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Project Abstract

Optical Coherence Tomography as an Essential Tool for Clinical Assessment and Follow-Up after Corneal Transplantation

Purpose:Anterior segment optical coherence tomography (AS-OCT) is a noninvasive, high-resolution imaging modality that is widely used for corneal assessment in multiple planes. OCT allows visualization of the entire width of the graft–host junction (GHJ) and the interface between the host and the graft following deep anterior lamellar keratoplasty (DALK) and penetrating keratoplasty (PK). Furthermore, after endothelial keratoplasty procedures, OCT enables early postoperative evaluation of graft detachment, including its presence, location, height, and extent.

Methods: Corneal optical coherence tomography (OCT) images will be analyzed to improve understanding of postoperative changes following various corneal transplantation techniques. The evaluation will focus on graft–host junction (GHJ) alignment and morphological features after deep anterior lamellar keratoplasty (DALK) and penetrating keratoplasty (PK), as well as graft attachment as an indicator of anatomical success after Descemet membrane endothelial keratoplasty (DMEK). Findings will be categorized as early or late postoperative changes based on follow-up duration and the availability of long-term imaging data.

Results : The morphological characteristics of the graft–host junction (GHJ) will be evaluated after deep anterior lamellar keratoplasty (DALK) and penetrating keratoplasty (PK), and interface features following DALK will be described. After Descemet membrane endothelial keratoplasty (DMEK), key early postoperative parameters will be analyzed to identify potential cutoff values associated with spontaneous graft attachment in cases of early postoperative graft detachment. In addition, both early and late postoperative changes in OCT findings will be evaluated during follow-up. Results will be presented at the end of the project.

Conclusion: Optical coherence tomography (OCT) is expected to provide valuable information following various corneal transplantation techniques. The findings are anticipated to help surgeons assess and refine their surgical techniques to reduce graft–host misalignment after penetrating keratoplasty (PK) and deep anterior lamellar keratoplasty (DALK), which may influence postoperative outcomes. Identification of cutoff values may guide clinical decision-making regarding rebubbling in cases of graft detachment after Descemet membrane endothelial keratoplasty (DMEK). In addition, this study is expected to improve understanding of postoperative wound-healing processes across different corneal transplantation techniques.