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Progressive lenses and acute anisometropia

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Introduction

Assessment of case studies demonstrate that acute/induced anisometropia does not absolutely preclude patients from continued progressive lens wearing. Acute or induced anisometropia occurs when a sudden change in the prescription is introduced. Typically, this occurs following cataract operations to a single eye. Difficulties arise when the difference in refractive power of both eyes after the operation is 2.00D and more. Different powered lenses induce varying amounts of prism. This unwanted differential prism has the potential to disturb the binocular vision and is especially problematic when the vertical prism is induced (a very common problem when using multifocal lenses to perform near vision tasks).

Methods

Three patients were selected with approximately the same amount of acute anisometropia which occurred after undergoing cataract surgery to a single eye. After several consecutive years of wearing progressive power lenses, patients intended to pursue wearing them with a new post cataract correction. The amount of differential prismatic effect induced at the near vision point (NVP) for each patient is approximately 2.25D. (Assuming the NVP of 10mm below the optical centre). Following prescription analyses and patients individual needs analysis, each patient was dispensed with progressive lenses with different settings.

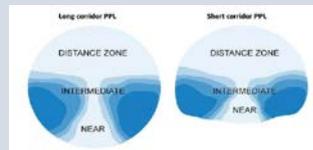
Patient 1 was given long corridor (general use) progressive lenses

R -2.00/-1.00x90 6/6 add +2.75
L -4.25/-1.75x90 6/10 add+2.75
(R eye pre cataract -4.50/-1.75x100)
Differential prism at NVP 2.25 DN Le

Long corridor progressive lenses typically would have 17-21 mm min fitting height 12-17 mm corridor length. Normally would not be considered as a viable option but some modern more advanced progressive lenses consider the line of sight in the design calculation

Patient 2 was given short corridor progressive lenses

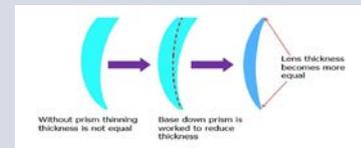
R +1.00/-1.00x175 6/6 add +3.00
L +3.25/-2.00 x140 6/10 add+3.00
(R eye pre cataract +4.25)
Differential prism at NVP 2.25UP Le



Short corridor progressive lenses change power from distance to near quickly. A simple solution is to use the shortest possible corridor. Typical min fitting heights 13-15 mm with min progression corridor of 8-10 mm. Patient reaching reading portion quicker = less differential prismatic effect at NVP

Patient 3 was given progressive lenses with no prism thinning in one lens

R +2.25/-0.25x90 6/7.5 add +2.50
L 0.00 6/6 add+2.50
(L eye pre cataract +2.50/-0.50x75)
Differential prism at NVP 2.25UP Re



Prism thinning is a technique used to remove BASE UP prism on both lenses by an equal amount (2/3 of the add) to ensure an even distribution of lens thickness top to bottom

Le ordered with no prism thinning. Problem - now differential prism moved to the distance portion. Studies show adaptation to induced prism is different for distance and near. The max adaptation in the zone of habitual gaze.

Results

Whilst all 3 patients showed relatively good adaptation response, the patient dispensed with short corridor progressive lenses experienced the greatest improvement. The other 2 patients were able to use their specs for short periods of time or during daily activities but preferred to use a supplementary pair of reading glasses for prolonged near vision tasks or to remove the specs when reading.

Conclusion

With an increasingly aging population cataracts are a more often presenting common visual disorder. The in practice need for correction of an induced anisometropia is becoming noticeably less. This is primarily due to both improvements in cataract surgery and improvements in practitioner consideration, reducing the wait time between operations. Nonetheless, having an understanding of possible solutions is still essential.