Pterygium excision after LASIK

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1. Introduction

Pterygium is a highly prevalent ocular degenerative condition that manifests as a fleshy triangular growth of fibrovascular tissue onto the cornea and can result in irritating dry eye symptoms or astigmatism, necessitating its excision. Risk factors for the development of a pterygium include older age, male gender, outdoors occupation, living in a rural environment, and prolonged exposure to sunlight. In a recent meta-analysis which included 415,911 subjects from 24 countries, the prevalence of pterygia was found to be 12%, reaching 53% in a series from China.\textsuperscript{1}

Since its introduction in the 1990s, laser-assisted in situ keratomileusis (LASIK) surgery has gained wide popularity with 1.4 million cases performed at its peak in 2007.\textsuperscript{2} The procedure consists of creating a corneal flap using a mechanical microkeratome or a femtosecond laser followed by corneal ablation and reshaping using the excimer laser to achieve emmetropia. The flap is then laid back in place and allowed to adhere to the underlying corneal bed via endothelial pump function. It is the most commonly performed refractive procedure worldwide.

Given the high prevalence of both conditions, their coexistence is increasingly likely with pterygia occurring in eyes that have already undergone LASIK. In this report, we describe the management of such a case of a symptomatic pterygium involving a LASIK flap.

2. Case description

A 45-year-old female presented with irritation and foreign body sensation in the right eye. Her ocular history was remarkable for an uneventful LASIK surgery on both eyes a number of years back. Examination revealed a pterygium temporally in the right eye extending approximately 4mm into the cornea and involving the LASIK flap (Fig. 1). There was no evidence of a pterygium in the left eye. Conservative treatment was incrementally started with artificial tears, loteprednol, cyclosporine A 0.05%, and punctal occlusion with no improvement in her symptoms. Surgical excision was therefore planned.

Pterygium excision was performed in a standard fashion in the operating room. After administration of a retrobulbar block, the head of the pterygium was grasped with 0.12mm forceps and gently peeled off the LASIK flap. Although a surgical plane was sometimes present, areas of deeper adhesions were often noted necessitating frequent use of a crescent blade to sever these adhesions and reduce traction on the LASIK flap. A diamond bur was then used to smooth the cornea. The conjunctival portion of the pterygium and surrounding tenon were excised, and the resulting defect covered with a similarly sized conjunctival autograft, affixed with fibrin glue.

Postoperatively, the patient maintained her 20/20 vision and was relieved from her ocular symptoms (Fig. 2). Significant improvement on topographic indices was noted with resolution of the irregular astig-
matism induced by the pterygium (Fig. 3). Pathologic examination showed the typical elastotic degeneration and no corneal tissue was identified at the edges, indicating that the flap remained intact after surgery (Fig. 4). The postoperative course was complicated by the formation of a pyogenic granuloma on the second postoperative month which responded well to steroid eyedrops.

3. Discussion

This is the first report describing the excision of a pterygium that is involving a LASIK flap. Martins et al. reported a case of an early pterygium growing in the more typical nasal location and involving the LASIK flap of a 42-year-old male. Similar to our case, anterior segment OCT showed full-thickness involvement of the LASIK flap. While their case was asymptomatic and was managed non-surgically with observation, we were able to confirm flap involvement intraoperatively.

Martins et al. attributed the formation of the pterygium to chronic inflammation caused by the refractive surgery. Indeed, wound healing after LASIK surgery is accompanied by the release of various cytokines and growth factors, including IL-12, eotaxin, monocyte chemoattractant protein (MCP)-1 and IL-8. Additionally, similar inflammatory factors are involved in the formation of pterygia and recurrent pterygia. A number of observations in our patient seem consistent with this hypothesis, namely the unusual temporal location, age of the patient, deeper penetration into the flap, unilaterality, and the later formation of a pyogenic granuloma. However, the true nature of the underlying chronic inflammation remains to be elucidated. Pathologic examination of the excised tissue showed no unusual histologic features.

Surgical excision, was reminiscent of that of a recurrent pterygium rather than a primary one. We elected to excise the head of the pterygium first rather than starting with the body, to avoid tension on the LASIK flap. Extensive use of a crescent blade was needed to maintain the surgical plane and avoid tension on the flap. The procedure however was uneventful and this case demonstrated that successful excision of the pterygium, resolution of the patient's symptoms, and a good cosmetic outcome are possible without incurring any damage to the LASIK flap. Whether this case represents the coexistence of 2 common pathologies or chronic inflammation remains to be elucidated.

Patient consent

Written consent to publish this case has not been obtained. This report does not contain any personal identifying information.

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Authorship

All authors attest that they meet the current ICMJE criteria for Authorship.

Declaration of competing interest

None.

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