2013-9-11 19:23:27

print_now

Date published online: February 2009

REFRACTIVE SURGERY

Interface fluid syndrome … in depth

by Matt Young EyeWorld Contributing Editor

Stage 4 DLK with stromal melting; interface fluid should not be confused with DLK, although sometimes, it is
Source: Francis Mah, M.D.

A new variation of interface fluid syndrome (IFS) has been reported—this time both after LASIK and keratoplasty—thanks to a meddlesome scar.

In an exclusive interview with EyeWorld, Richard S. Hoffman, M.D., clinical associate professor of ophthalmology, Casey Eye Institute, Oregon Health & Science University, Portland, the lead study author, explained how "persistent interface fluid syndrome" differs from the traditional syndrome and why that should matter in terms of your treatment response.

But first, let's describe the case, reported in the August 2008 issue of the Journal of Cataract & Refractive Surgery.

A 65-year-old woman had multiple surgical procedures in her right eye over 13 years. These included (in chronological order) ALK in both eyes, LASIK in the right eye, cataract surgery, penetrating keratoplasty, another LASIK procedure, and finally a LASIK enhancement.

Subsequently, she was diagnosed with graft rejection and put on prednisolone acetate 1%. With no improvement, she was later found to have interface fluid secondary to steroid-induced glaucoma. Glaucoma drops were administered, but again, without improvement.

At that point, visual acuity was 20/25 in the right eye but only count fingers in the left.

"Slitlamp examination showed a central pocket of fluid in the LASIK interface in the right eye that was isolated inside the corneal graft-host margin," Dr. Hoffman reported in the August 2008 issue of the Journal of Cataract & Refractive Surgery. "Interface fluid syndrome secondary to endothelial failure was diagnosed, and Descemet-stripping endothelial keratoplasty (DSEK) was performed in the right eye several weeks later."

But DSEK didn't work either. The anterior fluid pocket remained unchanged.

"At a biannual DSEK forum, the case was discussed and flap elevation and repositioning were recommended to facilitate resolution of the interface fluid," Dr. Hoffman reported. "Elevation of the LASIK flap was complicated by a significant circumferential adhesion at the junction of the penetrating graft-host margin and the LASIK keratectomy. On the first postoperative day, interface fluid was not present and remained resolved."

EyeWorld: Ophthalmologists have known about interface fluid syndrome (IFS) for a while, haven't they?

Dr. Hoffman: Yes, the syndrome has been around for a while. It's usually associated with steroid-induced glaucoma. Patients will have had LASIK, they are put on steroid drops, the pressure goes up, and there's fluid in the interface. Often, it's mistakenly diagnosed as diffuse lamellar keratitis (DLK). Some surgeons then administer more steroids and the pressure becomes higher. The pressure problem isn't correctly diagnosed because you can have an artificially low pressure reading over the central cornea. Ultimately, misdiagnosis of the interface fluid in this manner can lead to lost vision. But if you stop the steroids, the fluid goes away.

EyeWorld: Can anything else cause traditional IFS?

Dr. Hoffman: There are reports of IFS after endothelial damage.

EyeWorld: So why was this case of interface fluid special?

Dr. Hoffman: This patient was diagnosed as having steroid-induced glaucoma—but that probably was not correct. The pressure was probably relatively normal. Notably, pressure was lowered with glaucoma medications and the interface fluid didn't go away. Instead, the patient had an ALK that went bad, cataract surgery, a corneal transplant, and LASIK. The only potential cause in my mind was that the endothelium was not good. In retrospect, it's possible the endothelium was functional, but fluid interface did not go away because of a certain scar.

EyeWorld: So what happened next?

Dr. Hoffman: Another surgeon recommended lifting up the flap, but there were skeptics, including myself. If the fluid was from bad endothelium, it would just come back, I thought. But interestingly, when we did lift up the flap, the fluid didn't come back.

EyeWorld: Why not?

Dr. Hoffman: In order for the interface to accumulate fluid, the flap has to change shape slightly. Once fluid is present and the LASIK flap changes its contour to accommodate it, adherence of the peripheral flap with a circumferential scar at the graft-host junction creates a potential space that does not disappear without breaking the scar and repositioning the LASIK flap. The condition is probably rare, but in any LASIK patient who undergoes a transplant, it could happen.

EyeWorld: Why was there a scar present in the first place?

Dr. Hoffman: A scar develops when you do transplant where the donor attaches to the recipient at the graft-host margin. All penetrating keratoplasties have scars. If the patient had had LASIK inside the graft-host margin, it wouldn't have been a problem. That's because a LASIK flap created inside the corneal transplant diameter doesn't intersect or cut through the graft-host scar. But most of the time grafts are normally 8 mm, and most people cut a 9 mm LASIK flap that goes through the graft-host margin.

EyeWorld: Given your experience, would you now say that LASIK should

be contraindicated for patients with penetrating keratoplasty?

Dr. Hoffman: Definitely not. I think there's a strong possibility of a patient developing persistent interface fluid if he had a penetrating keratoplasty, then LASIK, and then developed interface fluid. But if you diagnose IFS and lower the pressure, and if fluid is still there, then lift up the flap. The incidence of this problem, though, must be rare.

Editors' note*: Dr. Hoffman has no financial interests related to his comments.*

Contact information

Hoffman: 541-687-2110, rshoffman@finemd.com