Original Article

Effects of Lotrafilcon A and Senofilcon A Bandage Contact Lenses on Visual Outcome and Ocular Comfort After Photorefractive Keratectomy

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Abstract

Objectives: To compare the efficacy of two different silicone hydrogel bandage contact lenses (BCLs) in terms of visual rehabilitation and ocular discomfort following photorefractive keratectomy (PRK).

Materials and Methods: This prospective study included 60 eyes of 30 patients who underwent bilateral PRK surgery to correct myopia and/or astigmatism refractive errors. Following surgery, lotrafilcon A BCLs were applied to the right eye and senofilcon A BCLs were applied to the left eye. When the BCLs were removed on postoperative day 5, subjective ocular symptoms of discomfort were evaluated on a scale of 0 to 10, where 0 indicated no discomfort and 10 indicated maximum discomfort. The postoperative spherical equivalents (SE) of both eyes were compared at 15 days and 1 month. Postoperative SE ≤ ±0.50 diopters was accepted as emmetropia. The number of patients who achieved emmetropia was also compared at 15 days and 1 month postoperatively.

Results: Scores for ocular discomfort in the first 5 days postoperatively did not differ significantly between the BCLs ($p>0.05$). However, a statistically significant difference was observed between the two lenses in terms of SE values at postoperative 15 days and 1 month ($p<0.05$). Eyes fitted with the senofilcon A BCL demonstrated better postoperative visual rehabilitation.

Conclusion: Although post-PRK ocular discomfort scores did not differ significantly between the two BCLs, the senofilcon A lenses performed better in terms of achieving the target SE postoperatively.

Keywords: Lotrafilcon A, senofilcon A, bandage contact lens, photorefractive keratectomy, refractive errors

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Introduction

Refractive surgery is often preferred by individuals who seek an alternative to glasses or contact lenses, and outcomes have improved significantly over the past decade. Laser in situ keratomileusis (LASIK) has become the most widely used procedure, although reports of side effects such as corneal ectasia, epithelial ingrowth, and flap-related complications have been documented.[1] In contrast, photorefractive keratectomy (PRK) is a well-established flapless procedure with a low risk of complications and has been used for over two decades.[2] Additionally, individuals susceptible to flap instability issues, such as those in the military, participating in contact sports, or having thin corneas, may not be suitable for LASIK procedures but are good candidates for PRK.[3]

Appropriate corneal re-epithelialization is a critical factor in achieving optimal visual recovery in patients undergoing PRK.[4] Bandage contact lenses (BCLs) are used to shield the epithelium from the eyelid, promote rapid epithelial healing, minimize haze development, reduce postoperative pain, and restore the corneal epithelial barrier to prevent postoperative infection.[5] The use of silicone hydrogel BCLs after PRK is a common practice because they have higher oxygen permeability (Dk/t) compared to conventional lenses.[6] Various BCLs made of silicone hydrogel materials such as lotrafilcon A-B, senofilcon A, balafilcon A, and omafilcon A are used to obtain the best corneal epithelial healing.[7,8] The United States Food and Drug Administration has authorized senofilcon A for continuous use for 1 week and lotrafilcon B for 6 days, while lotrafilcon A is approved for both therapeutic use and extended wear up to 30 days.[9,10,11,12] Despite extensive investigation of the therapeutic effectiveness of different silicone hydrogel materials on pain, discomfort, and epithelial healing following PRK, their performance in terms of postoperative visual rehabilitation has not been extensively discussed.

The objective of the present study was to investigate the effects of two different silicone hydrogel BCLs materials, lotrafilcon A (Air Optix Night and Day Aqua®, Alcon) and senofilcon A (Acuvue Oasys with Hydraclear Plus®, Johnson & Johnson), on visual rehabilitation at postoperative 15 days and 1 month after PRK. Additionally, the study aimed to evaluate the role of these two materials in patient comfort during the first 5 days postoperatively.

Materials and Methods

This study received ethical approval from the Ondokuz Mayıs University Ethics Committee (no: B.30.2.ODM.0.20.08/454-136, date: 18.03.2024) and adhered to the principles outlined in the Declaration of Helsinki. Informed consent was obtained from the participants after explaining the nature and possible consequences of the study. A total of 30 patients between the ages of 18 and 39 years who were admitted to our clinic seeking independence from glasses or contact lenses for myopic and/or astigmatic refractive errors were included in the study. These patients underwent PRK after completing a thorough ophthalmological examination, including corneal topography, pachymetry, intraocular pressure measurement, and fundoscopy. Prior to the laser procedure, a 1% cyclopentolate drop was applied 3 times at 5-minute intervals, and the refractive errors of the patients were measured 45 minutes later. Individuals with a preoperative cycloplegic spherical equivalent (SE) difference of ≤0.50 diopters (D) between their eyes were included in the study. PRK was performed with a target value of 0 D, considering the cycloplegic refractions.

The study excluded patients who underwent laser treatment for hyperopia, lost or removed their BCLs within the first 5 days postoperatively, did not present for follow-up at postoperative 15 days and 1 month, had a history of previous ocular surgery (e.g., cataract, pterygium, vitrectomy, radial keratotomy, LASIK, small incision lenticule extraction), had a history of corneal dystrophy, recurrent epithelial erosion, or keratoconus, had any systemic disease associated with delayed wound healing (e.g., collagen tissue disease, autoimmune disease), or underwent PRK for the second time.

Surgical Protocol

All PRK procedures were performed by the same surgeon (K.Y.) using an Alcon WaveLight® Allegretto Eye-Q device (Alcon Inc., Fort Worth, Texas, USA). Prior to the excimer laser procedure, local anesthetic topical 0.5% proparacaine (Alcaine®, Alcon Laboratories, Puurs, Belgium) drops were administered twice in each eye. The surgical field was disinfected and draped, and a blepharostat was placed. A 20% alcohol solution was then applied to the central cornea (8.5-mm diameter) and left for 15 seconds before being washed with 30 mL of balanced salt solution (BSS). The corneal epithelium was mechanically removed using a standard hockey stick-shaped blade. Following excimer laser PRK, 0.02% mitomycin C was applied to the corneal stroma for 30 seconds and the eye was washed with 30 mL BSS. Then, a drop of 0.5% moxifloxacin (Vigamox®; Alcon Laboratories, Texas, USA) was instilled directly onto the cornea. During the procedure, an Air Optix Night and Day Aqua® lotrafilcon A lens (Alcon) was applied to the right eye, while an Acuvue Oasys with Hydraclear Plus® senofilcon A lens (Johnson & Johnson) was applied to the left eye. The properties of the two silicone hydrogel plano BCLs used in this study are presented in Table 1.

Postoperative Clinical Assessment

The postoperative medication regimen for both eyes was standardized and comprised of 0.1% fluorometholone (Flarex®; Alcon Laboratories, Puurs, Belgium) and 0.5% moxifloxacin (Vigamox®; Alcon Laboratories, Texas, USA) administered 5 times daily and preservative-free artificial tear (VisuXL®; VISUfarma, Rome, Italy) drops administered 8 times per day. The BCLs were removed by the physician who performed the procedure (K.Y.) on day 5. Cycloplegic refractive errors were evaluated at postoperative day 15 and 1 month. The difference between both eyes in terms of SE at postoperative day 15 and 1 month was also assessed. Patients with an SE of ±0.50 D or less at both postoperative time points were considered emmetropic. The differences in residual refractive error between eyes with different BCLs and numbers of emmetropic eyes in the two groups was investigated.

On postoperative day 5, a thorough examination was conducted and the patients were evaluated by means of a questionnaire pertaining to their subjective ocular symptoms. The patients were asked to rate the burning, stinging, foreign body, and dryness they experienced in each eye during the first 5 days after surgery on a scale of 0 (no discomfort) to 10 (highest level of discomfort). These four symptom scores were averaged to yield the ocular discomfort score. The subjective ocular discomfort scores of the patients' paired eyes were also compared.

Statistical Analysis

The data obtained were analyzed in SPSS (version 15.0; SPSS, Inc., Chicago, IL, USA). Initially, the distribution of the data was evaluated using the Kolmogorov-Smirnov test. Quantitative data were presented as mean ± standard deviation if normally distributed or median and range if non-normally distributed, while categorical data were expressed as numbers and percentages. The results from paired eyes were analyzed using the paired t-test or Wilcoxon paired test as appropriate. Categorical data were compared using Fisher's exact test according to appropriate criteria. A value of $p<0.05$ was considered statistically significant in all tests.

Results

In this study, 60 eyes of 30 patients (50% female and 50% male) were evaluated. The mean age of participants was 24.7±5.97 years (range: 18-39 years). Preoperative median SE was -3.25 D (range: -1.50 to -7.00) for the right eyes fitted with lotrafilcon A lenses and -3.69 D (range: -1.25 to -7.25) for the left eyes fitted with senofilcon A lenses. There was no statistically significant difference in preoperative SE values between eyes fitted with lotrafilcon A and senofilcon

A lenses (p=0.09). There was also no statistically significant difference between the preoperative flattest keratometric measurement (K1) of the eyes with lotrafilcon A compared to senofilcon A lenses (43.05±1.45 D vs. 43.02±1.43 D, p=0.54). The mean value of the steepest keratometric measurement (K2) was also similar between the participants' paired eyes (44.10±1.24 D vs. 44.15±1.28 D, respectively, p=0.44). In the preoperative assessment, pachymetry measurements for the right eye were found to be 535.60±23.80 µm, while the corresponding measurements for the left eye were 537.40±23.56 µm. A statistically significant difference in preoperative corneal thickness was observed between the eyes (p<0.001). Preoperative patient data is summarized in Table 2.

The mean ocular discomfort score of patients on postoperative day 5 was 3.57±1.71 for the right eyes fitted with lotrafilcon A and 3.89±1.71 for the left eyes fitted with senofilcon A (p=0.17). On postoperative day 15, the median SE for the eyes fitted with lotrafilcon A lenses was significantly higher compared to the eyes fitted with senofilcon A (-0.50 D vs. -0.25 D, p=0.001). At postoperative 1 month, the median SE was -0.25 D (range: -0.75 to 0.50) in the eyes with lotrafilcon A lenses and 0 D (range: -0.50 to 1.25) in the eyes with senofilcon A lenses. There was a statistically significant difference between the two contact lenses in terms of SE at 1 month postoperatively (p=0.005). Upon adopting the criteria of a postoperative SE ≤ ±0.50 D as indicative of emmetropia, there was no statistically significant disparity between the lotrafilcon A and senofilcon A lenses in terms of the number of eyes achieving emmetropia at postoperative 15 days (60% vs. 73.3%, p=0.210). At the postoperative 1-month assessment, both groups had the same emmetropia ratio (93%). Postoperative outcomes with the two different BCLs are summarized in Table 3.

Discussion

The current study compared the efficacy of two silicone hydrogel BCLs made of different materials, senofilcon A

Table 1. Contact lens features

Parameter	Air Optix Night and Day Aqua®	Acuvue Oasys with Hydraclear Plus®
Material	Lotrafilcon A	Senofilcon A
Manufacturer	Alcon	Johnson & Johnson
Base curve (mm)	8.6	8.4
Diameter (mm)	13.8	14
Dk	140	103
Dk/t	175	147
Water content	24%	38%
Modulus (MPa)	1.4	0.72
UV filter	No	Yes

Dk: Oxygen permeability ($x10^{-11}$), Dk/t: oxygen transmissibility ($x10^{-9}$), UV: Ultraviolet

Table 2. Preoperative patient data

	Lotrafilcon A	Senofilcon A	p
Preoperative SE (D), median (min, max)	-3.25 (-1.50, -7.00)	-3.69 (-1.25, -7.25)	0.09*
Pachymetry (µm), mean ± SD	535.60±23.80	537.40±23.56	<0.001**
Preoperative K1 (D), mean ± SD	43.05±1.45	43.02±1.43	0.54**
Preoperative K2 (D), mean ± SD	44.10±1.24	44.15±1.28	0.44**

*Wilcoxon test, **Paired t-test, SE: Spherical equivalent, D: Diopter, min: Minimum, max: Maximum, SD: Standard deviation, K: Keratometric

Table 3. Postoperative outcomes of two different bandage contact lenses

	Lotrafilcon A	Senofilcon A	p
Ocular discomfort score, mean ± SD	3.57±1.71	3.89±1.71	0.17**
SE day 15 (D), median (min, max)	-0.50 (-1.50, 0.75)	-0.25 (-1.37, 2.25)	0.001*
SE 1 month (D), median (min, max)	-0.25 (-0.75, 0.50)	0 (-0.50, 1.25)	0.005*
Emmetropic eyes day 15 (n, %)	18 (60)	22 (73.3)	0.231***
Emmetropic eyes 1 month (n, %)	28 (93.3)	28 (93.3)	1***

*Wilcoxon, **Paired t-test, ***Fisher's exact test, SD: Standard deviation, SE: Spherical equivalent, D: Diopter, min: Minimum, max: Maximum

(Acuvue Oasys with Hydraclear Plus®) and lotrafilcon A (Air Optix Night and Day Aqua®) in terms of visual rehabilitation and ocular comfort following PRK to correct myopia and/or astigmatism. No significant difference in ocular discomfort scores for the first 5 postoperative days was detected between the eyes that received lotrafilcon A or senofilcon A lenses. However, a significant difference was observed between the two lenses in SE values at postoperative 15 days and 1 month. Although the senofilcon A lens showed better visual rehabilitation than the lotrafilcon A lens, the number of patients considered emmetropic (SE ≤ ±0.50 D) was not statistically different at either time point.

During the PRK procedure, the corneal epithelium is removed mechanically or with the laser itself (known as transepithelial ablation) to allow stromal ablation.[13] Epithelial cells are the first to regenerate corneal layers and trigger corneal repair. Delays in this process can result in increased subepithelial haze.[14,15] The use of appropriate BCLs after surgery helps in epithelial healing, reduces pain, and improves visual acuity.[16] BCLs are worn for 3 to 5 days post-surgery and are the gold standard for protecting the epithelium from the eyelid, reducing haze formation, and preventing erosion. Several silicone hydrogel contact lenses are available for therapeutic use, including lotrafilcon A-B, senofilcon A, balafilcon A, omafilcon A, and samfilcon A.[17] Lotrafilcon A is a first-generation silicone hydrogel contact lens with high oxygen transmissibility (Dk), low water content, and relatively high lens modulus or stiffness. It requires a plasma coating surface treatment to provide wettability. Senofilcon A is a second-generation silicone hydrogel contact lens having a fairly good Dk (103), lower than lotrafilcon A (140), but higher water content and lower modulus. The utilization of polyvinyl pyrrolidone (PVP) as an internal wetting agent in senofilcon A obviates the need for any surface treatment.[18] The modulus of elasticity is a constant value that quantifies the capacity of a material to maintain its shape and resist deformation under stress. A material with a high modulus exhibits stiffness, resists deformation, and maintains its shape more effectively, which facilitates manipulation (insertion and removal) and enhances visual acuity. Conversely, a high-modulus material may increase the incidence of mechanical complications of the lens (e.g., superior epithelial arcuate lesions, giant papillary conjunctivitis, corneal staining, conjunctival flap formation) and reduce lens comfort. As the modulus increases, the water content decreases and the lenses do not readily conform to the shape of the eye, which may contribute to mechanical irritation and a subsequent local inflammatory response. A high modulus was also associated with an increased risk of keratitis in prolonged contact lens wear.[18] Although it did not affect our ocular comfort scoring, we posit that the high modulus of lotrafilcon A (1.4 vs. 0.72 in senofilcon A) and low water content (24% vs. 38% in senofilcon A) are among the factors influencing visual rehabilitation.

There are numerous investigations on the influence of silicone hydrogel BCLs differing in material composition on the healing process of corneal epithelial wounds, as well as on postoperative pain and ocular discomfort following PRK. However, there is a paucity of research on the impact of these lenses on visual rehabilitation.[19,20] Razmjoo et al.[20] reported that patients who received senofilcon A contact lenses demonstrated significantly lower levels of pain than those who were fitted with lotrafilcon A lenses across all three visit days (days 1, 3, and 5) following PRK with alcohol-assisted epithelial debridement. However, there were no significant differences in visual acuity and epithelial defect size between the two groups. The present study diverges from the findings suggested by Razmjoo et al.[20] in terms of ocular discomfort. This discrepancy may be attributed to the subjective nature of ocular discomfort or to inter-racial differences. In terms of visual rehabilitation, Razmjoo et al.[20] compared uncorrected visual acuity on postoperative day 3 and found no difference between the two BCLs. In the present study, visual rehabilitation was objectively measured at postoperative 15 days and 1 month. Our findings that senofilcon A led to better results in visual rehabilitation than lotrafilcon A may be due to the fact that we measured refractive status with an objective method and evaluated it at a later time point.

Duru et al.[21] compared senofilcon A and lotrafilcon B in terms of epithelial healing and ocular discomfort for the first 3 days after PRK. They reported that there was no significant difference in the duration of corneal re-epithelialization between the two BCLs. However, senofilcon A lenses were found to cause significantly less pain and epiphora compared to lotrafilcon B. They investigated ocular discomfort only for the first 3 days, while the current study extended the investigation to the first 5 days and used lotrafilcon A instead of lotrafilcon B. The difference in water content and DK/t values between lotrafilcon A and lotrafilcon B may have also played a role in the different ocular discomfort outcomes.

In a study of pain management in eyes that underwent PRK with alcohol-assisted epithelial debridement, Taylor et al.[7] observed that eyes fitted with senofilcon A lenses displayed the lowest pain scores on postoperative days 1 and 4, followed by eyes fitted with lotrafilcon A lenses, and then eyes fitted with balafilcon A lenses. In the current investigation, the intensity of postoperative ocular discomfort was evaluated using an ocular discomfort score, which was calculated by averaging scores assigned for burning, stinging, foreign body sensation, and dryness, rather than relying on a single pain parameter. The reason for the difference in results between the two studies may be attributed to this methodological difference. Their study did not examine the effect of BCLs on visual rehabilitation. Another study conducted by Li et al.[22] found no significant differences between the senofilcon A and balafilcon A contact lenses in terms of corneal epithelial healing speed, tear film parameters, SE, or uncorrected visual acuity at postoperative 4 days, 10 days, and 1 month. However, senofilcon A BCLs were associated with less pain in the first few days after surgery and were more comfortable to use after transepithelial PRK (T-PRK). They speculated that the edge design of BCLs and the mobility of the lens on the

de-epithelized cornea may play a role in early postoperative pain outcomes. A possible reason for the lack of a difference in visual rehabilitation between their study and the present study could be that they preferred T-PRK instead of alcohol-assisted epithelial debridement, which may have influenced the outcomes.

Mukherjee et al.[23] conducted a study comparing the effectiveness of senofilcon A and comfilcon A BCLs following T-PRK. The researchers expected lower pain scores with comfilcon A due to its higher water content and oxygen permeability, but their results showed the opposite. They attributed this to the comfilcon A lens having increased mobility during blinking due to a higher base curve. The impact of BCLs on postoperative pain management appears to be influenced by several factors, including but not limited to oxygen permeability and water content. Additionally, the researchers found similar results in terms of uncorrected visual acuity at 1 month between the two BCLs.[23] In contrast, the present study demonstrated better visual rehabilitation outcomes with senofilcon A compared to lotrafilcon A, which may be attributed to the use of objective rather than subjective methods for evaluating postoperative refractive status.

Study Limitations

Limitations of the present study are the small sample size and short 1-month postoperative follow-up. Another limitation is the consistent preference for one contact lens for the right eye and another for the left. Further studies with larger sample sizes and longer follow-up period are warranted to validate the results of the current study.

Conclusion

Both senofilcon A and lotrafilcon A contact lenses were found to be effective in providing relief from ocular discomfort and serving as BCLs following PRK surgery. Nevertheless, it was observed that using a senofilcon A contact lens after PRK surgery had a more pronounced and beneficial effect on visual rehabilitation in the first month after the procedure compared to lotrafilcon A contact lens. Senofilcon A appears to be the superior choice for early visual rehabilitation following PRK, and should therefore be favored more often in daily clinical practice.

Ethics

Ethics Committee Approval: This study received ethical approval from the Ondokuz Mayıs University Ethics Committee (no: B.30.2.ODM.0.20.08/454-136, date: 18.03.2024) and adhered to the principles outlined in the Declaration of Helsinki.

Informed Consent: Informed consent was obtained.

Declarations

Authorship Contributions

Surgical and Medical Practices: K.Y., Concept: K.Y., Design: K.Y., Data Collection or Processing: G.A., Analysis or Interpretation: G.A., Literature Search: G.A., Writing: K.Y., G.A.

Conflict of Interest: No conflict of interest was declared by the authors.

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References

1. Sahay P, Bafna RK, Reddy JC, Vajpayee RB, Sharma N. Complications of laser-assisted *in situ* keratomileusis. Indian J Ophthalmol. -69:1658;2021 1669.
2. Shah R. Journey from photorefractive keratectomy to small incision lenticule extraction. Indian J Ophthalmol. 2020;68:2645-2646.
3. Reitblat O, Gershoni A, Mimouni M, Vainer I, Livny E, Nahum Y, Segev F, Bahar I. Refractive outcomes of high-magnitude astigmatism correction using femtosecond LASIK versus transepithelial PRK. Eur J Ophthalmol. 2021;31:2923-2931.
4. Tomás-Juan J, Murueta-Goyena Larrañaga A, Hanneken L. Corneal regeneration after photorefractive keratectomy: a review. J Optom. 2015;8:149-169.
5. AlDahash F, AlAmeer A, Hussain OB, Khandekar R, Ahmad A, Ahad M. Effect of bandage contact lens exchange on pain and healing after photorefractive keratectomy-a randomized control trial. Eye Contact Lens. 2021;47:113-117.
6. Diec J, Tilia D, Thomas V. Comparison of silicone hydrogel and hydrogel daily disposable contact lenses. Eye Contact Lens. 2018;44(Suppl 1):167-172.
7. Taylor KR, Caldwell MC, Payne AM, Apsey DA, Townley JR, Reilly CD, Panday VA. Comparison of 3 silicone hydrogel bandage soft contact lenses for pain control after photorefractive keratectomy. J Cataract Refract Surg. 2014;40:1798-1804.
8. Mohammadpour M, Heidari Z, Hashemi H, Asgari S. Comparison of the lotrafilcon B and comfilcon A silicone hydrogel bandage contact lens on postoperative ocular discomfort after photorefractive keratectomy. Eye Contact Lens. 2018;44(Suppl 2):273-276.
9. Covey M, Sweeney DF, Terry R, Sankaridurg PR, Holden BA. Hypoxic effects on the anterior eye of high-Dk soft contact lens wearers are negligible. Optom Vis Sci. 2001;78:95-99.
10. Keay L, Sweeney DF, Jalbert I, Skotnitsky C, Holden BA. Microcyst response to high Dk/t silicone hydrogel contact lenses. Optom Vis Sci. 2000;77:582-585.
11. Brennan NA, Coles ML, Comstock TL, Levy B. A 1-year prospective clinical trial of balafilcon a (PureVision) silicone-hydrogel contact lenses used on a 30-day continuous wear schedule. Ophthalmology. 2002;109:1172-1177.
12. Nilsson SE. Seven-day extended wear and 30-day continuous wear of high oxygen transmissibility soft silicone hydrogel contact lenses: a randomized 1-year study of 504 patients. CLAO J. 2001;27:125-136.
13. Lee HK, Lee KS, Kim JK, Kim HC, Seo KR, Kim EK. Epithelial healing and clinical outcomes in excimer laser photorefractive surgery following three epithelial removal techniques: mechanical, alcohol, and excimer laser. Am J Ophthalmol. 2005;139:56-63.
14. Anitua E, Muruzabal F, Alcalde I, Merayo-Lloves J, Orive G. Plasma rich in growth factors (PRGF-Endoret) stimulates corneal wound healing and reduces haze formation after PRK surgery. Exp Eye Res. 2013;115:153-161.
15. Dua HS, Gomes JA, Singh A. Corneal epithelial wound healing. Br J Ophthalmol. 1994;78:401-408.
16. Taneri S, Oehler S, MacRae S, Dick HB. Influence of a therapeutic soft contact lens on epithelial healing, visual recovery, haze, and pain after photorefractive keratectomy. Eye Contact Lens. 2018;44(Suppl 1):38-43.
17. Qu XM, Dai JH, Jiang ZY, Qian YF. Clinic study on silicone hydrogel contact lenses used as bandage contact lenses after LASEK surgery. Int J Ophthalmol. 2011;4:314-318.
18. Stapleton F, Stretton S, Papas E, Skotnitsky C, Sweeney DF. Silicone hydrogel contact lenses and the ocular surface. Ocul Surf. 2006;4:24-43.

19. Zheng Y, Zhai CB. Performance of bandage contact lens in patients post-ocular surgeries: a systematic literature review. Eye Contact Lens. 2023;49:449-458.
20. Razmjoo H, Abdi E, Atashkadi S, Reza AM, Reza PA, Akbari M. Comparative study of two silicone hydrogel contact lenses used as bandage contact lenses after photorefractive keratectomy. Int J Prev Med. 2012;3:718-722.
21. Duru Z, Duru N, Ulusoy DM. Effects of senofilcon A and lotrafilcon B bandage contact lenses on epithelial healing and pain management after bilateral photorefractive keratectomy. Cont Lens Anterior Eye. 2020;43:169-172.
22. Li H, Shao T, Zhang JF, Leng L, Liu S, Long KL. Comparison of efficacy of two different silicone hydrogel bandage contact lenses after T-PRK. Int J Ophthalmol. 2022;15:299-305.
23. Mukherjee A, Ioannides A, Aslanides I. Comparative evaluation of comfilcon A and senofilcon A bandage contact lenses after transepithelial photorefractive keratectomy. J Optom. 2015;8:27-32.