

Presbyopia and progressive powered lenses essay sample



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Visual defects are mostly caused by genetic factors or age-related diseases. There are three focusing states of the eye: emmetropia, hypermetropia and myopia. Also, presbyopia is a state of the eye that occurs when the eye is losing the ability to focus on close up objects and it occurs on people after the age of 40 years due to the gradual and progressive age - related loss of accommodation.

Referring to presbyopia, according to A Glasser (2010), presbyopia is the gradual and progressive age-related loss of accommodative amplitude. The progressive loss of accommodation begins early in life and culminates in a complete loss of accommodation by about 55 years of age.

The exact mechanism of presbyopia are not known with certainty; the research evidence most strongly supports a loss of elasticity of the crystalline lens, although changes in the lens's curvature from continual growth and loss of power of the muscles that bend and straighten the crystalline lens (known as the ciliary muscles) have also been postulated as its cause. To help them correct their vision they can be advised to have Progressive Powered Lenses.

A Progressive Powered Lens is, According to British Standard Institute (2003), " a special type of multifocal lens designed to provide correction for more than one viewing range and in which the power changes continuously rather than discretely".

Progressive lenses should not be referred as multifocal lenses as they are not actually multifocals. They are, however, closely related to multifocals and are designed for the same people. International and Australian standards
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both indicate that a progressive is not a multifocal. (D. Wilson, 1999, p. 77). However, as the British Standard states, it is a “ special type of multifocal lens”, which can be also classified as a varifocal lens.

The advantages of progressive lenses are that they look like normal single vision lenses. This makes them more attractive than any other multifocal lenses (bifocals or trifocals), where there is a visible line delimitating the distance prescription from the reading one. Also, the progressive lenses provide a complete range of working distances, unlike the bifocals which can provide only distance and reading prescriptions. Because of their gradual progression, the patients will not suffer from image jump and therefore they provide the closest thing to natural vision.

But the progressive lenses do have some disadvantages as well. By their nature, the progressive lenses have areas of indistinct vision caused by unwanted astigmatism. These areas sometimes give the patient a swimmy sensation, although is the prismatic effect rather than the unwanted astigmatism that actually create this effect. Because of these areas the wearer is restricted to a relatively narrow intermediate channel and a slightly wider reading zone.

The progressive lenses are suitable for a wide variety of wearers. Almost any presbyope can be a good candidate for a progressive lens, including long-time bifocal wearers.

There is another type of progressive lenses called “ enhanced readers”. The enhanced readers are occupational progressive lenses and are much more versatile than normal readers, giving a range of working distances. Unlike <https://assignbuster.com/presbyopia-and-progressive-powered-lenses-essay-sample/>

normal progressives, the occupational readers have a wide reading area and also a very wide intermediate channel.

The disadvantage of occupational progressive lenses is that they provide little or not at all distance vision.

For the patient of whom the case record was done it was chosen Hoyalux Tact occupational varifocal aspheric lenses, 1.50 index, v - value is 58. These are lenses designed for indoor activities such as computer use and reading. They guarantee focused, distortion free vision in all conditions and help prevent tiredness and irritation in the patient's eyes, as well as reduce headaches.

Tact is particularly suitable for patients that are already wearing standard progressive lenses, as an additional pair of progressives for activities performed for long periods indoor, as mentioned above. These lenses offer the wearer a small amount of distance vision which is positioned 10 mm above the horizontal cross line in the lens. Hoyalux Tact is of less overall width than a conventional varifocal design. This means that the patient will be able to see clearly at all distances, however, because the distance zone of the lens is reduced, the lens is not suitable for driving. Tact will be perfect for VDU (visual display unit) users and specific professions such as musicians, dentists and accountants.

The patient is currently wearing this type of varifocal lenses at work and a new pair of spectacles was dispensed because the reading power has increased slightly. As the patient is an accountant and is a VDU user, working on the computer eight hours a day, an Ultra Clear coating was recommended <https://assignbuster.com/presbyopia-and-progressive-powered-lenses-essay-sample/>

to them. UltraClear coating is a thin colourless layer or multiple layers, applied by a vacuum - coating process. The UltraClear coating reduces the amount of light reflected off each surface of the lens and increases the light transmission. This coating is particularly important with the advent of flat - form aspheric lenses. As the aspheric lenses have quite flat back surfaces, without the UltraClear coating the patient would see reflections of everything behind them, including their own eyes. In conclusion, this coating is very good for the patient in question as they are getting an aspheric design of the lens.

The next stage in the process of dispensing is to choose the frames to suit the lenses and also to suit the customer's features. The ophthalmic industry has, in the last twenty years in particular, concentrated on fashionable frames and lenses, and has adopted some of the principles of the fashion industry, particularly from hairdressing. The basic aim is to emphasise the client's good points and de - emphasise the bad points. Now the frames are chosen to suit the patient's face shape and colouring.

However, in the case of varifocal occupational lenses, due to the fact that the lenses have more than one visual channel, a minimum frame height of 30 mm is required, especially if is considered the Hoyalux Tact Progressive lenses. Therefore, the role of the dispensing optician is to complement the customer's features by choosing a frame that suit their face shape and style but also the frame need to comply with the minimum fitting heights. This means that the patient is restricted to slightly bigger frames and needs to avoid the shallow frames. In choosing the frames a special attention need to be given to the patient's allergies also, if any.

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An important factor in choosing the right frames for a patient that is having varifocal occupational lens is to check that the pantoscopic angle is between 8 and 10 degrees. According to British Standard Institute (2003, p. 9) the pantoscopic angle is “ the angle between the optical axis of a lens and the visual axis of the eye in the primary position, usually taken to be the horizontal”. This is to ensure that the patient will look through the right angle of reading lenses. Also, is important to measure the back vertex distance.

This is the distance from the visual point of a lens to the corneal apex or the closed eyelid” (British Standard Institute, 2003, p. 10). This is to ensure that the patient will look through the right prescription of the spectacles because if the glasses are too close or too far of the patient’s eyes, the prescription will vary from more positive to less positive power. The vertex distance of the spectacles should be the same as the vertex distance measured in the testing room by the optician. If is different, then a compensated prescription is ordered for the customer.

When the measurements for the occupational lens are taken, a special attention is to be given to the fitting heights of the lenses into the frame. For Hoyalux Tact the minimum fitting height is 18 millimetres from the tangent of the frame. The standard height for progressive lenses is the centre of the pupil – that is, the fitting cross should line up wit the centre of the pupil when the patient is looking into the distance.

The method used to measure the heights of the patient was by placing the frame with the dummy lenses onto the patient. With the dispenser’s head at the same level as the patient’s, the dispenser placed a dot with a marking

pen on the point level with the centre of the pupil. Some people use this to determine the monocular pupil distances; however a separate measuring for that is required. The lenses are to be ordered according to the fitting heights.

As mentioned above, the distance between the pupils is to be checked as well. This is to ensure that the patient is looking through the optical centre of the lens and is not having any prismatic effects. The prismatic effect is the deviation of a ray passing through a specified point on a lens. In the optical centre of a lens the light passes through undeviated, therefore there is no prismatic effect. The optical centre is measured with the aid of a pupillometer and by placing it in front of the patient's eye and aligning the lines on the pupillometer with the centre of the customer's pupils. However, people have different measurements for right and left pupil distance as the eyes are not perfectly symmetrical.

Finally, a special attention needs to be given to the patients on collection of their spectacles. At the collection the patient's spectacles were checked again to make sure that the lenses were glazed according to the measurements taken. Also, the patient was advised to clean the glasses with a cleaning cloth which was provided and to use and keep the spectacles at work. The patient was advised not to use them for driving, not to put the spectacles on the table and not to put them with the lenses facing the surface as they may scratch.