Epithelial Downgrowth After Clear Corneal Phacoemulsification

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ABSTRACT

Purpose: The purpose of this article is to report a case of epithelial downgrowth after clear corneal phacoemulsification.

Materials and methods: The authors report the case of a 79-year-old man submitted to left eye phacoemulsification, through a clear corneal, 2.75mm incision with intra-ocular lens (IOL) implantation. Surgery was uneventful except for intraoperative floppy iris syndrome (IFIS) which caused minimal iris incarceration. At postoperative days 1 and 7 no abnormalities were detected for the exception of minimal iris incarceration. At 1-month appointment, a diffuse sheet of epithelium was observed with respect to the main wound and the incarcerated iris. The patient was asymptomatic, best corrected visual acuity (BCVA) was 7/10 and intra-ocular pressure (IOP) was 16mmHg. No intra-ocular inflammation was detected. A clinical diagnosis of epithelial downgrowth was assumed and subsequently supported by suggestive anterior segment optic coherency tomography (OCT), specular microscopy and corneal topography.

Results: At 5-month follow-up the patient remained asymptomatic, with no evidence of epithelial downgrowth spreading, besides iris incarceration. BCVA and IOP continue stable 7/10 and 16mmHg, respectively, and the eye remained with no inflammation.

Discussion: Predisposing situations for the invasion of epithelium into the anterior chamber include numerous intraocular surgeries, incomplete or delayed wound healing, iris incarceration and implantation of epithelial cells with instruments. The precise understanding of the pathogenesis is still unknown. The outcomes of treatment are variable and generally unsatisfactory with no clear treatment guidelines. In this case the main risk factor identified was IFIS with iris incarceration

Conclusions: Although the prognosis of this disease is usually poor, at 5-months follow-up the patient remained asymptomatic with no evidence of epithelial spreading.

Key words: epithelial invasion, phacoemulsification, floppy iris syndrome

RESUMO

Objetivo: O objetivo deste artigo é descrever um caso clínico de *downgrowth* epitelial após facoemulsificação através de incisões em córnea clara.

Materiais e Métodos: Os autores descrevem um caso clínico de um homem de 79 anos submetido a facoemulsifição no olho esquerdo, através de incisão corneana de 2.75mm com implante de lente intra-ocular (LIO). A cirurgia decorreu sem intercorrências, excetuando uma síndrome de íris flácida (SIF) intra-operatória que causou encarceramento mínimo da íris. Nas consultas de pós-operatório do dia 1 e 7 não se detetaram quaisquer anomalias exceto encarceramento mínimo da íris. Na consulta de 1 mês de pós-operatório detetou-se um crescimento difuso de epitélio em relação com a porta de entrada e com a íris encarcerada. O doente estava assintomático, a sua melhor acuidade visual corrigida (MAVC) era 7/10 e a pressão intra-ocular (PIO) era 16mmHg. Não se detetou inflamação intra-ocular. Foi presumido um diagnóstico clínico de *downgrowth* epitelial que posteriormente foi suportado por tomografia ótica de segmento anterior, microscopia especular e topografia da córnea.

Resultados: Aos 5 meses de *follow-up* o doente mantém-se assintomático, sem evidência de propagação do *downgrowth* epitelial, apesar do encarceramento da íris. A MAVC e PIO mantêm-se estáveis, 7/10 e 16mmHg, respetivamente, o olho mantém-se sem sinais de inflamação.

Discussão: As condições que predispõe à invasão do epitélio para a câmara anterior incluem múltiplas cirurgias intra-oculares, atraso ou cicatrização incompleta, encarceramento da íris e implantação das células epiteliais com os instrumentos. Ainda não se conhece totalmente a fisiopatologia desta condição. Os *outcomes* dos tratamentos disponíveis são variáveis e geralmente insatisfatórios, não havendo *guidelines*. Neste caso em particular o principal fator de risco identificado foi o SIF que levou ao encarceramento da íris.

Conclusões: Apesar do prognóstico desta patologia ser normalmente mau, aos 5 meses de *follow-up* o doente mantém-se assintomático, sem evidência de propagação do *downgrowth* epitelial.

Palavras-chave: invasão epitelial, facoemulsificação, síndrome da íris flácida

INTRODUCTION AND PURPOSE

Epithelial invasion is a rare complication of anterior segment surgery or penetrating trauma. It can be classified into three forms: epithelial pearls, epithelial cysts, and diffuse sheets of epithelium, also known as epithelial downgrowth. The last one represents the most common form of epithelial invasion, causing more destruction, and is most likely to lead to intractable glaucoma.[1]

The most common event leading to epithelial downgrowth is cataract extraction, followed by penetrating injury, and penetrating keratoplasty.[1] The incidence of this condition after cataract surgery was 0,12%, decreasing to 0,08% over the latter decade.[2] The declining incidence in last years may be related to improved microsurgical

procedures, with small, sutureless, clear corneal approaches. There are only three cases of epithelial downgrowth after clear corneal phacoemulsification described in PubMed in the last decade.

Most patients present within 6–12 months after surgery or trauma. The most common symptoms described, include decreased vision, red eye, pain, tearing, and fotofobia. Weiner's et al., in a 30-year review of 124 cases, reported that the most common presenting signs include a retrocorneal membrane (45%), glaucoma (43%), a positive Seidel test (23%), and corneal edema (21%).[1,2]

Available treatments include surgical excision of the invading epithelium, cryotherapy, corneal graft and use of antimetabolites, however the visual prognosis is often poor.[3]

Recently, spontaneous remission of the epithelial invasion with favorable visual prognosis was reported. It is not clear which clinical factors may lead to this positive outcome.

The purpose of this article is to report a case of epithelial downgrowth after clear corneal phacoemulsification.

MATERIALS AND METHODS

The authors report the case of a 79-year-old man submitted to left eye phacoemulsification, through a clear corneal, 2.75mm incision with IOL implantation. Surgery was uneventful except for intraoperative IFIS which caused minimal iris incarceration. At postoperative days 1 and 7 no abnormalities were detected for the exception of minimal iris incarceration. At 1-month appointment, a diffuse sheet of epithelium was observed with respect to the main wound and the incarcerated iris, as seen in fig. 1. The patient was asymptomatic, BCVA was 7/10 and IOP was 16mmHg. No intra-ocular inflammation was detected. A clinical diagnosis of epithelial downgrowth was assumed and subsequently supported by suggestive anterior segment OCT, corneal topography and specular microscopy, as seen in fig. 2, 3 and 4. Despite this minimal iris incarceration and epithelial downgrowth the surgical team adopted a wait and see approach due to patient multiple comorbidities.

Figure 1 – Epithelial downgrowth biomicroscopy

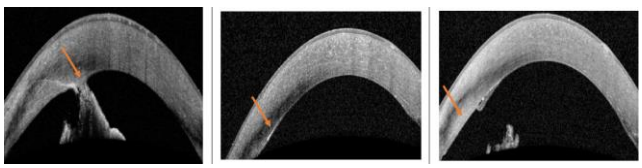

Figure 2 – Anterior segment OCT: iris incarceration and hyperreflective layers (Spectral-Domain Heidelberg Spectralis® - anterior segment module)

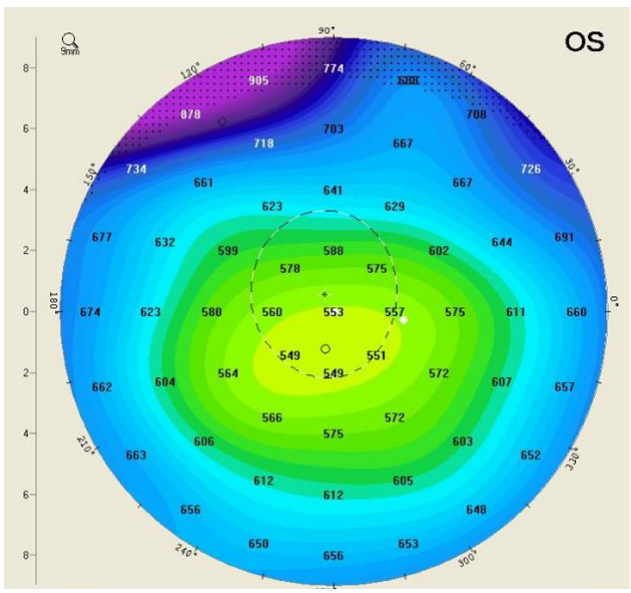

Figure 3 – Suggestive corneal topography (Oculus Pentacam HR®).

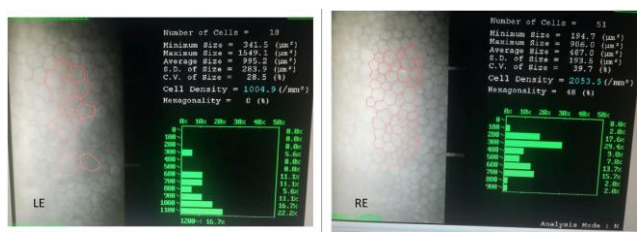

Figure 4 – Specular microscopy suggesting endothelial suffering in LE (TopCon SP 3000)

RESULTS

At 5-months follow-up the patient remained asymptomatic, with no evidence of epithelial downgrowth spreading. BCVA and IOP continue stable 7/10 and 16mmHg, respectively, and the eye remained with no inflammation.

DISCUSSION

Prompting conditions for the invasion of corneal or conjunctival epithelium into the anterior chamber include numerous intraocular surgeries, incomplete or delayed wound healing, wound fistulas, iris incarceration, vitreous in the wound, implantation of epithelial cells, and suture track leaks.[4] The precise understanding of the pathogenesis is still unknown. Epithelium cannot grow and mature within the eye by metaplasia, it must be introduced. However, mere presence of epithelium in the anterior chamber appears insufficient to cause downgrowth. A significant degree of inflammation and vascularization of the corneal stroma are also needed.1 The outcomes of treatment are variable and generally unsatisfactory with no clear treatment guidelines.[3]

In this case the only risk factor that was found was the phacoemulsification surgery in an eye with floppy iris syndrome predisposing to iris incarceration. In the immediate post-operattive period the surgical team chose not to reoperate and wait and see, due to patient general status.

The 5-months follow-up results can be explained maybe due to a spontaneous regression/steadiness of epithelial downgrowth.[5]

Although epithelial downgrowth is usually an aggressive complication of intraocular surgery or trauma that can lead to irreversible vision loss and so requires prompt intervention, Jaber M.R. et al. describe a case of spontaneous involution of epithelial downgrowth after clear corneal phacoemulsification that resembles our case report. The patient was also asymptomatic no treatment strategy was implemented, he was closely observed and epithelial downgrowth regression was documented. The exact mechanism for regression is not known, the authors speculate that may be related to migration of the remaining healthy endothelial cells to displace and replace the multiplied epithelial layer.

CONCLUSIONS

In this case, the epithelial downgrowth was diagnosed early in the course of the disease and prompt surveillance was established. Although the prognosis of this disease is usually poor, at 5-months follow-up the patient remains asymptomatic with no evidence of epithelial spreading.

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