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"How Two Diverse Patients Benefited from HOYA's Innovations"

INTRODUCTION:

Progressive addition lenses (PALs) are the new cutting lenses used today for many presbyopes. Since the introduction of PALs into the market-place, their sales have greatly increased to about 50% of all multifocals sold today (Karp, 2004). PALs optics can vary a great deal and with the different variations there is virtually an unlimited number of designs possible.

Many first time PAL wearers have a difficult time adapting to progressive lenses. Review of Optometry reported that the difficulty of adapting was secondary to the variation in power throughout the lens (Jan, 1984). This variation causes light beams and their wavefronts to bend in different directions (Stephens, 1998). In turn, optical aberrations are produced and patients report "swimming" or "swaying" effects. New manufacturing techniques by HOYA ensure these sensations will no longer be a problem.

HOYALUX iD provides clients with disturbance-free vision through a three-step process: first, the front and back surface is calculated, then the separate design properties are restructured, and lastly the two surfaces are integrated. The steps use two novel lens design evaluation technologies. Balanced View Control (BVC) determines the degree of visual distortion through the PAL at various angles, and Skew Deformation Index Mapping (SKIM) processes the exact extent of visual distortion endured by the person wearing the progressive lenses. HOYALUX iD is the one and only integrated double surface progressive lens designed this way. HOYA processes BVC and SKIM while using horizontal power progression on the back surface to reduce unwanted astigmatism and vertical power progression on the front surface to give the wearer the feeling of natural vision, unlike the Varilux Ipseo and Physio that has the front surface made from a mold and only one digitized surface. This paper discusses how two diverse patients have

benefited from HOYA's innovations. One patient was a long time PAL user who was previously dissatisfied with Varilux's Ipseo and Physio. The other patient was a first time wearer of progressive spectacle lenses.

CASE 1:

In January 2007, JM, a 52-year-old white male inventory clerk was fitted with Varilux's Physio. However, after a month of adaptation he still had complaints of distortion in the periphery. The following month, JM ordered the Ipseo from Varilux. The Ipseo's selling point is that it is a lens individually tailored to each patient. It uses a machine to determine how the patient uses his or her eyes and creates lenses based on the results. Nonetheless, JM still had complaints of a distorted periphery and described his computer monitor as having the shape of a "V" when he looked at the screen.

JM's past ocular history showed he had been happily wearing HOYA GP Wide progressive lenses for eight years. His medical history included high blood pressure treated with Mavik (trandolapril) and high cholesterol, which was treated with Zocor (simvastatin). About two years ago, he was diagnosed with type II diabetes mellitus, which was being controlled with metformin. His fasting blood glucose level on 2/27/07 was 95, and HbA1C was 5%. JM's slit lamp examination of the anterior and posterior segment was normal, without signs of diabetic or hypertensive retinopathy, and no ocular signs of high cholesterol were detected. He reported that most problems of his vision problems occurred while entering data into the computer and completing reading tasks. He indicated that he was on the computer for a signifi nt each day, usually between five and seven hours. It was an easy choice for JM in choosing the HOYA iD, made by digitally imaging both front and back surfaces of the lenses.

REFRACTIONS:

6-19-03 (Pre-Diabetes)
HOYA GP Wide
OD: – 5.25 – 0.75 x 100 VA: 20/20
OS: – 5.50 – 0.75 x 070 20/20
Add: +1.75 20/20

10-6-05 (uncontrolled Diabetes)
OD: – 4.25 – 1.25 X 100 VA: 20/20
OS: – 3.75 – 1.25 X 085 20/20

12/15/06 (controlled Diabetes)
Varilux Physio (Jan, 2007), Ipseo (Feb, 2007), HOYA iD 2007)
OD: - 5.25 – 1.50 x 090 VA: 20/20
OS: - 4.50 – 1.75 x 090 20/20
Add: +2.25 20/20

JM's previous HOYA lenses met his visual needs for several years, but after he was diagnosed with type II diabetes mellitus his prescription started to change. With diabetic treatment his prescription was close to his pre-diabetic Rx, but the axis of his astigmatism changed. With his new Rx he made two attempts with Varilux's top two lenses, but could not adapt to them. Mid February 2007 JM went back to wearing his previous HOYA GP Wide lenses. The following month he acquired HOYA iD.

Before ordering the iD, he was examined to see if the problem was from the change in the astigmatic axis. In order to stimulate his working conditions, he was trial framed with the 12/15/06 Rx and seated in front of a computer, and allowed to adjust his own axis. He chose the exact same axis as was found with the phoropter on 12/15/06.

EYRY Ultra Hi-index plastic was chosen for JM's lenses because it had the same high index (1.70) as his previous lenses. Additionally, an anti-reflective coating (Super HiVision) was added to reduce JM's eyestrain while on the computer and to reduce glare during nighttime driving.

CASE 2:

TG is a 54 year-old black female working as a case manager in a crisis unit. Her autistic daughter was examined at The Eye Clinic of Nova Southeastern University. During the examination, TG realized that it had been many years since her own last eye exam and was reminded of the importance of an annual eye exam to ensure her visual health. She had never worn glasses before, except for +2.50D readers purchased at the pharmacy. The following week of March 2007 she was examined and had a chief compliant of blur in the distance and at near. TG's medical history was unremarkable. Without glasses, she was found to be $20/20^{-2}$ OU in the distance and .4/1.6M at near. TG's slit lamp examination and fundus examination were within normal limits for her age with mild nuclear sclerosis (cataracts) OD, OS. The refraction results were as follows:

OD: + 0.75 – 0.50 x 110	VA: 20/20
OS: + 0.75 – 0.50 x 085	20/20
Add: +2.25	20/20

It is important to get a thorough history of how the patient uses his or her eyes before selecting a lens, such as hobbies, computer use, and amount of time spent reading per day. TG had never worn progressive lenses before, so she was questioned about her visual demands and cosmetic concerns. She stated that she uses her distance vision while driving an hour to work, but is continually looking up and down while at work, indicating that she'll need a smooth transition between near and far perscriptions. The HOYALUX Summitt CD, specifically designed with a minimum fitting height of 14 mm for small frames, was considered but not used because she chose a larger frame. The HOYA GP Wide was considered because of the large reading zone. Ultimately, HOYALUX Summit ECP was chosen because it has a wide distance, intermediate, and reading zone. Also,

this lens is one of the easiest for adaptation (HOYA, 2005). A material with impact resistance was also important to TG, therefore her lenses were made of Phoenix Trivex Transitions. Trivex is six times stronger than plastic and twice as scratch resistant as polycarbonate (HOYA, 2005). The Abbe Value of this material is 43, higher than both high index lenses (36), and polycarbonate (30). Lower Abbe values result in the presence of chromatic aberration such as color fringes around a high contrast figure (Wikipedia, 2007). Phoenix Transitions V Lenses were also included in order to slow the progression of her cataracts and the anti-reflection coating of Super HiVision was used to reduce eyestrain caused by the fluorescent lights at her job.

CONCLUSION:

After two weeks of wear time, both JM and TG were interviewed and both reported a great degree of satisfaction. JM immediately noticed a huge difference between the HOYA iD and the Varilux lenses. He described his perception of the computer screen as "non-distorted" and his every day vision as "natural." HOYA has once again delighted him with the results of their lenses. Now, he has more comfortable peripheral vision and loves his HOYA iD more than his former HOYA GP Wide Lenses.

TG was expecting that she would feel disoriented with progressives due to the fact that she had never worn glasses or PALs. To her surprise, there was absolutely no adaptation required! She exclaimed, "I haven't taken them off since I got them!" It is quite clear that HOYA has exceeded JM and TG's expectations with high quality optics, low adaptation, and clear, natural vision.

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