International Journal of Medical Ophthalmology

E-ISSN: 2663-8274
P-ISSN: 2663-8266
www.ophthalmoljournal.com
IJMO 2021; 3(1): 136-137
Received: 08-04-2021
Accepted: 13-05-2021

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How do managing post-lasik neuropathic complaints

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DOI: https://doi.org/10.33545/26638266.2021.v3.i1b.174

Abstract
From dry-eye symptoms to severe neuropathic pain, refractive surgeons should be aware of these possible complaints.

Keywords: Post-lasik, dry-eye, neuropathic complaints

Introduction
For a majority of LASIK patients, recovery will go as expected, healing fully within three to six months. However, refractive surgeons may encounter the rare patient who continues to suffer from dry-eye symptoms with no relief, some of which can be severe and disruptive to their daily life and mental health. We spoke with cornea and refractive surgery specialists who offered guidance on treating these cases.

Post-lasik chronic dry eyes
Historically, one of the most appealing aspects of LASIK has been its quick recovery time. Patients will see more clearly within 24 hours and they can usually return to their normal activities within just a couple of days of surgery, yet the eyes themselves can take several months to fully heal. Dry-eye symptoms are the most common complaints in the early postop period, occurring in as much as 60 percent of patients one month following LASIK. Although there's no surefire way to predict the severity of dry eye that individual patients may experience, studies have shown that factors such as sex, ethnicity, contact lens use, eyelid anomalies and diabetes have been associated with increased risk of dryness. Extensive research and education has been undertaken by the field of ophthalmology to treat the ocular surface prior to surgery, and more often than not, it's the group of patients who don't tolerate contact lens wear that seeks out refractive surgery and may need more aggressive treatment. Lasik Surgeon with treatment to optimize the ocular surface. "They stop wearing contact lenses, then we treat with cyclosporine drops, sometimes doxycycline orally, and Omega-3-7-9 to help with gland dysfunction. In some patients where we see intermittent punctate keratitis preoperatively we might even do in Clinically treatments like Intense Pulsed Light, Lipi Flow or Tear Care in advance to get their ocular surface ready for LASIK.
It's really hard to distinguish these patients from the broad variety of patients who might see well, but have various types of discomfort in the immediate post-op period. Most are treated as 'dry eye' with lubricating drops and punctal occlusion. Some may be given drops that improve tear secretion like cyclosporine or, a more prolonged course of tropical steroid or with auto logous serum tears.

Post-lasik neuropathic pain
More severe and rarer are persistent and debilitating symptoms that have been classified as neuropathic corneal pain, a subtype of dry-eye syndrome. Many of these patients didn't present with dry-eye symptoms prior to LASIK, adding to the mystery around the contributing factors to this conditions "The flap is a different kind of trauma and generally eyes did well after LASIK, but when you make the flap, you cut nerves that innervate the front of the eye," she says. "Those nerves are important for sensation, and just as important for detecting evaporation or change in temperature; those nerves are part of the homeostasis of the ocular surface. They're part of the pathway that causes us to tear and secrete mucin, and cutting the nerves themselves doesn't cause pain, but eyes that have had their nerves cut may have altered sensations; they may feel dry during the healing process, the eyes may actually be dry, and we think that, in a small fraction of patients, cutting these nerves is what triggers pain syndrome."

Common symptoms

In most patients this is transient and below their detection, some ophthalmologist believes, initially we would treat it with the usual therapies we use for controlling POST-OP inflammation, dry eye or blepharitis. But, if there's persistent discomfort in the setting of a normal examination then we begin to think of this as neuropathic pain."

It's hard to know if the problem is neuropathic until treatment plays out. For instance, patients may complain of rainbow glare or have light sensitivity. Those patients may fall into this category of postop discomfort or pain. The complaints are visual, but clinicians tend to lump these all together and give them lubricating drops and tell them they'll get better and most of them do. However, we know that the transient light sensitivity syndrome, which appears in the second to fourth week after LASIK, may require systemic steroids. Rainbow glare is an optical phenomenon, and some of those patients benefit from lasering the flap, but when someone comes back to the clinic for their one day or one week check and they're uncomfortable or unhappy, it's hard to know if they're the expected dry eye or one of the other issues until it starts to play itself out.

Management of neuropathic pain

Usual course of therapies would include resuming topical steroids. "Medications used systemically for atypical pain are useful, such as pregabalin or gabapentin, Additional therapies such as OMEGA-3-7-9, scleral lenses, lacosamide, non-steroidal agents, cyclosporine, tacrolimus, amniotic membrane and auto logos tears have also been reported to be effective in some patients. Acupuncture or botulinum toxins have also been reported effective in some patients. As eyes are healing, it is important to reduce the signaling, as that those eyes are on high alert and they tend to send false alarms at the slightest little trigger: bright light; dryness; evaporation. We have to make the eyes less triggerable, it is better to use topical steroids, often choose a soft steroid like loteprednol or fluorometholone. A little is good; a lot is not better. If patients don't respond to a little soft steroid then don't necessarily go for more or stronger steroid, but add a different drug or topical agent and/or a different approach. Offer a bandage soft lens or a scleral lens to dampen the signaling, but if the nerves are still hyper alert and they're super sensitive, then that's where systemic therapy comes using. Due to its safety profile and efficacy for peripheral nerve pain, gabapentin is a common initial therapy. We can typically start with 300 mg at bedtime and go up over a couple of days to 300 mg three times a day or four times a day, we would increase the night time dose to 600 mg. The main side effect is sedation, but you want to help the patient get relief so they can go about their business and not be bothered. In more chronic cases or if the gabapentin doesn't work, we might consider a bedtime dose of nortriptyline, or switch to pregabalin or duloxetine.

There may also be value in the use of serum tears or platelet rich plasma drops, although, As far as getting the eye to heal properly or getting the nerves to heal properly, we shoul focus on reducing inflammation initially, but there's value to serum tears or PRP drops certainly, at least as a lubricant, and because they contain molecules that can modulate inflammation and promote nerve healing, Serum tears have been shown to promote epithelial healing, so serum tears or PRP or other blood products aren't a bad idea in someone who is unexpectedly symptomatic in the early post-op period. In the chronic period after a year out, as not sure what the value is, so we can probably only use serum tears in the earliest healing period. That's probably where the greatest potential for biologics lies. Despite the rarity of neuropathic corneal pain, studies have investigated comorbidities that may increase a person's risk, such as chronic widespread pain, irritable bowel syndrome and pelvic pain, as well as fibromyalgia, autoimmune diseases and thyroid diseases.

We now know that patients who have other pain syndromes, such as low back pain, complex regional pain, fibromyalgia and migraines - those patients are more likely we think to develop persistent post-op pain syndrome like post LASIK neuralgia, as part of refractive surgery screening, it's important to consider if any of these are in the background and if patients are taking drugs for anxiety or depression. Depression is a risk factor for persistent postoperative pain. It's likely that before we understood this as well as we do now, there were patients who were operated on who nowadays, we might screen out. We found a common mutation, we could test and screen out these patients, but so far there doesn't seem to be one gene, so we can't say if it's a nerve, collagen or inflammation gene, however, if a candidate has a first-degree relative who has post-LASIK pain syndrome, we would hesitate to recommend LASIK for that candidate.

Conclusion

Neuropathic pain is atypical, although we see it after refractive surgery, cataract surgery; can be seen it after a patient got sunscreen in their eyes. It can happen with any kind of insult to the eye. There's probably less than 25 to 30 patients a year in the (South Western India) who really develop persistent ongoing issues that don't resolve after six to nine months, but it is still something that's important to consider.

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