

Bandage contact lens use after photorefractive keratectomy: Updated review

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1 Bandage contact lenses (BCL) have been widely used as an epithelial healing promoter to reduce
2 postoperative pain in refractive surgery, including photorefractive keratectomy (PRK). Since the
3 systematic review¹ published by this research team several works have addressed the use of BCL to
4 improve visual recovery and relieve the patient's discomfort symptoms. Among the new publications
5 on this topic were; Shetty et al.² assessed the effect a soaked BCL in keratolac ophthalmic solution on
6 pain score after PRK. Most of these new studies³⁻⁶ analyze the differences in terms of pain score and
7 re-epithelization zone within different contact lens materials, such Balafilcon A, Samfilcon A,
8 Senofilcon or Lotrafilcon B. The objective of this work is to update the new studies after the
9 publication of the systematic review¹.

10 We searched in PubMed, Web of Science and Scopus, from June 2018 to August 2021. Our keywords
11 were Photorefractive Keratectomy, PRK, Contact Lens, and Bandage Contact Lens. The papers found
12 were evaluated by the authors who selected them according to inclusion and exclusion criteria. The
13 rest of the methodology was carried out in a similar way to that described in the systematic review ¹.
14 A total of six articles²⁻⁷ were included, which enrolled 500 eyes from 285 patients who underwent
15 PRK. The main study characteristics are presented in Table 1. Mean age of the patients were 25.98 ±
16 3.83 years old. Mean follow-up postoperative were 2.51 ± 0.98 days. Pain score was expressed from 0
17 to 10 and epithelization zone expressed in mm² at first and third day were summarized on Table 2.

18 Shetty et al.² probed that a BCL soaked with Acuvail, a preservative free solution that contains
19 carboxymethylcellulose and keratolac tromethamine 0.45%, plays a crucial role as potential drug that
20 reduces pain after PRK. Contact lenses have been used for drug delivery to treat pathologies such
21 glaucoma or corneal infections. However, this is the first study to include contact lens drug delivery
22 system in laser refractive surgery. They also found that the maximum concentration of keratolac
23 occurred after one hour of soaked, after which the concentration remained unchanged.

24 Regarding the publications that compare different materials, Yuskel and colleagues³ found that re-

42 epithelization occurred faster with Samfilcon A against Lotrafilcon B. Moreover, Samfilcon A
43 obtained better pain score than Lotrafilcon B on postoperative day one, with no difference on day
44 three. Bagherian et al.⁴ compared two very similar BCLs, Balafilcon A with an oxygen permeability
45 of 101 and 130 of Dk/t. They found that both BCL were equivalent in pain score and re-epithelization,
46 although the higher oxygen permeability BCL obtained superior deposits on the contact lens surface.
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48 In two publications of the saw year by Duru, N et al.⁵ and Duru, Z et al.⁶, the groups analyzed four
49 different materials (Balafilcon A, Samfilcon A, Senofilcon A and Lotrafilcon B). They concluded that
50 wearing Samfilcon A as BCL after PRK reduces pain score, foreign body sensation and epiphora. No
51 BCL stood out in terms of epithelial recover. And recently, AlDahash et al.⁷ achieved that BCL
52 exchange during the first PRK postoperative day vaguely reduce pain score and not vary epithelial
53 recovery.
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In conclusion, Samfilcon A, with the higher oxygen permeability and water content reported the
1 lowest pain score and re-epithelization zone in the postoperative day one. The differences between the
2 materials are no longer significant on the third day after the PRK surgery. However, additional studies
3 are needed to compare new materials with high oxygen permeability such as Samfilcon A and
4 Senofilcon A to corroborate these findings.
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