

Rigid Gas Permeable Contact Lenses in Keratoconus Patients

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ABSTRACT

Objective: To assess the role of Rigid Gas Permeable (RGP) contact lenses in keratoconus.

Study Design: Hospital based descriptive study

Place and Duration of Study: This study was conducted at the Outpatient Department, Hayatabad Medical Complex, Peshawar from November, 2012 to February, 2013.

Materials and Methods: Patients were examined for Vernal Keratoconjunctivitis having Keratoconus at the outpatient department, Hayatabad Medical Complex, Peshawar. 16 patients were found to have keratoconus.

Inclusion Criteria: Patients in the age group 12-30 years with VKC having keratoconus.

Exclusion Criteria: Patients outside this age range and those with keratoconus without VKC were excluded.

Results: Thirteen patients were using glasses while three did not use glasses. The visual acuity of patients' eyes was there. Improvement with glasses is shown in Table 4. Table 5 presents Visual acuity improvement with soft contact lenses and improvement with RGP lenses is shown in Table 6.

Conclusion: RGP contact lenses improve vision better than glasses and soft contact lenses.

Key Words: RGP contact lens, soft contact lenses, glasses, keratoconus, Vernal Kerato Conjunctivitis (VKC).

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INTRODUCTION

Keratoconus is a disorder of the cornea in which there is central or paracentral corneal thinning associated with protrusion resulting in irregular astigmatism. There is asymmetrical ectasia of the cornea but the normal eye of keratoconus is affected within 16 years in 50% cases.¹ Its prevalence ranges from 20 in 100,000 to 1 in 500,000. It is more frequently (4.4 to 7.5 times) found in Asians as compared to whites. In Iran, its prevalence is between 0.75% to 3.5%.⁵ The prevalence varies in relation to environmental, genetic and ethnic factors.⁶ Different classification systems exist for Keratoconus. Amsler Krumiech system divides it on the basis of myopia and astigmatism, corneal thickness or scarring and central k reading.⁷ Shabayek Alio system takes into account the higher order aberrations.⁸

Keratoconus severity Score (KSS) system classifies this disease on an average corneal power and root mean square (RMS).⁹ Initially one eye is affected in the late teens or twenties. It is associated with systemic diseases and ocular diseases. Vernal keratoconjunctivitis (VKC) is common disease and is has association with Keratoconus. One reason for this disease in VKC is supposed to be chronic eye rubbing. Keratoconus patients present with unilateral decrease vision due to irregular astigmatism.¹ It can be diagnosed clinically in late stages but early cases can be diagnosed with corneal topography.¹⁰ The progression of the disease can be halted by corneal cross linkage (CXL) which can result in stabilization or improvement in visual acuity.¹¹ In mild Keratoconus, Glasses and soft contact lenses can help these patients but in severe cases, Rigid Gas Permeable (RGP) contact lenses are successful in many patients. Intrastromal ring segments are also useful in mild to moderate Keratoconus. Lamellar or penetrating Keratoplasty is carried out when satisfactory vision is not achievable with RGP contact lenses or cannot be tolerated by the patients.¹⁰

This study was carried out to see how much RGP contact lenses are effective in our Keratoconus patients as compared to glasses and soft contact lenses.

MATERIALS AND METHODS

This cross sectional hospital based descriptive study was carried out at the outpatient department of Hayatabad Medical Complex, Peshawar from November, 2012 to February, 2013. All the patients

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were selected through non convenient sampling technique. Patients between the age of 12- 30 years were included in this study. An informed consent was taken from all the patients. Those patients who were outside this age limit and unwilling to give consent were excluded from this study. Corneal topography was first done for confirmation of keratoconus. Then refraction was carried out to see the best corrected visual acuity. After this soft and hard contact lenses were fitted to see the visual acuity improvement and all this was recorded in a pre - designated proforma.

RESULTS

Table 1. Thirteen patients were using glasses while three did not use glasses shown in Table 2.

Table 3 shows the presenting Visual acuity of patients' eyes. Improvement with glasses is shown in Table 4. Table 5 presents Visual acuity improvement with soft contact lenses and improvement with RGP lenses is shown in Table 6.

Table No.1: Number of patients n=16

Total	16	%age
Male	10	62.5%
Female	6	37.5%

Table No.2: Patients who used glasses n=16

Total No. of patients	16	%age
Used glasses	13	81.25%
Did not use glasses	3	18.75%

Table No.3: Presenting Visual acuity of patients eyes n=32

Presenting Visual acuity	No. of eyes	%age
6/6	1	3.12%
6/9	1	3.12%
6/12	0	0
6/18	1	3.12%
6/24	2	6.25%
6/36	3	9.37%
6/60	11	34.37%
FC	13	40.62%

Table No.4: Visual acuity improvement with glasses n=32

Presenting Visual acuity	No. of eyes	%age
6/6	2	6.25%
6/9	2	6.25%
6/12	1	3.12%
6/18	3	9.37%
6/24	3	9.37%
6/36	6	18.72%
6/60	10	30.12%
FC	5	15.60%

Table No.5: Visual acuity improvement with soft contact lenses n=32

Presenting Visual acuity	No. of eyes	%age
6/6	6	3.12%
6/9	5	3.12%
6/12	4	0
6/18	7	3.12%
6/24	3	6.25%
6/36	4	9.37%
6/60	0	34.37%
FC	3	9.37%

Table No.6: Visual acuity improvement with RGP lenses n=32

Presenting Visual acuity	No. of eyes	%age
6/6	13	40.62%
6/9	12	37.150%
6/12	2	6.25%
6/18	0	0
6/24	0	0
6/36	1	3.12%
6/60	1	3.12%
FC	3	9.37%

DISCUSSION

Yildiz et al had 27 keratoconus patients. The number of my patient was less 16 as compared to Yildiz et al but the reason may be that their hospital is at Istanbul and the health facility and educational status of the Turks is much better than us. People in our area lack knowledge, are poor to gain access to health facility. But they were not due to VKC and almost all the patients were either RGP lenses wearer or SHCL wearer. They had not taken into account best corrected visual acuity with glasses.¹² Mrazovac D had 137 patients of keratoconus.¹³ This number is very much high as compared to ours and Yildiz et al.^{12,13} Their study duration is very long (5 years) as compared to ours (3months).¹³ There was male majority in ours as well as other studies (72.26%).^{12,13} Mean age in my study is 21.5+/- 8.5 years as compared to 29.6±8 and 27.7 +/- 9.9 years.^{12,13} In our study, the age range was from 12-30 years as we searched for keratoconus in VKC patients. There was a statistically significant difference (p<0.001) between the BCVA obtained with contact lenses (0.82 +/- 0.21 Snellen chart) rather than spectacles (0.37 +/- 0.27 Snellen chart). The best corrected visual acuity was achieved with rigid gas permeable (RGP) lenses in majority of keratoconus eyes (51.85%), with semi-gas permeable (SGP) lenses in 43.39%, in 4.23% with polymethyl methacrylate (PMMA) lenses and with hard-soft gas permeable (GP) contact lenses in 0.53% of keratoconus eyes. There is a statistically significant difference in BCVA achieved

better with contact lenses than with spectacles. RGP lenses are most frequently used in conservative treatment of keratoconus, but SGP lenses were also shown to be a good option that gives equally satisfying final visual acuity with subjective comfortable feeling of contact lens wear.¹³

Rico-Del-Viejo L et al proved that contact lenses try to restore the vision, improve the quality of life, and delay surgical procedures in patients with this disease.¹⁴

CONCLUSION

RGP contact lenses are useful in keratoconus patients when spectacles cannot maintain or improve vision because of irregular astigmatism. They improve vision, delay the need for penetrating keratoplasty.

Author's Contribution:

Concept & Design of Study: Shafqat Ali Shah
 Drafting: Hidayatullah Mahsud
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 Revisiting Critically: Shafqat Ali Shah, Hidayatullah Mahsud
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Conflict of Interest: The study has no conflict of interest to declare by any author.

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