flap stability. Within several weeks, keratocytes begin to lay down new collagen at the cut edge of the Bowman layer, and eventually a fine scar is established at the edge of the flap. However, minimal healing occurs across the stromal interface. Late dislocation from blunt trauma has been reported many years after LASIK. This can occur if the shearing force exceeds the strength of the peripheral Bowman layer–level healing. Flap dislocation requires urgent treatment to replace the flap in its proper anatomical position. The surgeon should make sure that there is no epithelium on the underside of the flap or in the interface, a situation that significantly increases the chances of epithelial ingrowth.

**LASIK-Interface Complications**

**Diffuse lamellar keratitis**

The presentation of diffuse lamellar keratitis (DLK) (Fig 6-12) can range from asymptomatic interface haze near the edge of the flap to marked diffuse haze under the center of the flap with decreased BCVA. The condition represents a nonspecific sterile inflammatory response to a variety of mechanical and toxic insults. The interface under the flap is a potential space; any cause of anterior stromal inflammation may trigger the accumulation of white blood cells therein. DLK has been reported in association with epithelial defects that occur during primary LASIK or during enhancement, or even months after

![Images](image.png)

**Figure 6-12**  Diffuse lamellar keratitis (DLK). **A,** High magnification image of stage 2 DLK. Note accumulation of inflammatory cells in the fine ridges created by the oscillating microkeratome blade. **B,** Stage 3 DLK showing dense accumulation of inflammatory cells centrally. **C,** Stage 4 DLK with central scar and folds. (Parts A and B courtesy of Roger F. Steinert, MD; part C courtesy of Jayne S. Weiss, MD.)
the LASIK procedure from corneal abrasions or infectious keratitis. Other reported inciting factors include foreign material on the surface of the microkeratome blade or motor, trapped meibomian gland secretions, povidone-iodine solution (from the preoperative skin preparation), marking ink, substances produced by laser ablation, contamination of the sterilizer with gram-negative endotoxin, and red blood cells in the interface. The inflammation generally resolves with topical corticosteroid treatment alone without sequelae, but severe cases can lead to scarring or flap melting; therefore, early detection and management is important.

DLK is typically classified by the stages described in Table 6-2. Although stages 1 and 2 usually respond to frequent topical corticosteroid application, stages 3 and 4 usually require lifting the flap and irrigating, followed by intensive topical corticosteroid treatment. Oral corticosteroids may be used adjunctively in severe cases. Some surgeons use topical and systemic corticosteroids in stage 3 DLK instead of, or in addition to, lifting the flap. Recovery of vision in DLK is usually excellent if the condition is detected and treated promptly.

A surgeon should have a low threshold for lifting or irrigating underneath the flap in suspected cases of severe DLK. Lifting the flap allows removal of inflammatory mediators from the interface and direct placement of corticosteroids and NSAIDs to suppress inflammation and necrosis. If there is any suspicion that the inflammation is due to infection, lifting the flap and obtaining samples for corneal cultures of the interface should be considered. Topical antibiotics can also be placed in the flap interface at the same time. In cases of suspected DLK not responsive to corticosteroids within 7–10 days of initiation, the diagnosis should be reconsidered, as infectious keratitis or pressure-induced stromal keratopathy (PISK, discussed later) can mimic DLK and require corticosteroid cessation.


**LASIK infectious keratitis**

It is important to differentiate sterile interface inflammation from potentially devastating infectious inflammation. Increased pain and decreased vision are the primary indicators of infection. However, postoperative discomfort is common, so it is difficult