

The effects of soft contact lens use on cornea and patient's recovery after autograft pterygium surgery



Mutlu Cihan Daglioglu^{a,*}, Mesut Coskun^a, Nilufer Ilhan^a, Esra Ayhan Tuzcu^a, Ozgur Ilhan^a, Ugurcan Keskin^a, Emre Ayintap^b, Huseyin Oksuz^a

^a Department of Ophthalmology, Faculty of Medicine, Mustafa Kemal University, Hatay, Turkey

^b Department of Ophthalmology, Faculty of Medicine, Bezmialem University, Istanbul, Turkey

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ABSTRACT

Purpose: To investigate usage of soft contact lens (SCL) on post-operative pain relief and daily, activity due to pterygium surgery.

Methods: Autograft pterygium surgery was performed to 63 eyes of 63 patients. After surgery in 30, eyes of 30 patients in group-1, SCL was placed on the cornea. In 33 patients of group-2, antibiotic, pomade was applied and tightly covered with bandage. Follow-up visits were performed on 24th and, 48th h after the surgery. Re-epithelization time and pain scores were compared.

Results: Patients' 24th h pain score was 2.96 ± 0.76 in group-1, and 4.15 ± 0.75 in group-2. The mean, pain score for 48 h was 1.66 ± 0.66 in group-1, and 2.96 ± 0.68 in group-2. Patients' pain scores for, both 24th h and 48th h were lower in group-1 ($p < 0.01$). The mean re-epithelization times in, group 1 and 2 were 48 and 56.7 h, respectively. Corneal re-epithelization is improved in patients, with SCL compared to group 2.

Conclusion: SCL seems effective on reducing post-operative pain and eye stinging, and may accelerate, corneal re-epithelization and maintaining daily activities.

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1. Introduction

Pterygium is an ocular disease mostly encountered in socially active and productive age group [1]. Pterygium surgery is usually performed under subconjunctival anesthesia. Recurrence after surgery remains a challenge. Male gender and sunlight exposure during the lifetime were considered as additional risk factors in terms of recurrence [2]. Conjunctival autograft surgery with suture or fibrin glue is frequently performed for the treatment of primary and recurrent pterygium. In a recent report, it has been reported that fibrin glue is superior to suturation in conjunctival autografting in aspect of recurrence rate [3]. After surgery, 60% of patients suffered from significant pain [4]. In order to reduce post-operative pain, non-steroidal anti-inflammatory drugs (NSAIDs), local anesthetics solutions and opioids have been used [4–6]. Additionally, to accelerate corneal re-epithelization and reduce the pain in post-operative period, eyes are covered by tight bandages [7]. Thus, pain is relieved while corneal re-epithelization accelerated. However, patients can open their eyelids under bandages, which cause delay

in corneal re-epithelization. Furthermore, patients with closed eyes feel uncomfortable and stay away from social life for a period. To the best of our knowledge, in the literature there is no study dealing with the use of soft contact lens (SCL) after pterygium surgery in order to relief post-operative pain and improve the quality of life of the patient. The present study aims to find out the effects of use of SCL on post-operative pain relief and daily activity in the early period following pterygium surgery (Table 1).

2. Materials and method

In this prospective randomized study, out of all pterygium surgery cases, patients with primary nasal pterygium were included to the study. The study was approved by the local ethics committee. Autograft pterygium surgery was performed to 63 eyes of 63 patients after obtaining informed consent. None of the patients had an additional eye disease. Preoperative or intraoperative sedation was not performed of any of the patients. Patients were randomly divided into two groups. Group-1 consisted of 30 patients and group-2 of 33 patients. Proparacaine hydrochloride (0.5% Alcaine[®], SA Alcon-Couvreur, Puurs, Belgium) was dropped on the eye topically after sterile cover application. Afterwards, local anesthesia was performed by subconjunctival injection of

* Corresponding author. Tel.: +90 326 229 10 00x3387.

E-mail address: mutluaysen@hotmail.com (M.C. Daglioglu).

Table 1
Age, VAS, corneal re-epithelization and outside time of the patients.

	Group 1	Group 2	p-Value
Age	42.66 ± 5.58	43.54 ± 5.42	p = 0.53
VAS (at 24 h)	2.96 ± 0.76	4.15 ± 0.75	p < 0.01
VAS (at 48 h)	1.66 ± 0.66	2.96 ± 0.68	p < 0.01
Corneal re-epithelisation duration	48	56.72 ± 1.17	p < 0.01
Outside the time (hour) (within 2 days)	23.93 ± 2.22	13.78 ± 2.04	p < 0.01

VAS: Visual analog scale.

2% lidocaine (Jetocaine amp[®], Adeka Medicine, Istanbul, Turkey), under the pterygium and to the site used for conjunctival graft. Pterygium was cleaned by dissecting over cornea and excised together with the attached conjunctiva. Hemostasis was achieved with wet field cautery application. Conjunctival autograft was excised from the superior temporal region.

In group-1, conjunctival autograft was continuously sutured to the surrounding conjunctiva with a 10–0 nylon suture. After suturing ciprofloxacin 1X1 (Ciloxan[®], Alcon, Fort Worth, TX, USA) and diclofenac sodium 1X1 (Voltaren[®], Novartis, Basel, Switzerland) were instilled. Thereafter, high oxygen permeable silicone hydrogel SCL having 14 mm diameter (Purevision[®], Bausch & Lomb, Rochester, NY, USA) was placed on the cornea. The initial and completion nodes of continuous suture were on the limbus and covered by SCL (Fig. 1). Nylon sutures were removed 10 days after surgery.

In group-2, conjunctival graft was continuously sutured to the surrounding conjunctiva with 10–0 nylon sutures. Afterwards, diclofenac sodium drop and ciprofloxacin pomade were applied, and eyes were tightly covered with bandage.

All operations were performed under the operation microscope by an experienced surgeon (HO). Patients were discharged the same day after the surgery. Control examinations of patients were performed on 24th and 48th h following surgery by a masked observer. In both groups SCL was removed at 48th. The corneal re-epithelization time and pain scores of two groups were compared post-operatively. Visual analog scale (VAS) was used to assess post-operative pain. The VAS values were measured according to the study by Koranyi et al. [8].

In this scale there is a scoring spectrum between “0: no pain” and “10: unbearable pain”. Corneal re-epithelization was examined by fluorescein staining on slit-lamp examination. Patients who did not show re-epithelization were re-examined at 72nd h. Pain scores were obtained from patients at examinations of 24th and 48th h. In addition, re-epithelization time, and periods spent at home and

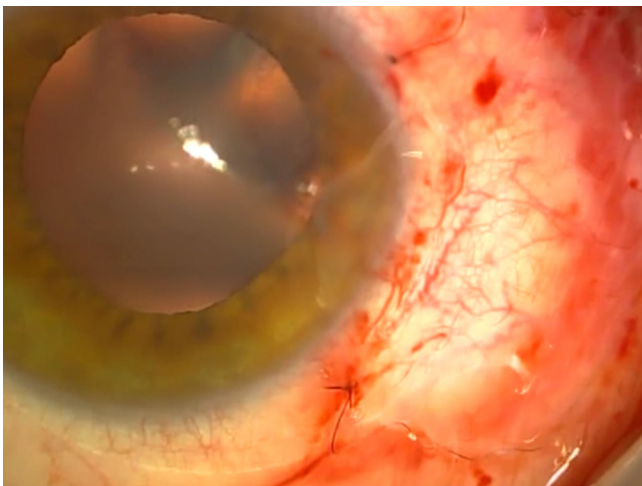


Fig. 1. The photograph of a patient showing soft contact lens use after pterygium surgery.

outside were also compared. Topical flourometolon (Flarex[®], SA Alcon-Couvreur, Puurs, Belgium) of 4 × 1, and 4 × 1 ciprofloxacin drops were prescribed for one month period to the patients with completed re-epithelization.

2.1. Statistical analyses

SPSS package program was used for statistical analyses. A *t*-test was used for statistical analyses and a *p*-value less than 0.01 were considered as significant.

3. Results

In group-1 16 patients were male and 14 females while 16 patients were female and 17 were male, in group-2. The mean age of patients in group-1 was 42.66 ± 5.58 years, while it was 43.54 ± 5.42 years in group-2. There was no statistically significant difference between two groups in terms of age, sex, and sample size.

Patients' 24th h pain score was 2.96 ± 0.76 in group-1, and 4.15 ± 0.75 in group-2. The mean pain score for 48 h was 1.66 ± 0.66 in group-1, and 2.96 ± 0.68 in group-2. Patients' pain scores for both 24th h and 48th h were statistically significantly lower in group-1 compared to group-2 (*p* < 0.01).

Among Group-1 patients, corneal re-epithelization was completed at an average of 48 h, while it was completed at 56.72 ± 1.17 h in group-2 patients. Among group-2 patients, corneal re-epithelization was completed at 48th h in 12 patients, and it was completed at 72nd h in 21 patients. Statistically significant difference was observed between two groups in terms of corneal re-epithelization time (*p* < 0.01).

Patients in group-1 spent an average of 12.60 ± 2.26 h at home and spent 23.93 ± 2.22 h outside within two-day period. However, group-2 patients spent 22:12 ± 2.99 h of their times at home, while they spent 13.78 ± 2.04 h outside within post-operative two-day period. Statistically significant difference was observed between two groups in terms of time spent at home and outside (*p* < 0.01).

Sliding or folding of SCL was not observed in any patients on slit-lamp examination. In both groups, no ocular surface complications were encountered.

4. Discussion

Today, prolonged corneal re-epithelization time and pain still remain as problems following pterygium surgery. The pain secondary to pterygium surgery is thought to have originated from cornea and conjunctiva. Occurrence of pain in the early post-operative period of pterygium surgery is affected by factors such as surgical trauma, corneal epithelial defect, and suture irritation.

In pterygium surgery, since the effects of subconjunctival anesthesia last for a short time, usually pain starts at early post-operative period. NSAIDs, morphine and topical anesthetic agents have been used to reduce pain after surgery [4–6]. Oksuz et al. [6] reported that topical lidocaine gel was effective to reduce pain after pterygium surgery. The use of topical anesthetic eye drops and

NSAIDs together with SCL application was found to be effective in reducing pain associated with epithelial defects in photorefractive surgery [9]. However, studies have reported that topical anesthetics cause delay in corneal re-epithelization [10]. Because of previously reported corneal side effects of NSAIDs eye drops [11,12], in the present study, we administered NSAIDs drops at early post-operative period once a day, in both groups.

Wishaw et al. found that peribulbar administration of morphine was effective in reducing post-operative pain [4]. However, morphine causes side effects such as nausea, vomiting. Furthermore, prolonged hospital stay and delay in return to normal activities has been reported in patients underwent opioid analgesic application [13].

Large-diameter SCL's have been used after surgery to reduce the rate of recurrence of pterygium. It has also been reported to be possible solution to pain after pterygium surgery; however, no concrete data is available in the literature [14].

Contact lenses placed on the cornea of cover the epithelial defect. In addition, SCL reduce suture material associated post-operative pain by eliminating friction between sutures and eyelid. In this study we continuously sutured conjunctival autograft with 10/0 nylon suture. Patients' pain scores for both 24th h and 48th h were significantly lower in group-1 compared to group-2, in the present study. In group-1, the initial and completion nodes of, 10/0 nylon, continuous suture were on the limbus that covered by SCL. Therefore, suture-related irritation, pain and stinging are eliminated. In addition, photophobia and tearing are believed to be less occurred in these patients. Post-operative eye stinging and pain are seen because of the contact between the eyelid and the surgical site in tightly closed eyes with bandage. Therefore, disturbed patient opens and closes the eye under bandage, which increases the pain. Additionally, keeping eye closed under the bandage requires further effort, which consequently might cause fatigue of periocular muscles.

In the present study, corneal re-epithelization was delayed in group-2 patients compared to those in group-1. This issue might be caused by occasional uncovering of cornea under tight bandage. Because the eye bandage does not eliminate the movements of the eyelids. Pterygium surgery is among common surgical procedures performed in ophthalmology. Pterygium is mostly encountered in socially active and productive age group [1]. Such patients should stay at home for a few days, which consequently cause a temporary social isolation for patients and lead indirect economic loss.

Because the patients with eye bandages are unable to use one eye, they prefer to spend their time at home more. However, as the patients with SCL are able to use both eyes their daily activities are not restricted.

The findings of the present study suggest that the use of SCL is safe and effective in terms of reducing early post-operative pain and eye stinging, and accelerating corneal re-epithelization and maintaining daily activities following pterygium surgery.

Conflict of interest

The authors have declared that no conflict of interest exists.

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