

Ongoing quest for presbyopic success leads to development of new GP multifocal product

The new Renovation™ multifocal from Art Optical Contact Lens, Inc. was specifically developed with the needs of the mature presbyopic patient in mind. Although this demographic is substantial in terms of potential multifocal contact lens wearing candidates, the market is under served due to the inability of current multifocal designs to meet the higher add requirements of the advancing presbyope.

All presbyopic lenses meet the needs of emerging and moderate presbyopes. Practitioners can achieve good success in the add range of +1.25 to +2.00 with most of the available designs on the market. However, when it comes to the mature presbyope, where add power demands reach and surpass +2.25, practitioners must rely on a combination of products and modalities to achieve a successful fit for their patient. While mono-vision, multifocal back surface, multifocal front surface and segmented lens designs can be successful for advancing presbyopic patients, the practitioner often works through the fitting process for multiple designs before meeting the needs of the patient. Even then, success is measured by patient acceptance, with most settling for somewhat compromised distance and/or near vision, or “20/happy” acuity.

To date, there hasn't been a multifocal design that is 100% successful across the entire range of presbyopic patients, and this is especially true for the mature presbyope. Art Optical's MagniClear® lens is a good example of a product that works very well for the emerging and moderate presbyope but begins to fall short of near power in higher add ranges. MagniClear works well for approximately 50% of the mature presbyopes and has been a good design to start with, but as with other multifocal lenses in this add range, practitioners become discouraged when they run into a series of patients that are not successful.

MagniClear's core design is a fixed front surface geometry incorporating a 7mm low value eccentric distance zone, transitional aspheric intermediate zone and spherical add zone. The size and low negative eccentricity value of the distance zone provides excellent distance acuity. The junctionless transition from the distance to aspheric intermediate zone provides the patient simultaneous acuity at all distance and intermediate ranges. There is a slight shift of gaze required to move from the aspheric intermediate zone to the spherical add zone. When

this tri-zone system functions properly, the patient can easily transition into the near zone and gain full access to the add power area. However, when MagniClear does not function properly, it is almost always due to the patient's inability to obtain an adequate amount of near correction. In these cases, patients are +0.75 to +1.00 diopter short on near power, and the near acuity problem is not resolved when the add power is increased to +3.50 or even +4.50.

It was during the initial release of MagniClear and attempting to use higher add powers that we encountered a tremendous increase in lens mass. This led to the development and release of the MagniClear Plus design that uses a low eccentricity value base curve to decrease the amount of mass generated by these higher add values.

MagniClear has been available since 2000 and much data has been collected on its success and shortcomings. Research led to the discovery of spherical aberrations that transpire at the transition from the intermediate to the add zone. This can occur at certain base curve and power combinations or a combination of both that will limit the patients access into the add zone area. A change in the configuration of MagniClear's front surface design would be required to minimize these aberrations and allow the patient full access to the near add zone. Once we identified the combinations, however, it was determined that adjusting the design to accommodate would require a significant change to the entire MagniClear geometric structure. The alterations would change the consistent distance zone size and front surface negative eccentricity to a flexible platform that would automatically adjust to minimize the spherical aberrations while controlling overall lens mass. While the proposed changes were beneficial, we also recognize that there are over 40,000 successful MagniClear patients and thousands of loyal MagniClear practitioners who are satisfied with the product and who would be affected by the change at the time of a reorder.

Thus, our research lead us to the development of Renovation®, our latest multifocal offering.

Renovation™
MULTIFOCAL



With its flexible, front surface, eccentricity control platform, flexible distance/intermediate zone control, and flexible automated thickness control, Renovation provides an attainable level of near vision and helps increase your first fit and overall success with mature presbyopic patients.

RENOVATION DESIGN FEATURE ①:

Flexible, front-surface eccentricity control platform

BENEFIT:

Automatically adjusts the eccentricity of the distance and intermediate zones to correct for aberration, virtually eliminating optical distortion during zone transition.

There is an inherent creation of spherical aberration that can occur with certain combinations of posterior and anterior radius combinations. This is specifically true when combining multiple anterior radius zones over a single radius posterior surface. The anterior radius combination, either eccentric or spherical, must be free of aberration at the zone transitions to allow the patient to translate through the incorporated power range. So, even though the add power in the lens can be verified by instrumentation, the presence of aberrations limits the patients ability to fully and functionally access the near zone of add power.

Spherical aberration correction is a key benefit offered by the Renovation lens design. Through ray tracing, Art Optical has identified and isolated the anterior power transitions that can cause optical distortion through an extended range of base curve, distance and near power combinations. With the unique, flexible, front-surface eccentricity control platform, the eccentricity of the combined distance and intermediate zones is automatically adjusted to allow the power transition to occur without visual interference so patients are able to access the add zone without encountering aberration based optical distortion.

RENOVATION DESIGN FEATURE ②:

Flexible, distance/intermediate zone control

BENEFIT:

Adjusts to accommodate small pupils for enhanced near vision and large pupils to reduce flare & glare.

Renovation uses a large distance and intermediate zone diameter to allow normal movement of the lens so as not to interfere with distance acuity, even in dim illumination.

When the patient has good distance and intermediate acuity but is unable to access the full add power with Renovation, it is typically due to the inability of the patient to fully translate into the near add zone. This is often related to pupil diameter and lens centration. With the flexibility to adjust the distance zone of the Renovation design, the patient will gain quicker access to the near zone and improve their ability to obtain full near vision.

The standard distance/intermediate combined zone is a total diameter of 7.9mm or 3.95mm out from the center and is acceptable for the majority of patients. However, when near vision is not obtainable with the standard 3.95mm zone, reduce this to 3.5mm (a total of 7.0mm). The zone can be reduced further if necessary, but use caution to insure that it is not interfering with the distance vision. In the rare situation that the standard 3.95 zone is not large enough, the zone can also be expanded. Specify the distance/intermediate zone as 4.25mm (8.5mm total).

RENOVATION DESIGN FEATURE ③:

Flexible automated thickness control

BENEFIT:

Enhances centration and wearing comfort even at higher add powers.

Many designs have inherent problems with excessive lens mass when attempting to generate the increased add powers required to satisfy the mature presbyope. Increased lens mass has a tendency to cause centering issues that may be detrimental to both the distance and near visual zones.

Renovation's proprietary design software counteracts increased mass when higher add powers are required. Normal center thickness can be maintained even when the add power exceeds +3.50.

RENOVATION PARAMETERS:

Base Curves.....	6.90 - 8.50mm in .05 steps
Distance Power	+/-20.00D in .25 steps
Add Power.....	+1.00 to +3.50 D in .25 steps
Diameter	9.0 to 10.0 mm in .10 steps
Distance/Intermediate	
Zone Diameter	3.95mm standard (3.50 and 4.25 on Request)

RENOVATION MULTIFOCAL LENS FEATURES:

