



# What is the Impact of Hard Contact Lens on the Operation of the Corneal Cross Linking? A Case Report

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## ABSTRACT

The purpose of this report was to demonstrate the effect of a hard contact lens on the cornea following a cross linking procedure on visual acuity in a female patient who already had significantly reduced VA despite the cross linking on the cornea. Formation of temporary corneal haze, permanent scars, endothelial damage, treatment failure, sterile infiltrates, and herpes reactivation are the other reported complications of this procedure. Cross-linking is a low-invasive procedure with low complication and failure rate but it may have direct or primary complications due to incorrect technique application or incorrect patient's inclusion and indirect or secondary complications related to therapeutic soft contact lens, patient's poor hygiene, and undiagnosed concomitant ocular surface diseases.

**Keywords:** Keratoconus; Cross-linking; Hard CL; GP CL; Health; Eye disorder; Visual acuity

## INTRODUCTION

Impaired visual acuity is one of the health issues associated with Eye Disorders in particular. There are many types of visual impairment, Keratoconus is one of several types of visual impairment that could also occur [1]. Keratoconus is an eye condition that is characterized by corneal thinning and irregularities on the cornea's surface that compromises the cornea's structure, resulting in vision loss. It affects around one in every 2,000 people and quite often starts in puberty and progresses until about the mid-30's. Keratoconus, if remain untreated, can result in severe vision loss [2]. The corneal changes make it difficult to focus the eye with or without eyeglasses or standard soft contact lenses [3].

Keratoconus is scary if laser vision correction surgery, such as Laser therapy, is performed on the eye because it can cause excessive the condition. Anyone with even a mild case of

keratoconus should eliminate laser vision correction surgery unless the doctor recommends it in very specific circumstances. This case was handled on August 2021 in Gaza, Palestine. Where am I work, with hard contact lenses, which was one of the methods utilized to treat patients with keratoconus following keratoconus surgery [4]. The therapy that we used here, has been used for a variety of purposes, include decreasing the majority of the issues in both eyes that we might have following surgery and providing excellent vision, including which were: Binocular vision improved, Reduce the discomfort caused by astigmatism by eliminating the high quantity of astigmatism and by using "soflex" hard CL, we were capable to achieve 6/6 (20/20) or closer in each eye. We are attempting to apply the "hard contact lens" technique in female patients in order to determine the level of performance and success in this method, especially in our territory [5].

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## CASE PRESENTATION

The most commonly prescribed type of hard contact lenses are Rigid Gas-Permeable (RGP) lenses. They're more comfortable and safer to wear than earlier types of hard lenses, such as conventional Polymethyl Methacrylate (PMMA) lenses. PMMA lenses are seldom prescribed today. RGP lenses are made from a flexible plastic material that typically includes silicone. This lightweight material allows oxygen to pass directly through the lens to reach your eye's cornea. Your cornea is the transparent, outermost layer of your eye. Your cornea refracts light and serves as your eye's outermost lens. When your cornea doesn't get enough oxygen, it can swell. This causes hazy or blurred vision, and other eye problems. PMMA lenses did not allow oxygen to pass through the lens. The only way oxygen could reach the cornea was for tears to wash under the lens each time you blinked. To allow tears to move under the lens, PMMA lenses were fairly small in size. Plus, there had to be a gap between the lens and the cornea. This made PMMA lenses uncomfortable to wear and made it easier for the lenses to pop out, especially when playing sports. Because RGP lenses let oxygen pass through them, these lenses are larger than PMMA lenses, and cover more of your eye.

### Patient History

**Chief complaint:** 27 years female, presented to the clinic where am I working with decrease visual acuity, associated with itching and blurring vision.

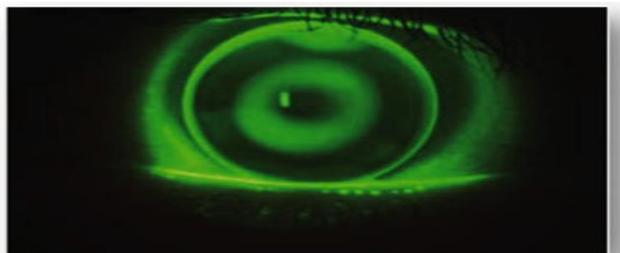
**Past medical history:** No history of previous medical treatment.

**Family history:** No systemic or ocular disease of any individual.

**Ocular history:** No history of past treatment, just using glasses recently.

**Surgical history:** The patient operated on corneal cross linking for decrease visual acuity" keratoconus's cornea". Presented with blurring vision due to refractive changes and variability in K- reading.

**Visual acuity (with glasses a ter surgery, last visit):** RT) 0.00/-3.50\*60 VA: 66 p (partial) (Figure 1) [6].



**Figure 1:** The format of the lens applied on the right eye with fluorescein by using slit-lamp instrument.

### Other clinical findings

**Cornea:** Clear

**Squint:** Absence (safe)

**Fundus:** Clear

**Associated conditions:** None

**EOM:** Safe

**IOP:** RT) 10 mmHg

**Pupil:** Good reaction

**LT:** 10 mmHg

## RESULTS AND DISCUSSION

As optometrists and ophthalmologists, we always provide eye diagnosis and services for a number of different impairment conditions. We have been using the Hard CL strategy to minimize the quantity of decrease in visual acuity exacerbated by fluctuation in corneal topography measurements. This type of CL has several advantages, including that of the capacity to increase binocular vision, reduce astigmatism, and achieve 6/6 or nearby in every single eye [7].

Despite the high cost of this type, the simplicity with something that can be scratched, and the frequent feeling of discomfort, it is still the best option for providing clear vision while still being wearable and handle. The advancements generated "rigid gas permeable" lenses, which are slightly more flexible enough to allow oxygen to pass through to the cornea. Even though they retain their shape on the eye, they are still classified as hard contact lenses. Rigid gas permeable contacts, also identified as GP or RGP lenses, have numerous benefits in addition to healthy oxygen flow. RGP lenses have slowed the progression of nearsightedness in both young and adult lens wearers. While the patient's visual acuity continues to deteriorate despite corneal cross-linking surgery, and she refuses to wear glasses again, we use this method to determine the amount of vision rehabilitation and improvement obtained by using hard contact lenses post corneal cross-linking surgery [8].

This was not the first patient or trial; we've used to use this method on a wide range of patients, but it was a challenge for us, particularly after the cross-linking procedure and the ongoing fluctuation of k-readings. We utilized hard CL with BC 7.4 mm, Q (Diameter) 9.50, SE-1.00 for right eye and final power (-3.50) DS, and the other one for left eye with BC 6.7 mm, Q 9.30, SE -4.00 and final power (-9.50) DS, based on the clinical findings and refractive errors. The final vision we had approached for each eye after CL implementation was 6/6 (RT), 6/9 (LT). With comprehensive comfort and clear vision, the patient was delighted [9].

## CONCLUSION

We could evaluate the lens fitting by observing the CL on a slit-lamp; both lenses were effectively centered on each and every single eye, the alignment of the lens showed the back surface of the lens matching with the cornea over most of the surface, and the lens movement was smooth and effortless. And the final fitting we seem to have been able to achieve was both appreciated and satisfactory. Overall, despite the challenges of utilizing hard contact lenses due to the environment conditions, patient behavior, diagnostic, and clinical findings; it is still the preferred option for minimizing VA decline and providing clear VA.

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