

# MALONEY VISION INSTITUTE CLINICAL UPDATE

## Infectious versus Non-Infectious corneal Infiltrates

Corneal infiltrate is an accumulation of white blood cells in the cornea in response to infection, inflammation, allergy, or a toxic reaction in the cornea.

In this clinical update we will illustrate the differentiating factors between infectious and non-infectious (inflammatory) infiltrates after LASIK.

Diffuse Lamellar Keratitis (DLK) is an example of inflammatory infiltrative keratitis. DLK is a term used for a syndrome when diffuse or multifocal Lamellar infiltrates are seen after LASIK or related lamellar procedures (*Figure 1*). These infiltrates have the following characteristics:

1. They are confined to the interface, extending neither anteriorly into the flap nor posteriorly into the stroma.
2. They are diffuse and scattered through a large area.
3. There are multiple faint foci.
4. The infiltrates may be more concentrated around surgical debris.
5. There is little or no anterior chamber reaction.
6. There is no overlying epithelial defect.
7. The conjunctiva is relatively non-inflamed, and there is little or no ciliary flush.

The etiology of these infiltrates is uncertain. However, many sources have been postulated to be the triggering mechanisms, including debris from microkeratome, meibomian secretion, and many others.

Marginal infiltrates are another example of inflammatory infiltrative keratitis that sometimes occurs with contact lens wear (*Figures 2 and 3*), or after a LASIK procedure (*Figure 4*). Inflammatory infiltrates sometimes occur centrally, as in cases of EKC (*Figure 5*). These infiltrates have the following characteristics:

1. They are located sub-epithelially and do not extend posteriorly.
2. They are relatively small in size.
3. There are multiple foci of infiltrates.
4. The infiltrates are located in the peripheral part of the cornea.
5. There is little or no anterior chamber reaction.
6. There is no overlying epithelial defect.
7. The conjunctiva is relatively non-inflamed, and there is little or no ciliary flush.



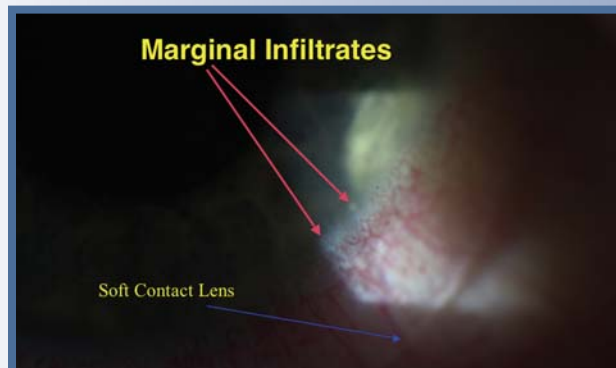
**Figure 1:**

This is a presentation of Diffuse Lamellar Keratitis (DLK) seen one day after LASIK procedure. The dosage of the steroid was increased to one drop of flarex every hour while the patient was awake for the first three days, then it was reduced to one drop every three hours until it was resolved.



**Figure 2 and 3:**

These photographs illustrate multiple foci of infiltrates in the periphery of the cornea close to the limbus. Note the conjunctival injection in the eye.



An infiltrate that might be infected is usually differentiated by the following characteristics (Figure 6):

1. A single or dominant foci.
2. Extension posteriorly into the stroma and/or anteriorly into the flap when LASIK is done.
3. Increasing opacity over time.
4. Stromal loss.
5. Anterior chamber reaction.
6. An epithelial defect if the infection develops on the surface or if an interface infection extends anteriorly.
7. Conjunctival inflammation with ciliary flush and discharge.

The treatment of choice for inflammatory infiltrates such as those in DLK (Figure 1) or peripheral marginal infiltrates (Figures 2, 3 and 4) is with steroid eye drops. The type of steroid and its dosage depends on the severity of the condition. As a general rule, the more severe the condition the stronger the medication and/or the higher the dosage should be. Typically, increasing the dosage of a mild steroid used in post-operative LASIK cases is sufficient to reduce the inflammation. In some severe cases irrigation under the flap is warranted.

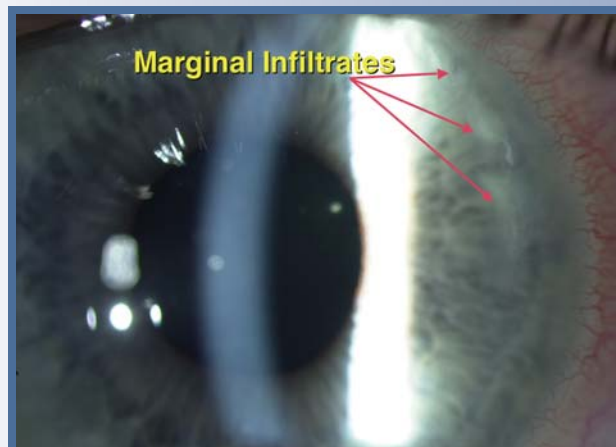
For the treatment of an infectious infiltrate or even one that you suspect to be infectious, the treatment of choice is antibiotic eye drops. The dosage depends on the severity of the infection. The details of the management of such cases is beyond the scope of this clinical update.

Over the years we have made sure that in our surgical environment, the necessary steps are taken intra-operatively to ensure the highest standards to minimize the occurrence of such cases.

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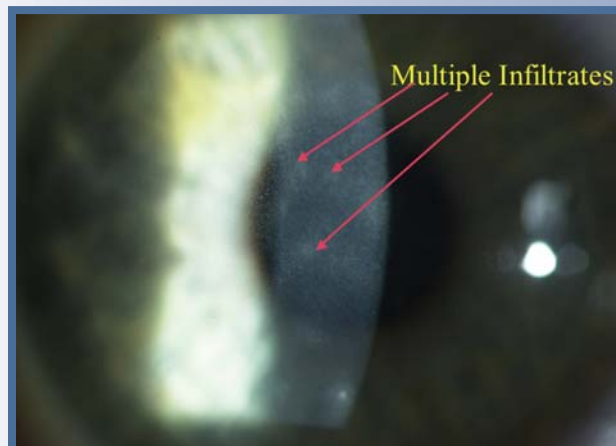
## MALONEY VISION INSTITUTE

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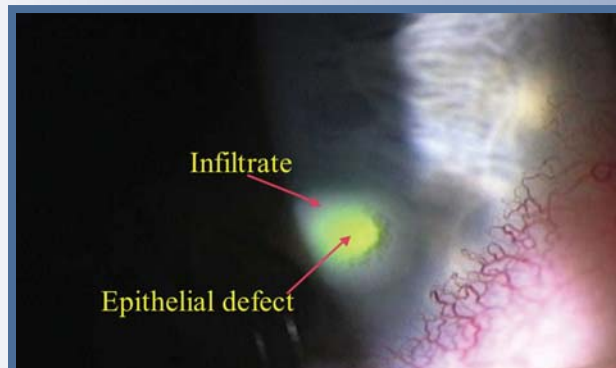
**Figure 4:**

This photograph illustrates multiple foci of infiltrates around the edge of the flap one day post LASIK procedure. Note the conjunctival injection in the eye. This is another example of infiltrates that can occur because of an inflammatory response, for which the treatment of choice is steroid eye drops.



**Figure 5:**

Photograph of an eye with multiple small scattered infiltrates without any epithelial defect from EKC (adenovirus kerato-conjunctivitis).



**Figure 6:**

Photograph of an eye with a peripheral corneal ulcer. Please note that there is only one large foci of infiltrate with an overlying epithelial defect and conjunctival injection. The treatment of choice is antibiotic eye drops.