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Soft Contact lens in the Management of Forme Fruste Keratoconus: A Case Report

Vishwa Ravi[1], Amaravathi[2], Ashwini. D. L.[3], Vandana Kamath[4]

[1, 2, 3, 4]Sankara College of Optometry, Sankara Eye Hospital, Sankara Academy of Vision, Bengaluru, Karnataka, India

[3]Corresponding author E-mail address: *ashwini.22255[at]gmail.com*

Abstract: ***Purpose: To mask the irregularities of Forme fruste keratoconus with soft contact lens and to assess reduction in any of the symptoms and comfort of the patient. Case report: A case of 22-year female visited an eye hospital with complaint of dry eye, redness, watering, and occasional itching in both eyes for last 2 years even after getting treatment for it. Patient was using lubricating eye drop for 2 years and was diagnosed with Forme Fruste keratoconus changes in both eyes. Patient has come for contact lens opinion. Patient's unaided visual acuity was 6/24 in both eye and with pinhole vision was 6/6. The topography value in right eye was K1 = 44.6 D, K2 = 45.3 D and in left eye was K1= 45.0D, K2= 45.8 D. At first the patient was advised to use rigid gas permeable lenses but because of the intolerance to RGP, soft contact lens trial was done.Patient was more comfortable, vision improved, and symptoms were reduced. This report concludes that soft contact lens will be one of the good options for patients with Forme fruste keratoconus or early keratoconus.***

Keywords: Forme Fruste keratoconus, Corneal topography, Soft contact lens, Rigid Gas Permeable lenses

1. Introduction

Forme fruste keratoconus (FFK) can be defined as a cornea that has no abnormal findings by both slit lamp and topography, with the fellow eye of clinical keratoconus.[1] The term Forme Fruste was proposed by Amsler in 1938 then refined by Klyce et al to define as contralateral eye in unilateral KC, the FormeFruste being an incomplete, abortive, or unusual form of syndrome or disease.[2,3] It is a subclinical disease and is not a variant of keratoconus. Although clinicians use many other terms such as mild Keratoconus, early keratoconus, and subclinical keratoconus. It is a topographic consequence of Forme fruste rubbing.[4]

Fellow which appears normal while the other eye frank keratoconus can be considered as a FFK eye.[3]In such eyes, the clinicians should not find any clinical signs of clinically manifest keratoconus, like Vogt's striae and Fleischer's ring, nor should this eye have any significant topographic features like asymmetric bow tie or skewed axis deviation, which would suggest an early form but clinically detectable keratoconus.[5] To treat FFK, there are various treatment options are available. In this current report, we have reported about the treating the FFK with soft contact lenses.

2. Case Report

A 22-year-old female came to an eye hospital with a complaint of dry eye, redness, watering, and occasional itching in both eyes since 2 years (even after getting treatment for it). The patient was a spectacle user for 10 years and last glass was changed a year ago. There was no history of trauma or surgery done in any of the eyes. But the patient was using lubricating eye drop for 2 years and was diagnosed with Forme Fruste keratoconus changes in both eyes. Now patient has come for contact lens opinion. The patient does not have any significant medical history or allergic history.

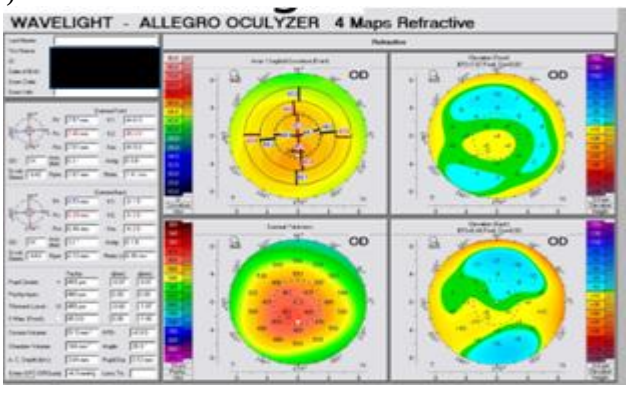
Patient's unaided visual acuity for distance was 6/24 in both eyes. The distance vision improved with pinhole up to 6/6 in both eyes. Near unaided visual acuity was found to be N6 in both eyes at 40 cm. Retinoscopy value for right eye was-2.00 Ds / -0.25 Dc × 180◦ and for left eye was -2.00 Ds / -0.25 Dc ×180◦. The subjective refraction power acceptance was -2.00 Ds for right eye and -1.75 Ds/ -0.25Dc ×140◦ for left eye that resulted in 6/6 and N6 vision in both eyes.

Intraocular pressure estimation done with non-contact tonometer were within normal limits that is 14 mmHg for right eye and 13 mmHg for left eye at 1:02 pm. The slit lamp examination showed redness, watering, papillae in both eyes with clear cornea, anterior chamber with Van Herick's grading 3, clear lens, and normal color and pattern of iris.

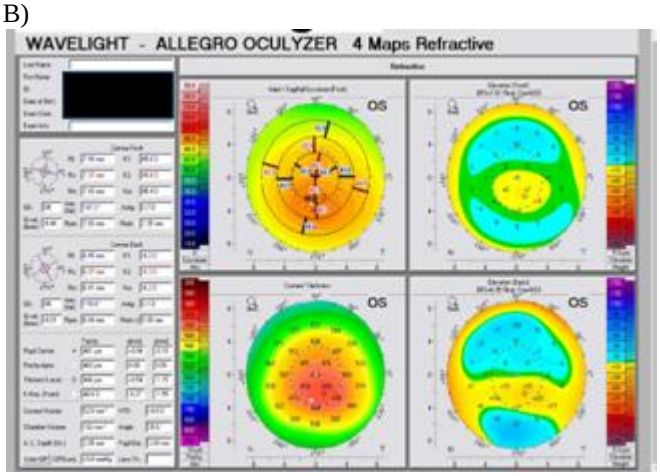
The topography value for right eye was K1 = 44.60 D, K2 = 45.30 D and in left eye K1= 45.00D, K2= 45.80 D. At first the patient was advised to fit rigid gas permeable lenses. But patient was intolerable to RGP lenses. Trial was done with soft contact lens and vision improved, patient wascomfortable andsymptoms were reduced.

Figure: Fig A and B shows topographic images of early keratoconus changes in right eye and left eye, respectively.

A)

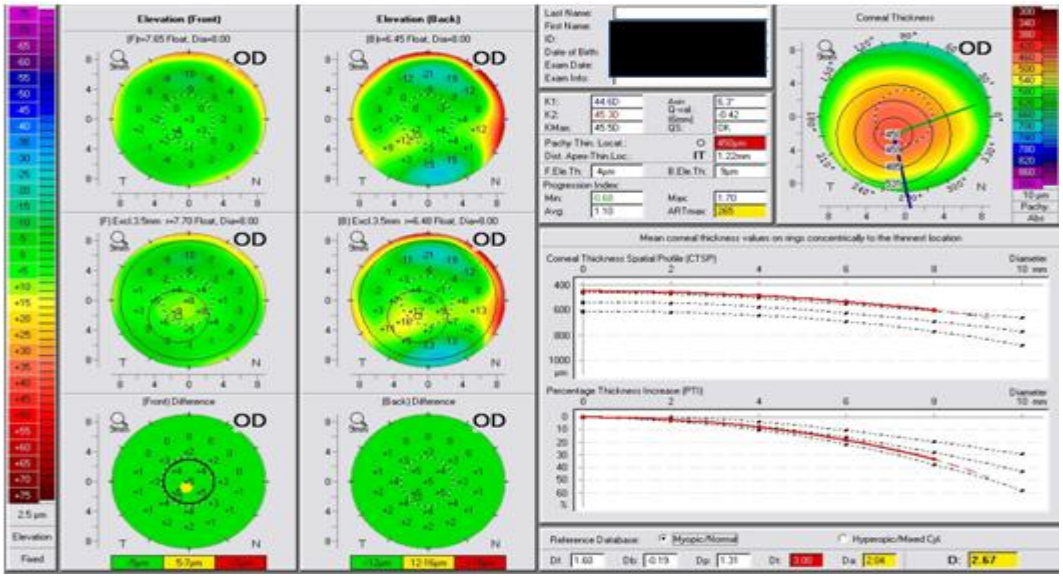


B)

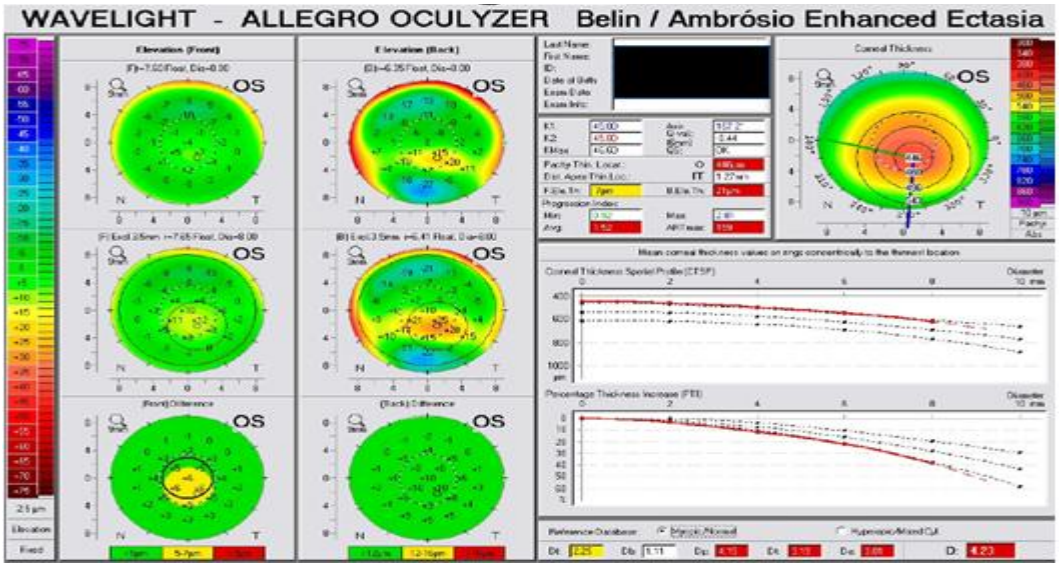


In (FIG A) right eye, the thinnest point of steepening was 45.3 D and the corneal thickness at that point was 450 µm and in (FIG B) left eye the thinnest point of steepening was 45.8 D and corneal thickness 446 µm. This indicates that though the patient does not have any changes in vision and slit lamp examination but was diagnosed with mild to moderate keratoconus changes with corneal topography. Changes were present at the anterior and in posterior part of cornea.

c)



D)



In figure C and D**,** Belin/Ambrosio enhanced ectasia shows there steepening of the cornea anteriorly is more than posterior curvature of cornea

Contact lens trial
OD = 8.6 mm / -2.50 Ds / 14.2 mm
OS = 8.6 mm / -2.50 Ds / 14.2 mm.
Trial was done with Bausch and Lomb,biotrue-1-day contact lens.

Fit assessment (OU):
Centration - Well centered
Coverage - 360◦ limbal coverage
Movement - 0.75mm to 1.00 mm (Smooth movement)
Push up test - 40% to 50 %
Subjective response -Comfortable (9/10)
Impression - Optimum fit

Over refraction:

Eye	Power	Vision
OD	+0.50 Ds	6/6, N6
OS	+0.50 Ds	6/6, N6

OD:Ocular Dexter;OS: Ocular Sinister; Ds: Diopter Spherical

Final contact lens parameter:

Eye	Base curve	Power	Diameter	Company	Wearing Modality	Tint
OD	8.6 mm	-2.00 Ds	14.2 mm	Bausch & Lomb – Biotrue	Daily Disposable	Visible Tint
OS	8.6 mm	-2.00 Ds	14.2 mm	Bausch & Lomb – Biotrue	Daily Disposable	Visible Tint

OD: Ocular Dexter; OS: Ocular Sinister; Ds: Diopter Spherical; mm: Milli meter

Visual acuity with the contact lens were 6/6 and N6 in both eyes.Patient was comfortable with this lens compared to the spectacles and RGP lens. Symptoms of itching and dryness were also reduced.At the end, patient was dispensed with Bausch and Lomb's biotrue soft contact lens.

3. Discussion

Treatment option available for early Forme Fruste Keratoconus were spectacle correction and contact lens trials. With Keratoconus, spectacles play a limited role and contact lens become necessary for improving the vision and play a major role.[6]Various options in contact lens are available and one can use any of these as a starting lens, depending upon the severity of the cone and associated condition.[6]The main goal of fitting contact lens is to improve the vision with comfort without compromising the health of the cornea. A lens is selected based on the manifest refraction if possible and the degree of the keratoconus. For mild keratoconus, a soft or soft toric contact lens can be selected.[5] As the degree of keratoconus advances, RGP is the lens of choice. Soft contact lens is known for comfort. Once the patient starts using soft contact lens, then with the progression of the disease, it becomes difficult for the patient to tolerate RGP lens. So preferably RGP lens trial should be conducted as first lens whenever possible.[5]

Soft contact lens is probably the most effective in earlier stages of keratoconus like FFK. In the current case patient was uncomfortable and intolerable with the RGP contact lens. So, soft contact lens trial was done and with that vision was improved with6/6 in both eyes. Soft contact lenses were found to be comfortable for the patient and the symptoms were reduced. But with the RGP lens, vision was blurred, and symptoms were remained same. Contact lens application has a primary place and importance in the correction of optic problems of the disease. In addition to the disease stage, the patient's lens tolerance also pays a role in application of contact lens in keratoconus patients. In early case of keratoconus like FFK, the patient would not have any symptoms and reduction in visual acuity. Soft contact lens is the effective option be provided to the patient depending upon the comfort level. [5,7]

Soft spherical lenses have an extremely limited role in keratoconus and are mainly indicated in early keratoconus (FFK). Sometimes high myopia is associated with keratoconus and soft contact lens is useful in these patients. The other indication of soft contact lens includes intolerance to RGP lens and discomfort due to RGP lens. [7,8]Soft contact lenses are best application in keratoconus is in mild case of irregularity where the topography is symmetrical centrally, there is minimal optical distortion and adequate vision is achievable in glass. Based on the subjective acceptance also it can be decided that whether Soft, soft toric or RGP lenses are suitable. Patients those who have intolerance to RGP, we can prescribe soft or soft toric lenses. Benefits of soft contact lens outside of patient's comfort and cost is that they are readily available in most eye care practices. The downside of soft contact lens in keratoconus is that they do not correct irregular astigmatism and rotational instability with greater amount of corneal irregularity. [7,8]

4. Conclusion

Forme fruste keratoconus is a mild or early form of keratoconus that has no clear abnormal findings like in the case of moderate or advance keratoconus. Soft contact lens was found to mask the patient's irregularity well in this case and patient was extremely comfortable with the lens too as it not only masked the anterior irregularity but also the posterior irregularity too. The patient also reported that the symptoms like redness, itching and dryness discomfort were also somewhat reduced.

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