergistically in conjunction with atropine in cases of severe progression: vision correction is, after all, still necessary despite eye drops [8].

Currently, the principal recognised therapeutic interventions in myopia management are the following two contact lens options: orthokeratology and soft multifocal contact lenses with centre-distance design [8]. Rigid gas permeable multifocal contact lenses are based on the same mechanism as soft contact lenses, but there are no relevant studies on these as yet.

Before starting optical solutions, you will first need to know the binocular vision status of the child.


[*] In Germany, Austria and Switzerland, ophthalmologists are the primary eye care providers for children. There are two reasons for this. Firstly, the professional education of people involved in refractions is very heterogeneous. Optometry is a rather young discipline – less than 20 years old – and fully trained optometrists are only a small fraction of the practitioners. Secondly, the use of diagnostic drugs and prescription of atropine has until now been reserved to ophthalmologists by law. Ophthalmologists often work together with orthoptists in their practices to carry out binocular measurements in children. In recent years, there has been a great deal of interdisciplinary exchange in all optical professions in the field of myopia management, resulting in major synergies.


The International Myopia Institute recommended the following binocular vision tests in its white paper in 2019 [9]:

- Lag or lead of accommodation
- Amplitude of accommodation
- Flexibility of accommodation
- Heterophoria in near and distance vision
- Fixation disparity in near vision
- AC/A ratio

The results for near vision are of primary importance for the choice of optical myopia management solution.

In order to assess near binocular vision, distance vision must first be properly corrected. The question of whether and when myopia correction should commence has not been finally resolved as yet. It may be better to start from a short-sightedness of a half or one dioptre, or as soon as the child considers his or her visual acuity to be inadequate for daily life [10].

Knowledge of near binocular vision helps with the overall assessment of the visual system before and during treatment. The choice of therapeutic measure can alter the binocular vision to which the child is accustomed. In myopic children who already have


increased exophoria at near, the change from glasses to contact lenses or the use of multifocal glasses can cause an increased accommodation deficit and also a higher vergence demand due to the exophoric shift. These changes in the visual system can impact the child’s visual comfort in certain circumstances [11][12][13].

In cases of near esophoria and accommodation deficit, contact lenses and glasses with progressive lenses supporting near vision can be more effective for visual comfort and myopia control [12][14]. Ortho-K, on the other hand, seems to be more effective for children with decreased rather than increased amplitude of accommodation [15].

Glasses as the standard treatment

Parents and society currently consider it completely normal to give glasses to children and adolescents with ametropia. Giving contact lenses to young children, on the other hand, often prompts doubts and concerns among parents and even some eye specialists. If myopia progresses beyond a certain point, however, conventional single-vision glasses simply do not provide optimal care [16].

Eyeglass lenses for myopia control are currently mainly available in Asia. Progressive addition lenses and bifocals reduce the lag of accommodation, which is responsible for hypermetropic defocus, while reducing the accommodative demand. Executive bifocals with prisms are particularly effective for children with a low lag of accommodation [16]. Selecting the right type of lens again requires binocular vision measurements.

Once the eyeglass solutions are available, a completely new question will be asked in cases of progressive myopia: Should the child be prescribed glasses or contact lenses? At that point in time, myopia control may establish itself as a standard service. After all, glasses are long-established in people’s minds as the standard optical solution for decreased vision and have long been accepted as such. However, if a child chooses contact lenses following a consultation, various studies and our expanded knowledge give us the certainty that this treatment will also help the child and reduce the risks of severe myopia.

We are in an exciting and eventful development phase of a new field of business. Thanks to the work of several globally recognised experts, we are on our way to achieving a paradigm shift, which will ultimately help our children most of all.

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TAKEAWAYS

- The IMI White Papers, which were recognised by professional groups worldwide at the beginning of this year, provide a scientific basis for considering myopia management as a standard treatment today.

- Country-specific recommendations correspond to the particular policy conditions under which the professionals in each country operate. Policy-neutral recommendations for professionals should, however, be worked out in each case.

- Atropine, Ortho-K and multifocal soft lenses are care options that we can currently offer to children with progressive myopia. However, myopia management may only be perceived as a standard care by the general public with the introduction of special eyeglass lenses.