International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

An Overview of Spectacle Frame Designs for Progressive Lens Users

Mrityunjoy Bose[1], Junaid Nabi Pala[2], Rahman Waliur[3]

[1]Assistant Professor, Department of Optometry
[2]Assistant Professor Department of Operation Theatre Technology
[3]Senior Optometrist The Assam Royal Global University, Guwahati, India

Abstract:
A descriptive study of the frame shape, for dispensing progressive addition lenses. Apart from various measurements and power considerations,the use of progressive lenses in early presbyopes are increasing . Thus,selecting a suitable frame shape is important for both the user and the eye care professionals . As the shape of a spectacle frame is an important consideration for progressive lens fitting. This study reveals safe dispensing of progressive lenses with suitable frame, considering the user is comfortable and quickly adapts with the newly dispensed spectacle .

Keywords: Progressive Addition Lens, dispensing, presbyopes

INTRODUCTION:

Progressive lenses are the best options for presbyopic spectacle users as they provides the wearer with seamless viewing for clear distance , intermediate and near vision[2]. Moreover, these lenses are well tolerated compared to bifocals because they favour intermediate vision and lack the demarcation line [2] . It is also available in variable corridor width suitable for various users based on their needs [1]. In recent years , studies suggest progressive lenses are prescribed based on vertex distance , pantoscopic tilt and wrap angles, [3] . Several studies have also shown , patient's subjective preference with lens design, [4],[5] . But,the users while selecting frames often selects frames based on their facial shapes, [6] which may not suitable for progressive lenses.

Thus , this study is designed to encounter the difficulties faced by the user with new progressive lens due to frame shape and it also focus about the frame design and its contribution to successful and quick user's adaptation to progressive lenses.

Material and Methods:

A group of 20 presbyopic individuals of age groups 45 ± 3 , who will be using progressive glasses for the first time, were included. The users had undergone ocular examination within 1 month duration. These individual were introduced to frames of various shapes and suitable b size , which includes cat eye, rectangular, round, aviator, oval and square. The selected frames were fitted with progressive lenses of desired power. After dispensing the progressive spectacle fitted with desired power. The users feedback after using the new pair of glasses were recorded for a duration of 1 week, 3 week and 1 month. These feedbacks were noted based on the adaptation process.

Results:

All users (100%) were in the adaptation phase during the first 1 week time. But eventually 80% were comfortable within the 3 week duration provided necessary troubleshooting viz pentoscopic tilt, face wrap, nose pad adjustment (close/ apart)and temple tips (loosening/ tightening) were taken into considered. At the end of one month almost (90%) the users adapted to their new Progressive spectacle except those with some aviator style frames complaing of difficulty in near vision which are shown in (Table 1)

Table 1: It shows the user's responses for a duration of 1 week, 3 weeks and 1 month based on the frame shape.

Frame Shape	No of individuals	Responses by users (various troubleshooting methods were considered)		
		1 week (no of individuals)	3 weeks (no of individuals)	1 month (no of individuals)
Cat eye	3	adapting (3) Well adapted (0)	well adapted (2) facing difficulty (1)	well adapted (3) not suitable(0)
Rectangular	4	adapting (2) well adapted (2)	well adapted (4) facing difficulty (0)	well adapted (4) not suitable(0)
Round	3	adapting (2) well adapted (1)	well adapted (2) facing difficulty (1)	well adapted (3) not suitable(0)
Oval	3	adapting (2) well adapted (1)	well adapted (3) facing difficulty (0)	well adapted (3) not suitable(0)
Square	3	adapting (2) well adapted (1)	well adapted (3) facing difficulty (0)	well adapted (3) not suitable(0)
Aviator	4	adapting (3) well adapted (1)	well adapted (2) facing difficulty (2)	well adapted (2) not suitable(2)

The frame shapes like rectangular, round , oval and square have shown better adaptability from 1st week onwards . The cat eye frames shows delayed adaptability and some of the aviator frame design are found to be not suitable for progressive users. Even after repeated trouble shooting efforts , some aviator style frames failed to adapt for (10%) progressive users.

Out of the 4 (20%) users , who choose aviator frame over others were having two specific aviator frame designs teardrop type and navigator type as shown in (figure 1). The navigator type shows better adaptability. While the tear drop type is not suitable.

Figure 1: Shows the shapes & designs of aviator frames , a . Tear drop type b. Gladiator type

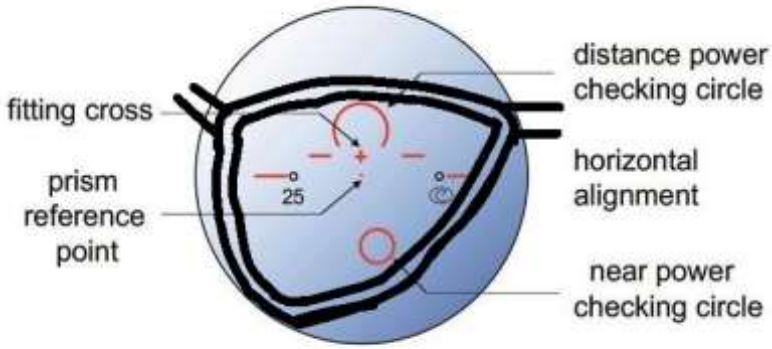
A.Tear Drop Type

Gladiator type

Conclusion:

Thus, frame selection for progressive spectacle is one of the most important consideration for its adaptability. The best progressive friendly spectacle frame design include rectangular, round, oval and square. Moreover cat eye frames and aviators of gladiator types can also be adapted. But aviator of tear drop type should be avoided as this frame design is such that a significant portion of the near reference circle is not present, Making it difficult for the users to see near objects clearly which is shown in (figure 2) . This study highlights the importance for selecting accurate frame design suitable for progressive glasses in order to achieve a better and quick adaptation .

Figure 2: It shows how a tear drop type of aviator frame will cut off a significant near reference circle/ near power checking circle, of an uncut progressive lens. If it is fitted in this specific frame for right eye.



An uncut progressive lens to be fitted in a tear drop aviator frame for right eye.

This knowledge is important for eye care professionals and users for successfully dispensing and adapting to progressive spectacles.

References:

1. L. R. Achiron , N. S. Witkin The use of dissimilar progressives in the management of presbyopia . Survey of Opthalmology (1998)
2. Krause K , Monbl K , Augenheilkd. Acceptance of progressive lenses. 1996, PMID:8992091
3. Eduardo Pascual, Jose A Gomez , Jose Alonso ; 2023 Theoretical performance of progressive addition lenses with poorly measured individual parameters. 2023 ,
   PMID : 36624926
4. Han, S. C., Graham, A. D. & Lin M. C. Clinical assessment of a customized free-form progressive add lens spectacle . Optom. Vis. Sci. 88, 243-243 (2011)
5. Forkel J , Reiniger J. L. , Adam M , Andrea W, Anne S et .al . Personalised progressive addition lenses: Correlation between performance and design. Optom. Vis. Sci. 94, 208-218 (2017)
6. Rakib H. R. , Sunzida S. , Laxmi R. D., Mohd A. H. Facial shape- based eyeglass recommendation using convolutional neural networks.(2023)