Visual quality improvement in refractive surgery
Gortzak, R.

Citation for published version (APA):
HERPES SIMPLEX VIRUS KERATITIS AFTER LASER IN SITU KERATOMILEUSIS
ABSTRACT

PURPOSE: To report two cases of herpes simplex virus (HSV) keratitis after laser in situ keratomileusis (LASIK).

METHODS: Interventional small case series. Two patients underwent uneventful LASIK. History of herpes labialis in one patient and herpetic eye disease 10 years prior to intervention in the other patient was reported. Both patients developed stromal herpetic keratitis 6 weeks and 2 years after the procedure, respectively.

RESULTS: Treatment consisting of topical steroid drops and topical and systemic antiviral therapy was administered. Recurrences of the herpetic keratitis were seen after tapering of the topical steroids; four and three recurrences were observed, respectively. Final visual acuity was 6/9 in both cases.

CONCLUSIONS: Herpetic keratitis after LASIK is an uncommon, possibly under-reported, entity. Even patients without history of herpetic eye disease can present with this complication. Oral antiviral prophylaxis may be appropriate when performing LASIK on patients with a history of ocular or systemic HSV infection.
Controversy exists regarding the potential triggers of recurrent ocular herpes simplex virus (HSV) disease, including upper respiratory tract infection, fever, seasonal conditions, and psychological stress. Eye trauma, including refractive procedures, has also been proposed for this potential triggering effect.

In animal models, reactivation of latent HSV has been described following excimer laser photokeratectomy and laser in situ keratomileusis (LASIK). In humans, only three cases of reactivated HSV following LASIK have been reported previously.

We present two cases of HSV keratitis following LASIK in two patients with previous herpes labialis and herpetic eye disease, respectively.

**CASE REPORTS**

**Case 1**
A 32-year-old woman underwent bilateral LASIK for myopia. Preoperative refraction was S -4.25 C-1.75x 13° in the right eye and S-4.25 C-1.50x 8° in the left eye.

Uncorrected visual acuity (UCVA) was 6/120 in both eyes. Best spectacle-corrected visual acuity was 6/6 in both eyes. Ocular history was positive for herpes labialis.

Slit-lamp examination of anterior and posterior segments was normal. Cornea was completely clear bilaterally.

Laser in situ keratomileusis was performed with the Nidek EC-5000 excimer laser (Nidek Technologies, Gamagori, Japan) after a nasally hinged 160-μm flap was made by the Nidek 2000-MK microkeratome with an 8.5-mm suction ring. The laser procedure was not performed in the left eye because buttonhole formation in the center of the flap.

One day postoperatively, UCVA was 6/15 in the right eye, and the flap was clear. Dexamethasone and chloramphenicol drops four times a day were started.

Six weeks after the procedure and while on dexamethasone drops twice daily, the patient reported reduced vision in her right eye. Uncorrected visual acuity was 6/24. Slit-lamp examination revealed edema of the inferior cornea and keratic precipitates on the endothelium (Fig). Significant irregular astigmatism was observed on corneal computerized keratopography. Steroid drops were prescribed eight times a day. Because slow improvement was observed, primary HSV disciform keratitis was not suspected and antiviral therapy was not started. One month later, epithelial dendrites appeared, and acyclovir ointment five times a day and acyclovir tablets 400 mg five times a day were started. Uncorrected visual acuity improved to 6/9, and only a minimal haze at corneal interface remained.

During 18-month follow-up, four recurrences of the disciform herpetic keratitis occurred, always related to tapering of the steroid drops, and responding well to topical therapy. During the attacks, UCVA decreased to 6/24 with irregular astigmatism, returning to 6/9 after resolution.
Case 2
A 39-year-old woman underwent bilateral LASIK for myopia performed elsewhere. Two years after the procedure, she reported pain and reduced vision in the right eye. Uncorrected visual acuity was 6/120. Ocular history was positive for ocular herpes that occurred in her late teens, with quiescence thereafter. Ocular examination revealed corneal epithelial dendrites, stromal edema, and Descemet’s folds. Treatment consisting of valacyclovir tablets 500 mg three times a day, acyclovir ointment five times a day, and dexamethasone drops four times a day was started. Uncorrected visual acuity improved to 6/6, and only a minimal stromal haze was observed. Three recurrences of the herpetic stromal disease were observed, twice after tapering of the topical steroids drops and once after discontinuation of the oral valacyclovir. During reactivation, UCVA decreased to counting fingers with remarkable recovery in between attacks. At present, 2 years after the first HSV recurrence, UCVA remains 6/6. During the past 10 months, the patient has not received any topical or systemic treatment.
DISCUSSION

Each year an estimated 48,000 cases of active HSV eye disease present in the United States, and hundreds of thousands LASIK procedures are performed annually. Therefore, a larger number of cases of recurrent HSV disease after LASIK would be expected to occur than previously reported.\textsuperscript{5,7} Furthermore, inactive herpetic eye disease is not considered an absolute contraindication for refractive procedures. Although LASIK is theoretically less traumatic to the corneal epithelium than surface photorefractive keratectomy, both procedures have been demonstrated to reactivate HSV in a rabbit latency model.\textsuperscript{3} It has been suggested, based on results on this same model,\textsuperscript{8} that patients with a history of recurrent ocular herpes may be able to safely undergo LASIK with less risk of a recurrent herpetic episode while on valacyclovir antiviral prophylaxis, although authors noted that controlled clinical trials have yet to be performed. The Herpetic Eye Disease Study Group did not find relationships between psychological stress, systemic infection, sunlight exposure, menstrual period, contact lens wear or eye injury, and recurrence of ocular HSV disease. In the three previously reported cases, and in our present two cases, the trigger for the recurrence of ocular HSV disease is unclear. It is difficult to ascertain whether the LASIK procedure played a role. We can only suggest a temporal relationship between LASIK procedure and ocular HSV reactivation. In reported cases, presentation occurred between 1 day and 2 weeks after the procedure.\textsuperscript{5,7} Two patients had previous ocular HSV disease,\textsuperscript{5,7} and one patient had herpes labialis.\textsuperscript{6} Prophylactic oral famciclovir therapy was started 1 day after LASIK in one patient,\textsuperscript{5} but the recurrence occurred the day after. Final visual acuity was 6/6 in one case,\textsuperscript{5} and two cases needed penetrating keratoplasty because of perforated ulcer\textsuperscript{6} and one case with bacterial keratitis.\textsuperscript{7} Case 1 presented 6 weeks after the LASIK procedure, but case 2 is atypical because of the large interval of 2 years between the LASIK procedure and the reactivation of the ocular HSV disease. Oral acyclovir therapy has been shown to reduce recurrences of HSV stromal keratitis,\textsuperscript{9} but the benefit of acyclovir extends to patients whose last episode occurred up to 1 year before. None of the three previous reported patients or our two patients had ocular or labialis HSV disease 1 year prior to the LASIK procedure. Reactivation of ocular HSV disease may be an underreported entity, and the supplementation of steroid drops that LASIK patients sometimes receive can mask the florid typical picture of stromal disease and be enough for resolution of the attack. Furthermore, prolonged steroid regimen after LASIK can potentiate viral replication if viral shedding occurs. Patients with a history of ocular or nonocular HSV disease undergoing refractive procedures need to be informed of the remote risk of disease reactivation. A prophylaxis of systemic antiviral therapy before and after the procedure may be necessary, but the time of onset and discontinuation of the treatment are unknown to date. Perhaps patients with even a remote history of HSV should not be on a prolonged steroid regimen. Appropriate management of this complication is crucial for maintaining good postoperative visual results.
REFERENCES


