

Case Report: Diagnosis and Management of High Myopia with Rigid Gas Permeable Contact Lenses

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Introduction

Myopia is a global pandemic with increasing prevalence worldwide.¹ Uncorrected myopia is a leading cause of blindness² and a higher degree of myopia is associated with increased risk of visually impairing ocular complications. The aim of this report is to describe a case of high myopia in a young Caucasian male and discuss the associated clinical investigation, diagnosis, treatment and management.

Case History

On June 23rd 2020, a 10y old Caucasian boy was referred for a contact lens appointment for myopia control.

Chief complaint:

Reduced vision at distance and near, seeking ways to improve vision.

Patient History:

- 1st pair of glasses at 1.5yrs old (full-time wear)
- Patient's medical history was unremarkable
- Both parents & 6 siblings are myopic

References

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Timeline

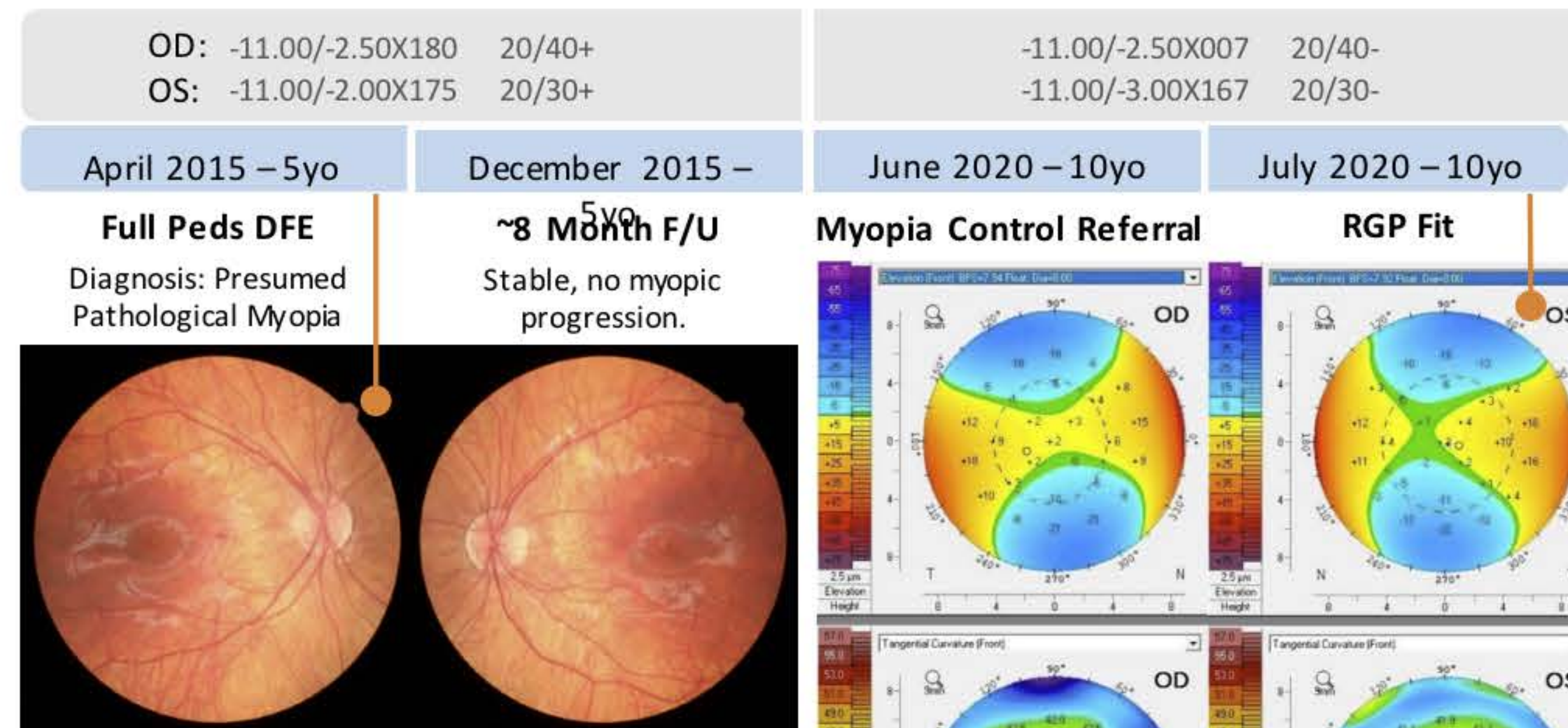


Figure 1. Funduscopy photograph of posterior.

Discussion

High Myopia VS Pathological Myopia

- | | |
|---|--|
| >6.00D | >6.00D or >26.5mm AL |
| Structure of the eye develop WNL. | Progressive increase in axial length causing thinning of sclera, retina, RPE, and choroid ⁴ |
| Optical power is too strong for the corresponding axial length ³ | The presence of myopic maculopathy equal to or more severe than the diffuse chorioretinal atrophy ⁵ |

Bottom Line: This patient has high myopia, not pathological myopia.

Figure 2. Corneal topography composites measured from an Oculus Keratograph on June 23rd 2020 showing anterior topographical maps, including elevation and tangential maps.

Contact Lens Fitting

OD Tricurve	Custom RGP Bitoric	OS Tricurve
Optimum Comfort Cardinal Contacts	Lens Name	Optimum Comfort Cardinal Contacts
8.18/7.71	Supplier	7.95/7.63
-10.00/-2.00	Base curve (mm)	-10.00/-2.50
10.50	Power (D)	
0.08	Diameter (mm)	10.50
8.20	Center thickness (mm)	0.08
8.20	Back optical diameter (mm)	7.90
0.09	Front optical diameter (mm)	7.90
9.38	Edge thickness (mm)	0.09
0.60	2 Zone radius (mm)	9.15
11.18	3 Zone width (mm)	0.60
Right Dot	3 Zone radius (mm)	10.95
	Engraving	

Figure 3. Finalized RGP parameters with good vision, fit and comfort.

Myopia Control Candidacy

- Rate of myopia progression^{6,7}
 - Mild progression -0.50D/yr or less
 - Moderate progression -0.50D to 0.99D/yr
 - Severe progression -1.00D/yr or more
- Risk factors associated with progression
 - Age: younger age of myopic onset⁸
 - Family History: number of myopic parent⁹
 - Ethnicity: Asian children from Asian countries progress faster in myopia & axial elongation¹⁰
 - Environmental factors: increased time outdoors may play a role in preventing onset of myopia¹¹

Bottom Line: Patient was a poor candidate for myopia control.

Contact Lens VS Spectacle Correction

RGP CL optimize vision in high myope with astigmatism:¹²

- Increased field of view
- Better optics, decreased optical aberration
- No minification effects
- Low risk of ocular infection & inflammation

Bottom Line: RGP provided superior vision compared to spectacles, addressing the patient's chief complaint.

Summary

- It is important to differentiate the diagnosis of high myopia from pathological myopia as the treatment, management, and outcome are different.
- Children with atypical onset of high myopia are non-candidates for myopia control.
- RGP is a safe and effective choice for high myopes with increased astigmatism and provide significant improvement in visual acuity compared to spectacle correction.