# Lipid Keratopathy: A Case Report

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**ABSTRACT**

Lipid keratopathy is a rare corneal disorder characterized by the deposition of lipid material within the corneal stroma, leading progressively to opacification and visual impairment. This condition may occur secondary to ocular diseases such as chronic inflammation, trauma, neovascularization, or infections, but it can also be associated with systemic lipid metabolism abnormalities. In some cases, however, it arises without any identifiable predisposing factor and is classified as idiopathic.

We report the case of a 47-year-old woman who presented to our ophthalmology department with progressive corneal opacification. Clinical examination revealed stromal lipid deposits consistent with lipid keratopathy, in the absence of prior ocular pathology or systemic disease, highlighting the importance of considering idiopathic forms in the differential diagnosis.

***Keywords :*** *Lipid keratopathy; Lipid deposition; Corneal neovascularization.*

## 1. INTRODUCTION

Lipid keratopathy (LK) is a relatively uncommon corneal pathology defined by the abnormal accumulation of lipids, most often cholesterol and neutral fats, within the stromal layers, leading to progressive loss of corneal transparency. The resulting opacification may gradually extend toward the visual axis, ultimately impairing visual acuity if left untreated [1]. The pathophysiological mechanism generally involves lipid extravasation from abnormal or newly formed vessels, supported by the observation that LK frequently occurs in areas of corneal neovascularization or long-standing stromal scarring.

LK may present in two distinct forms. Primary or idiopathic LK, which is rare, occurs in the absence of prior ocular pathology or systemic lipid disorders. Its etiology remains poorly understood, although subtle, subclinical vascular changes have been suggested. Secondary LK, the more common form, arises as a consequence of various ocular insults. These include infectious keratitis, chronic inflammatory diseases, interstitial keratitis, previous corneal trauma, and postsurgical changes, all of which promote neovascularization and increased vascular permeability [2]. Systemic dyslipidemia may also contribute to lipid deposition in some cases, although this association is less frequent.

From a clinical standpoint, LK typically manifests as yellow-white stromal deposits located adjacent to or surrounding neovascularized regions. The extent and density of lipid infiltration correlate directly with the degree of vascularization and chronicity of the underlying condition. Without intervention, the disorder may progress and lead to irreversible visual impairment.

## 2. CLINICAL CASE

We report the case of a 47-year-old woman with a history of poorly controlled diabetes and hypercholesterolemia under treatment, who presented to an ophthalmological consultation for a progressive corneal opacification with the notion of a sensation of grains of sand.

The ophthalmological examination showed a visual acuity of 10/10 in both eyes, the slit lamp examination found a golden yellow infiltrate in the cornea located in the upper external quadrant of the cornea. This infiltrate started in the areas near the boundary between the cornea and the sclera, and followed the thickness of the cornea, being denser in its anterior part and extending to the pupil. Deep blood vessels appeared around the lesion, originating from the clear edge of the cornea. The central margins of the lesion were polished, with crystals present only in the posterior portion, while the overlying epithelium was intact and did not react to fluorescein (Figure 1). The rest of the examination as well as the contralateral eye was normal.

The patient was treated with topical corticoids and artificial tears with close monitoring of the opacity.

The evolution was marked by a stagnation of the opacity with a slight decrease of its coloration.

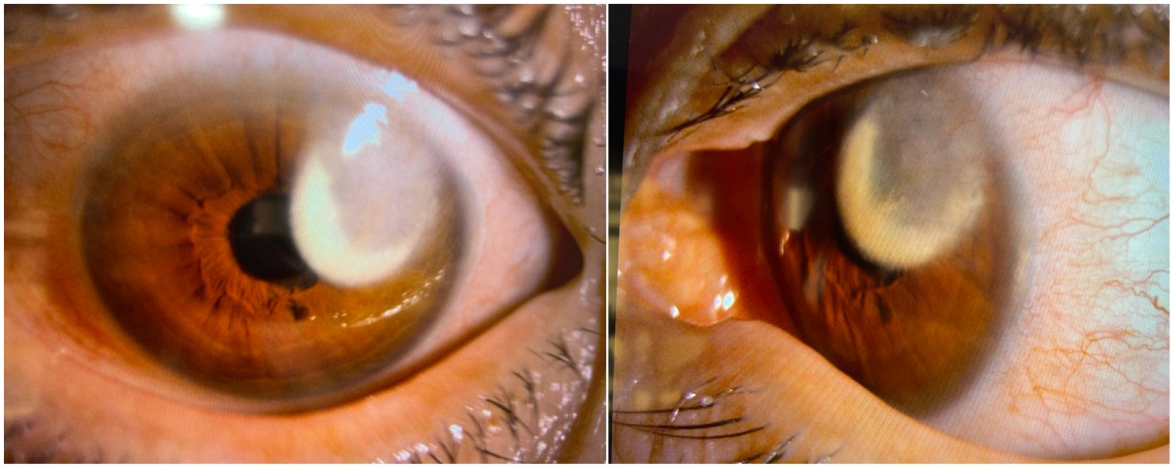

*Figure 1: lipid depletion of the neovascular vessel tips from the sclera to the pupil.*

## 3. DISCUSSION

Lipid keratopathy (LK) is an ocular condition in which lipid deposits form on the cornea [3]. It involves a disturbance in the balance between lipid production and elimination in the cornea, which may be caused by altered production of lipid degrading proteins, abnormal neovascularization, alteration of the corneal lipid layer, or a combination of these factors [4], Lipid keratopathy may be primary or secondary [5].

Treatments for lipid keratopathy can be diverse [6], such as steroid therapy, fluorescein-potentiated argon laser therapy, photodynamic therapy, fine-needle diathermy and penetrating keratoplasty [7–8–9].

There are no specific measures to prevent keratopathy [10–11]. Patients should follow good ocular hygiene and take precautions such as using products to moisten the cornea and taking regular breaks to reduce eye strain. Patients with a genetic predisposition should have an ophthalmologic examination twice a year.

## 4. CONCLUSION

LK is a metabolic keratopathy resulting from abnormal lipid deposition within the corneal stroma. Early recognition of the condition and timely management of the underlying causes—particularly inflammation and neovascularization—are essential to halt disease progression and preserve corneal transparency. When appropriate therapeutic interventions such as anti-angiogenic treatment, control of ocular inflammation, or correction of systemic lipid abnormalities are initiated promptly, the visual prognosis is generally favorable.

However, if the disease is left untreated or continues to progress, the persistent accumulation of lipids may extend toward the visual axis, leading to significant and sometimes irreversible visual impairment. In advanced stages, dense stromal opacification can result in profound vision loss,

underscoring the importance of early diagnosis, close monitoring, and comprehensive management in patients with lipid keratopathy.

**Ethical Consideration**

This study was conducted in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and the Helsinki Declaration of 1975, as revised in 2000. The authors declare that they have obtained the necessary authorizations for publication.

**CONFLICTS OF INTEREST**

All authors declare that they have no conflicts of interest.

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