

# BEYOND DISPOSABLES

## THE PLACE FOR SPECIALIST LENSES - PART 2

### Opportunities for soft torics

#### Data on astigmatism

It has been estimated that, in the UK, there are five million astigmats, of which 60,000 wear soft torics<sup>1</sup>. One in six soft lenses is a soft toric and this proportion has remained the same in the years preceding 2003<sup>2</sup>. The opportunities to fit more toric contact lenses are there to be taken by those contact lens clinicians who are proactive and willing to discuss the features and benefits of soft toric lenses with their patients. The launch in January 2003 of the Focus Dailies toric by CIBA Vision is likely to help convert more spectacle wearers over to contact lenses, as an alternative method of correcting astigmatism.

A study has shown higher astigmatism between 2.00 to 3.00D of cylinder to be 7% of the population and a further 3% have over 3.00D of cylinder<sup>3</sup>.

All these factors point to specialist soft toric lenses having a continuing place in the contact lens optician's range of options.

#### Toric lens visual considerations

Specialist torics are usually considered when astigmatism is over -2.50D, as disposable soft torics do not offer cylinders above this level.

The stock or made to order (MTO) soft torics invariably offer far greater cylinder and axis options for patients with higher degrees of astigmatism, or who have a more complex fitting or correction requirement.

Cylinders up to -11.00D may be supplied in 0.25D steps and axes 1 degree around the clock (ATC) by a number of manufacturers.

Naturally, as the patient's cylinder requirement increases, the need to accurately stabilise soft toric lenses in order to minimise rotation, becomes more critical. A -0.75D cylinder when rotating off axis by 20 degrees will induce a residual cylinder of 0.50D, which most patients can usually tolerate

without too much binocular difficulty. However, a -2.00D cylinder only rotating seven degrees will create the same 0.50D residual astigmatism<sup>4</sup>. The easy way to estimate the increasing impact of rotational induced residual astigmatism is to calculate the effect or use a table. There is a practical way to find out what degree of cylinder rotation will cause patient visual disturbance. This is to simply place the patient's spectacle prescription in a trial frame and proceed to rotate both cylinders by a few degrees at a time in front of their eyes, whilst

asking the patient to look at the lowest line they can read on the test chart. A loss of vision of half to one line binocularly will indicate the limit of acceptable rotation. Naturally, tolerance will vary according to the individual patient.

#### Non-standard toric lens requirements

Steep or flat corneas can be problematic to fit with disposable torics but the availability of specialist soft torics can readily cater for these less common corneal curves. Due to the flexibility of

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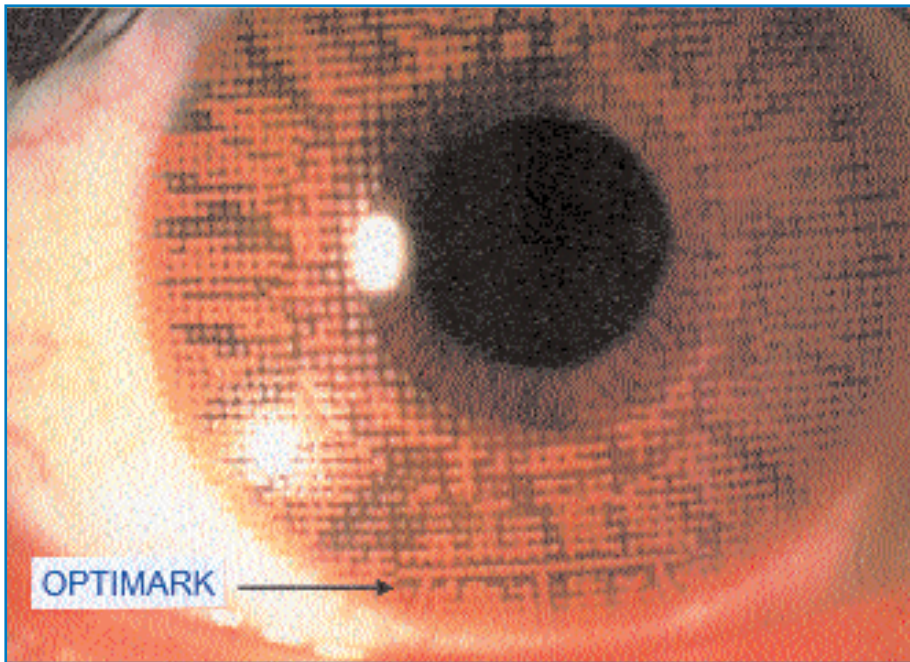


by Ron Loveridge FBDO (Hons) CL, FAAO, FIACLE

**In part one, the decline in the overall contact lens market was emphasised, together with the need for contact lens opticians to maintain their fitting skills - not only with disposable contact lenses but all other types which are 'beyond disposables'. These are referred to in this article as 'specialist' lenses. Several opportunities for fitting rigid gas permeable lenses were highlighted and these included correcting myopia in children, orthokeratology, torics, bifocals and multifocals.**

**In part two, soft torics, soft colours, extended wear, soft progressives and special purpose lenses are covered.**

**Keywords: astigmatism, soft toric lenses, coloured soft lenses, soft bifocals, soft multifocals, therapeutic lenses.**



▲ Figure 1: DuraSoft 3 OptiFit Color toric

lathe manufacturing technology, soft toric designs can also cater for prescription needs of patients with back vertex power (BVP) requirements above -8.00D and +4.00D with up to +/-20.00 D available.

Special methods of stabilisation may be required to avoid lens rotation where prism ballast or dynamic stabilisation is insufficient for certain astigmatic prescriptions or for patients with tight eyelids. An example of a soft toric lens with several stabilising methods incorporated into one design is the DuraSoft 3 OptiFit toric (CIBA Vision). This has a combination of perilimbal prism, upper and lower chamfers, eccentric lenticulation and a 360 degree

thin edge profile, all of which help stabilise this back surface toric design soft lens. Disposable soft torics do not offer this combination of stabilisation, which may mean the difference between success and failure with soft contact lenses. Contact lens opticians who are aware of the many front and back surface specialist torics with their broader variety of stabilisation options invariably fit these lenses on a three or six month frequent replacement basis.

#### Other soft toric opportunities

Frequently overlooked are coloured torics such as the 'DuraSoft 3 OptiFit toric Colors', available in nine opaque colours

which provide astigmatic patients who wish to change their eye colour with the opportunity to do so without compromising vision (Figure 1). Even presbyopic astigmats are catered for with 'Ultravision's SA toric multifocal' which is a lathe cut MTO aspheric with a Centre Near (CN) design containing a UV blocker with a choice of five colours or a visibility tint.

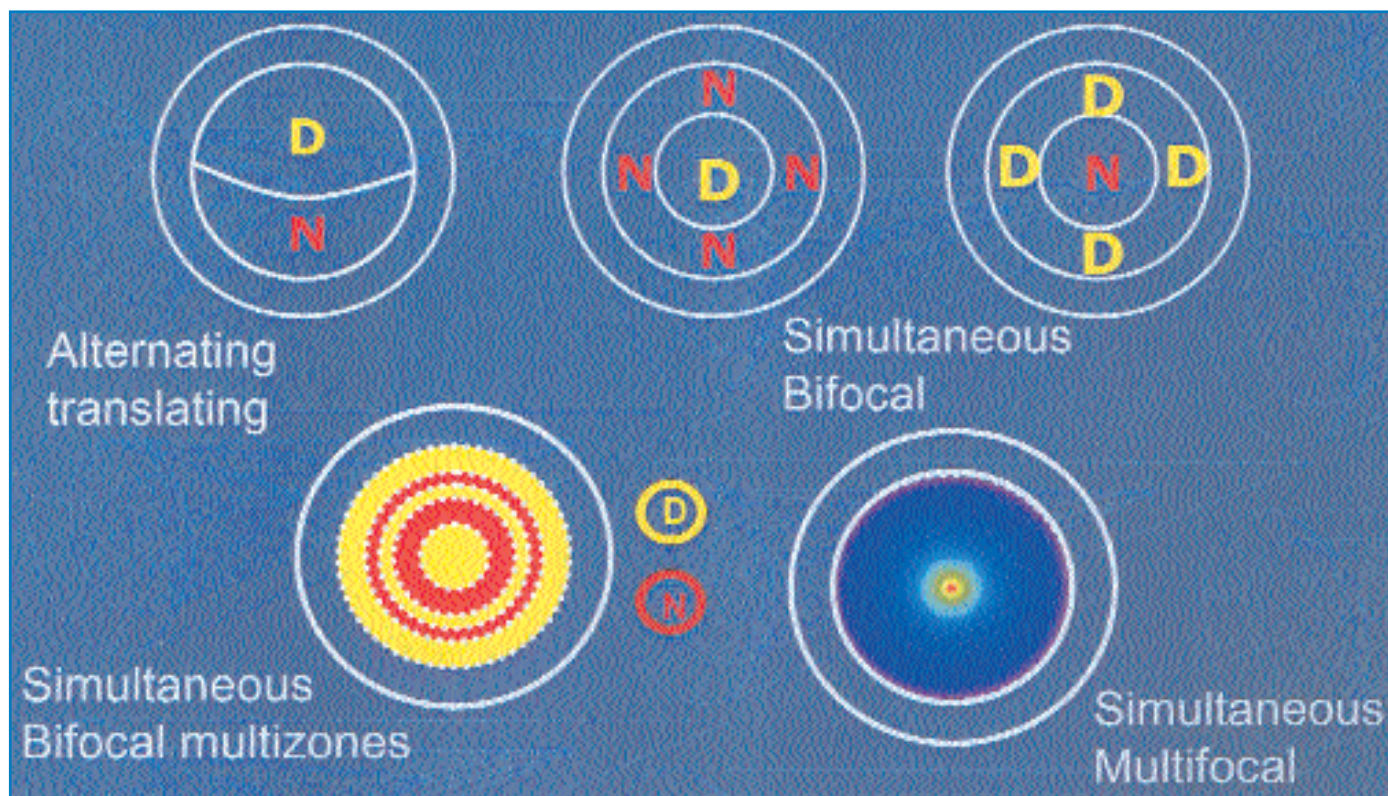
Soft progressive toric lenses are available from at least two contact lens companies in the UK, which provide astigmatic presbyopes with a non-disposable contact lens option. The most recent introduction in spring 2003 is the CIBASOFT Progressive toric which has a cast moulded back surface with a (CN) simultaneous vision progressive add which caters for up to +3.00 D reading addition<sup>2</sup>. The front surface is lathe cut with a toric surface stabilised with dynamic stabilisation (Figure 2).

All these soft toric lenses have to be manufactured as non-disposable specialist contact lenses because of their complexity of design, range of parameters and cost of production.

The advent of advanced computer technology for contact lens lathes ensures lens reproducibility is similar to spherical lens alternatives. Likewise, with manufacturers offering special software programmes and CDs to practitioners to help calculate a patient's contact lens requirements using keratometry readings, spectacle refraction and vertex distance, fitting a soft toric lens becomes a gratifying experience as well as a profitable form of visual correction. Recommending them to astigmatic patients who do not have a disposable soft toric lens available for their

▼ Figure 2: CIBASOFT Progressive toric - soft progressive toric front and back surface design





▲ Figure 3: Soft bifocal and progressive lens optical design options

prescription is a real solution and helps to retain patient loyalty.

## Opportunities for soft coloured contact lenses

### Historic background and lens types and uses

The original cosmetic purpose of coloured or opaque soft contact lenses was to hide iris defects such as aniridia, coloboma, or as light protection for albinos. Likewise these lenses, which were first marketed by Toyo Lens Company in Japan and Titmus Eurocon in Germany in 1976, were also used to mask unsightly scars, corneal opacities and anisocoria to name a few conditions. The original soft lenses were heterogeneous and had a hand painted coloured portion sandwiched in the centre of the lens (laminated). The consequence was that oxygen transmission was severely reduced and the lenses had to be manufactured quite thick, which caused discomfort for some patients.

Today's coloured lenses are manufactured by a process referred to as homogeneous with micron thick colour ink dot matrix or striated patterns printed onto either the front or back surface of the lens. There are several advantages to the homogeneous coloured lens, they are more natural in appearance, the oxygen permeability and transmission is unaffected and the lenses can be lathe cut or cast moulded to the same lens thickness as clear spherical soft lenses<sup>6</sup>. In the event that an unsightly scar or iris defect needs effective masking, specialist coloured lens with a single or

double under-print can be manufactured. Likewise, with a blind eye, a black pupil can be printed over the pupil area without affecting the above homogeneous lens benefits. These lenses may cost more but the psychological, cosmetic and confidence benefits are much improved for the patient.

Unfortunately, it is likely that many patients who would benefit from cosmetic contact lenses are unaware of their availability due to their prescriber or optician not telling them of their existence.

### Today's opportunities for coloured soft lenses

The coloured soft lens has, over the last ten years, also become an important fashion accessory due to the wish by patients to change, for example, their dark brown iris colour into blue, green or grey. Coloured lenses with opaque backing will mask the underlying natural iris colour. However, due to the interspacing between the dot matrix patterns the natural iris features will still be apparent. Disposable coloured contact lenses are growing in popularity along with coloured lenses with 'wild' or 'crazy' patterns, which are ideal for fun events such as dancing or fancy dress parties. However, these lenses are frequently only available with restricted BVP ranges or fitting options.

The specialist coloured lens range can overcome these restrictions and achieve the same effect and impact as disposable coloured lenses. Often there is a larger choice of iris colour or pattern to select from and therefore should be a serious

consideration for those patients who wish to change their iris colour or to wear a fun-type effect such as a 'Cat's Eye', 'Alien', 'Redeye' or 'Jaguar' pattern.

Contact lens opticians may be asked by the prescriber to help a patient with colour deficient vision or dyslexia by fitting certain coloured or tinted lenses. One such lens for patients with colour vision anomalies is called the 'ChromaGen' lens, now marketed by Cantor & Nissel, devised by contact lens optician David Harris. All patients attending for this therapy must have two eyes, because a colour filter is placed over the non-dominant eye whilst the patient observes a colour screen. The idea behind this approach is so that the dominant eye can see the colours as usual whilst the non-dominant eye has its colour perception changed dramatically. The filter colours available are violet, purple, orange, yellow, green, amber and magenta. The filter which brings out the colours the best is determined by trial and error<sup>7</sup>.

Fitting patients with haploscopic filter lenses has been the subject of a controlled trial by using ChromaGen lenses to help overcome dyslexia. These experiments have been mentioned in the literature to have improved the reading rate of a substantial number of dyslexic patients<sup>8</sup>.

The opportunities for coloured contact lenses, not forgetting the coloured toric, are always available for the clinician to use where appropriate. It should be remembered the skill of fitting cosmetic contact lenses is there to be seen by observing the effect on the patient's eyes.

It cannot be denied it is one of the best adverts for the contact lens optician's fitting ability.

### Extended wear soft lenses their place alongside silicone hydrogel lenses for continuous wear

Existing hydrogel extended wear patients who are successfully wearing their lenses are still likely to continue wanting regular replacements. Not everyone will be suitable for silicone hydrogel (Si-H) monthly disposable lenses for the following reasons:

- Parameters such as Back Optic Zone Radius (BOZR), Total Diameter (TD) and BVP may not be available.
- Cost implications
- Comfort differences which may be unacceptable
- Minor corneal disturbances, eg: Superior Arcuate Epithelial Lesions (SEALs).
- Drug release reasons
- Congenital cataract – when a small baby needs a high plus extended wear hydrogel lens

However, the growing interest in silicone hydrogel lenses for 30 days continuous wear has grown the extended wear market since 2000, from 1% to 7%<sup>2</sup> of new fits (96% with Si-H). Inevitably, in the event that a patient wishes to wear contact lenses overnight and Si-H lenses prove unsuitable, various high water content soft lens options may be considered. In addition, these lenses may be considered for 'flexible wear' or as a safer 'daily wear' alternative.

### Opportunities for bifocal and multifocal soft contact lenses

The potential presbyopic market is estimated at 10.5 million, although only 5% of existing wearers and 3% of new

wearers of the contact lens market are fitted with multifocal lenses<sup>9</sup>. The growth of the presbyopic market is estimated at 15% over the next 10 years<sup>10</sup> the implications are that more existing wearers will become presbyopic and, if disposable options are unsuitable, soft specialist lenses will be needed.

### Soft bifocal and progressive lens choices

There are several soft bifocal designs available (Figure 3) these include:

- Aspheric Centre Distance (CD)
- Aspheric Centre Near (CN)
- Concentric CD
- Concentric CN
- Multi-Aspheric
- Aberration Control

Table 1 compares the advantages and disadvantages of soft aspheric multifocal designs and simultaneous vision concentric bifocals.

Aspheric simultaneous vision lenses offer both distance and reading/intermediate vision correction over the pupil at the same time. It is the brain's ability rather than the eyes that help to isolate and select the clear image among the background of out of focus images. This type of lens is available in disposable format eg Focus Monthly Progressive from CIBA Vision or the Rhythmic Multifocal from Ocular Sciences, both are front surface CN designs. In the event the lens fit or BVP range is inappropriate, similar designs can be considered. Certain specialist lenses are also available, either PV150/PV200/PV250 (Cantor & Nissel) a CN aspheric, or Variations 70 (Ocular Sciences) also a CN aspheric. There is no guarantee that any of these lenses will work, but the increased range of fitting parameters may improve the chances of success over a disposable bifocal.

Concentric bifocal lenses incorporate either a front or back surface ring

segment, but are more often of the front surface type. They function on the principle that there are two separate areas - one for distance and one for reading - in front of the pupil and are manufactured either as 'centre distance' or 'centre near' designs. In soft lenses these concentric rings are positioned in front of the pupil, so a simultaneous effect is achieved.

The disposable version of the concentric simultaneous vision lens is the Acuvue Bifocal, which has five alternating concentric distance and reading rings within an 8mm optic zone.

Translating versions have been tried where there is a 2-3mm CD portion surrounded by a reading zone. The lens will then have to alternate in front of the pupil to activate the distance or reading area. The problem with the soft alternating bifocal is that it is hard to achieve satisfactory lens movement. Prism ballast, peripheral thickness zones or truncation are required either in combination or as a single design feature to activate adequate lens translation, but invariably this still proves to be insufficient.

The Echelon diffractive soft bifocal, which corrected distance by refraction and near vision by diffraction created by a diffractive phase plate moulded into the back surface is now no longer available as an option.

### Alternative options to correct presbyopia

Sometimes, if one type of bifocal or multifocal lenses does not work, a combination of CN in one eye and CD in the other might prove successful.

Other alternatives are to bias one multifocal lens in the dominant eye to have more distance vision whilst the non-dominant eye is biased towards reading. This technique of correction is known as 'modified monovision' and can be the

▼ Table 1: Opportunities and challenges of soft bifocal and multifocal lens types

Aspheric multifocals (simultaneous vision)		Concentric bifocals (simultaneous vision)	
OPPORTUNITIES	CHALLENGES	OPPORTUNITIES	CHALLENGES
Better DV with CD better NV with CN	Pupil dependent	CN or CD option	Pupil dependent
Does not affect fit	Reduced contrast sensitivity	Cost	Segment size critical
Higher eccentricity = ↑Add	Needs good centration	Easy to fit	No intermediate range without modifying power
Front surface aspheric ↓aberrations in early presbyopes	Smaller pupils less successful	Front or back surface available	Low success rate with emmetropes
Easy to fit	Only nominal adds with back surface CD design	Good distance with large segment	Transition blending
Varifocal effect + intermediate range	Distance vision Rx and Add affects success rate	Good reading with small distance segment	
Not gaze dependant		Could consider distance intermediate in one eye intermediate and reading in the other	

next step to take if the multifocal lenses selected do not provide sufficient distance or reading vision.

If modified monovision is unsuccessful 'enhanced monovision' may work.

The dominant eye is fitted with a single vision distance lens whilst the non-dominant eye continues a multifocal soft lens biased towards reading.

Once all these approaches have been tried and proven unsuccessful then 'monovision' (distance single vision lens in the dominant eye and reading single vision lens in the non-dominant eye) is worthy of consideration provided the reading add is not above +1.75D. It is important to note that binocular vision is undermined and certain tasks such as driving at night may be disorientating for the lens wearer.

## Other opportunities for special purpose lens options

### Sport

Tennis players can benefit from a specialist lens. The 'ProSoft Competivision' from CIBA Vision is a 55% 'phemfilcon A IV 1' lens designed for use when playing tennis is a good example where there is no disposable equivalent. This 'teal tinted' lens when in situ, enhances optic yellow the colour of the tennis ball and white court line marking, whilst muting the surroundings. The effect is to make the tennis ball and tennis court lines stand out from the background so that the wearer more readily sees the ball.

### Therapeutic uses

Specialist contact lenses, as well as disposable lenses, can be used as a bandage lens for drug release; assist healing of an ulcer or corneal erosion. Additionally, pain-relief from conditions such as bullous keratopathy, wound healing and protection of the eyes in cases of trichiasis, entropion, exposed sutures etc, can offer a major benefit when using specialist hydrogel contact lenses.

There are several occasions where a specialist soft lens would be preferable to a disposable lens. A clear lens with a black painted pupil, a MTO thicker than normal soft lens to improve the appearance of a lid ptosis, very large flat ulcerated corneas or small 10mm diameter corneas that need wound healing protection. Examples of typical specialist lens types used are Proclear 60% from Cooper Vision, Seequence O4, 38% Bausch & Lomb and Permalens 71% from CIBA Vision.

### Dry eye sensation

This can be a problem for some patients and studies have shown that 50% of soft lens wearers complain of dryness when wearing lenses. Although there are some disposable lenses such as silicone hydrogels or daily disposables that ease

the symptoms, specialist contact lenses may be a realistic option in terms of cost to the patient or parameter availability. Examples include Proclear 60% from Cooper Vision, CSI 38% or Classic 43% from CIBA Vision, all of these are valuable lenses to consider. Lens care solutions can also play an important role and switching to non-preserved systems like AOSept Plus (CIBA Vision) or in-eye lubricants Aquify (CIBA Vision) or Refresh & Blink (AMO) can help relieve dryness symptoms<sup>11</sup>.

Specialist contact lens opticians will find it invaluable to explore all contact lens opportunities on a regular basis so as to maximise their patients' best vision correction and lifestyle needs. CIBA Vision have formed a free-of-charge 'specialist club' for qualified practitioners who are enthusiastic about 'specialist contact lenses'. The web site is <http://specialist.cibavision.co.uk/index.cfm> and click on 'join' tab.

It will therefore be no surprise to learn just how enjoyable and fulfilling the experience of fitting specialist lenses can be; alongside the more usual supply of disposable contact lenses. More important still, contact lens opticians will ensure that their reputation will remain high among their peers, due to their continuing ability to fit all types of contact lenses regardless of complexity.

What are you waiting for? Start planning to use more specialist contact lenses in your practice today!

## References

1. CIBA Vision market research data 2002
2. Morgan P, Efron N, Trends in UK contact lens prescribing 2002 *Optician* 5859: 223; 28-31 7 June 2002
3. Blaze PA, Refining Toric Soft Lens Correction *CL Forum* 13: 55-58, 13 November 1988
4. Myer RI, Off-axis fitting of soft toric contact lenses. *International Eyecare* 1:7 486-488, 1988
5. CIBA Vision Product Data 2003
6. Loveridge R, Proactive Approach to prescribing colour contact lenses Part 1 *Optometry Today* 40 (22) 28-31 13 November 2000
7. Burnett Hodd NF, Putting ChromaGen to the test *Optometry Today* pp 39-42 17 July 1998
8. Harris D, MacRow-Hill SJ, Application of ChromaGen haplosopic lenses to patients with dyslexia: a double-masked, placebo-controlled trial. *Journal of the American Optical Association* 70 10 629-640 1999
9. Edwards K, Contact lens problem-solving: Bifocal contact lenses *Optician* 5721: 218; 26-32 10 October 1999
10. Mintel survey 2000
11. Caffery B, Discovering Dry Eye: Symptom, staining & solution *Contact Lens Spectrum* 17(11) :23, September 2002. ■