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Management Strategies for Presbyopic Patients with Intermittent Exotropia or Exophoria: A Clinical Perspective

Suman T*

Paedritic Optometrist, Dr. Shroff Charity Eye Hospital, India

***Corresponding author:** Suman Thakur, Paedritic Optometrist (Binocular Single Vision / Orthoptist), Dr. Shroff Charity Eye Hospital, Delhi, India, Tel: 7302888622; Email: symondymon77@gmail.com

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Abstract

The management of presbyopia in patients with intermittent exotropia XT or exophoria X presents unique challenges due to the dual needs of addressing accommodative insufficiency and binocular instability. This article explores the effects of plus addition lenses in such patients and discusses the role of prism glasses and convergence exercises as adjunct therapies. The importance of tailored therapeutic approaches to improve near vision and maintain binocular single vision is emphasized, alongside potential treatment strategies for different patient presentations.

Keywords: Presbyopia; Intermittent Exotropia; Exophoria; Plus Lenses; Prism Glasses

Perspective

Presbyopia is an eye condition characterized by a reduced ability to quickly focus on close objects. It's actually a natural phenomenon that affects everyone during the growing age. The hypothetical cause is by either a weakening of the ciliary muscles or a loss of lens elasticity preventing focal point change [1,2]. While the etiology of this condition is not fully understood, recent research suggests that increased lens rigidity is the primary cause [3,4]. Basically a patient with presbyopia is prescribed with the plus power as their natural capacity to converge the rays of light into the retina is less. Additional plus power enhances the eyes ability to converge rays onto the retina, thereby maintaining a clear image.

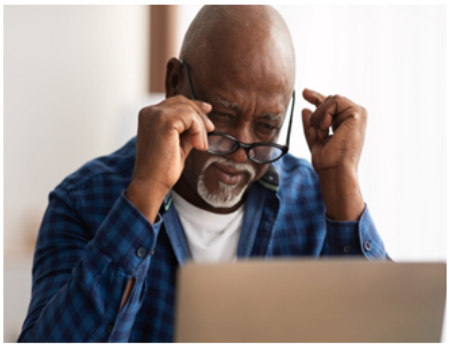

Figure 1: Sowing a unhappy presbyopic patient.

How Plus Lenses Plays with Accommodation

The positive refractive power helps relax accommodation by directly relaxing accommodative convergence. The design of plus lenses are in such a way that it consists of both side base in prism so the rays passing through plus lens converges which helps in bringing the rays into to retina. So on addition power we don't have to accommodate more to bring object on focus simultaneously controlling accommodative convergence, due to which a presbyopic patient who has less ability to accommodate feels happy on wearing an additional plus for near.

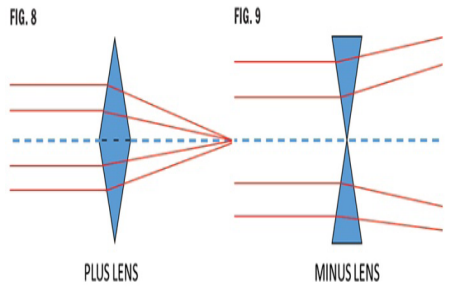

Figure 2: Showing formation of plus lens.

What Happens When a Prebyopic Patient with (Xt), (X') is Prescribed with Plus Number

Exophoia is characterized by sporadic outward deviation of one or alternate eyes. Duration of deviation, control and frequency vary from one individual to another. Disturbance in binocular vision by any cause can lead to deviation of eyes. Poor fusional facility has been suggested as the essential cause of squint. An inadequate fusion facility of eyes lead to an unstable state of equilibrium due to which eyes deviate inwards or outwards even on slight provocation [5]. A person with X' or (XT) is the one who is having difficulty in fusing things due to poor convergence. They are not able to maintain clear and single vision for longer period of time and if the same patient is presbyopic he will be adding up his difficulties to focus and clear near objects as he will also not be able to exert required accommodation to make the near diverging rays fall into the retina.

When a presbyopic patient with XT or X is prescribed plus addition lenses, they face more difficulties focusing and maintaining a clear near image. As we know a plus lens relaxes the accommodation and when this patient is given plus lenses the relaxation of accommodation will increase the amount of exotropia and patient will have more difficulties in controlling the squint and hence creating difficulty in maintaining single and clearer images for near. So in this case a add power to presbyopic patient will be a burden.

But What Then, How Should a Presbyopic Patient with (XT) /X' Should be Treated?

A presbyopic patient has less ability to converge the rays ie., accommodation insufficiency which can only be treated with extra plus power. But those presbyopic patient with (XT)/X' when only treated with addition lenses it will make exophoria worst by relaxing the accommodation more and patient might also feel double vision for near or might not feel comfortable for prolong near work so theses patient should be provided with prism glasses along with add.

A base in prism will help to control the exotropia. Glasses with addition power and base in prism will definitely help this kind of patient to control squint and maintain single and clearer image. The prescription in the amount of prism basically depends upon the amount of squint and the control of squint. In most of the cases we prescribe prism $1/4^{th}$ of the amount of squint but it is not the rule or compulsory method for the prescription, we also have to see the control of squint and also the vergence amplitude of the patients. Before prescribing prism we also have to give a trail and see fusing capability of the patient with the minimum amount of prism, this can be done with the help of brockstring or can also be done by making the patient read and ask if he can read for a longer period of time and ask if the words gets double or not in between and if he can control or not. After seeing all this we can prescribe the amount of prism where his ability to make images single and control for a longer period of time gets better Convergence exercises, in addition to prism glasses, can be beneficial for these patients.

Figure 3: Showing a base in prism in presbyopic glasses.

Vision therapy has played a huge role in improving symptoms and restoring binocular vision in IXT [6]. The effectiveness of vision therapy in treating convergence insufficiency has been massively developed in children [7] and adults [8]. Brockstring, single aperture ruler, vectogram and prism bar can be the possible convergence exercises for them. A prism glass , or convergence exercises or both (prism + convergence exercise) will help the patient to strengthen up his ability to control the intermittent out ward deviation and simultaneously the plus number will make patients near vision clearer. This combination of treatment is the actual

required therapy for these types of patients. Slowly we can taper the amount of prism and exercises by observing the patient strength of controlling the squint. The main goal of these therapies is to decrease the recurrence of deviation by minimizing the angle of deviation or by strengthening the ability to control it and by reducing the symptoms [9].

Figure 4: Exercise with vectogram.

Figure 5: Exercise with brockstring.

Conclusion

In conclusion, managing presbyopia in patients with intermittent exotropia XT or exophoria X requires a comprehensive approach that addresses both accommodation and binocular stability. While plus addition lenses may exacerbate binocular instability, the use of prism glasses and convergence exercises offers a viable solution to maintain near vision clarity and control squint. Further research and tailored clinical strategies are essential for optimizing patient outcomes.

Note: A manifest exotropia should be treated differently. A manifest squint means a type of deviation where there is no control at all. Hence this prism and exercises won't help this kind of patient. In manifest squint our sensory function is disturbed for which surgery is our ultimate goal of treatment.

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