

Multifocals and Progressives Alternative not Superiority

In the past two or three years there have appeared a number of studies indicating popularity of certain types of progressive power lenses over other types¹ and of progressives over standard segment type bifocals.^{2,3,4}

To date, no study comparing progressives to trifocals has come to this writer's attention. Until such a study is done, the question of popularity of progressives will remain unsolved despite some results favouring progressives over bifocals. Why have the manufacturers of progressive power lenses failed to compare their product with trifocals? Are they fearful that the outcome would not be as favourable as with bifocal lenses?

This writer, based on his knowledge of geometric optics and lens types, of personal use of bifocals and trifocals and of progressive lenses (both Ultravue and Varilux II), plus thirty-seven years of clinical practice, believes that progressives, apart from their cosmetic appeal, are overplayed because of the inherent restrictions in their design. We are not implying that standard multifocals have no restrictions, but simply that claims made on behalf of progressives mislead some practitioners and the public who conclude that these "no-line lenses" can meet any optical need of the public.

Have readers ever attempted to compensate for induced vertical prism due to an anisometropia, to adjust base curves to avoid possible aniseikonic effects, to provide base in prism in the reading area for convergence problems or even to provide a wider and undistorted field of vision in the working or reading area? Perhaps the genius of Bernard Maitenaz, the designer of the generating machine which permitted the production of progressive

power lenses,⁵ will, in the future, give us progressive lenses incorporating all the parameters required in practice. But on the other hand, what would happen to present lens types if "Gradient index optics" became a practical, clinical reality⁶?

The primary objective of any prescription for an ophthalmic appliance is to meet the visual needs of the patient. Practitioners should not "give in" to the cosmetic demands of the patient if a progressive power lens cannot meet his visual needs. At least, in the writer's practice, most requests for progressives stem from novelty and cosmesis. — newness does not necessarily mean superiority.

The most successful first generation progressive lens used in the writer's office was the "Zoom" which is no longer available.⁵ Nonetheless, the writer has never been enthusiastic about progressives due mainly to the distortions and aberrations found in the periphery or adjacent to the true optical zones of these lenses. In fact, if a standard single vision or multifocal lens had such faults, it would be *promptly rejected*. The same might be said about the visual results with soft contact lenses. Why do we take so much pain to determine an accurate refraction only to ignore part of our findings when fitting the soft lenses?

Perhaps some personal experiences with Ultravue or the Varilux II could be of interest. Admittedly, the writer's correction does influence his impressions of the usefulness of these two types of lenses:

— 3.25 — 3.50 × 180 ¾ Δ Base up
— 3.00 — 3.25 × 165 ¾ Δ Base down
add plus 2.00

C. V. Trifocal set 1mm below lower edge of pupil.

Because of the position of the segment, the beginning of the pro-

gressive area does not create a problem. A diplopic image caused by looking through the segment line is no more annoying than the blur and distortion created by the progressive power to either side of the progressive channel. In fact, it may be more annoying with progressive lenses because a segment line does not extend to the edge of the lens except for the executive.

At near, the Varilux gives only 2 newspaper columns of clear definition and these are trapezoid, narrower at the top and more angled to the left. A 15 degree head turn produces an uncomfortable lateral distortion and blur to the side opposite the head turn. These lateral aberrations and the narrow field can be tolerated when reading a book but become intolerable with a newspaper.

The Ultravue gives a slightly wider field but the edges have more blur. The trapezoid effect does not exist.

In the intermediate ranges, 18 to 36 inches, vision is good in the straight ahead direction but the lateral field is only 8 to 10 inches wide compared to the 24 inches available with the trifocals intermediate segment. This reduction in the field width is the most objectionable feature of the prescriptions. It is in the examination room that they have been most annoying. After several trials, both Varilux and Ultravue have been abandoned for in-office use.

If personal experience is any criteria for judgement, the most-used area of the trifocal in a home or office environment is the intermediate segment and we suspect that the same would be said for most patients. The narrowness of the progressive channel becomes a major feature in counselling a patient on

the use of progressive lenses. As Borish has indicated¹ the head turner will accept a progressive more easily than an eye turner. And in this respect progressives would be a boon to aphakics if such high powered lenses could be cosmetically produced. Have designers ever given thought to meeting the aphakic's spectacle needs with a progressive power lens?

Clinicians may or may not have noticed that a progressive lens demands more head movement up and down than a segment because the reading power is at the bottom of the progressive area, at least for the Varilux. The shorter channel of the ultravue is about similar to the trifocal. In a bifocal the N.V.L. is some 8-10 mm below the distance optical center, 15-17 mm in a trifocal and 18 or more in the Varilux. The N.V.L. can be raised by giving more than the required add but this may disturb the intermediate ranges, the

raison d'être of a progressive lens.

On the street, both Varilux and Ultravue provide clear distance vision edge to edge, but once into the progressive area to either side of the channel, vision is blurred and distorted; the Varilux causes vertical lines to slope 15-20 degrees to the left and 10 degrees to the right; the Ultravue causes undulations of the floor but vertical lines are upright.

In all this discussion the center of controversy is clear undistorted vision at near and at far. These two faults are not the same. Depending on head position things may be upright but blurred; in other positions the print is clear but sloped. As the ads say, "a smooth progression of power in every direction"; a correct statement, no doubt, because the lens surfaces vary smoothly and so does power, but is this the lens power the patient requires to correct his ametropia?

Oh yes, except in the office, the

writer uses these prescriptions on occasion but what a relief to get back to a lens free of aberrations and distortions!

References

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