Acute Reversible Corneal Endothelial Changes Associated With Selective Laser Trabeculoplasty

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Background

• Selective Laser Trabeculoplasty (SLT) is an increasingly popular treatment for glaucoma and ocular hypertension using Q-switched YAG laser pulses applied to the trabecular meshwork via a gonioscope lens

• In vitro and cadaveric studies have largely focussed on changes induced in the trabecular meshwork.

• There has been very little published on changes induced in the cornea by SLT with the exception of a few isolated case reports.

Changes Are Seen Across the Cornea

Central Cornea

Peripheral Cornea

No Morphological Changes On Specular Microscopy

Further Investigation

• Routinely booked patients at one centre (Cambridge) consented to have additional imaging pre and post SLT and at routine followup (monthly).

• Patients to have preoperative confocal microscopy and endothelial cell counts with specular microscopy.

• Standard treatment and followup

• Perioperative confocal and specular imaging immediately postoperatively within 30-60 mins and at routine 6 week followup

• Local IRB approval granted

Confocal Images Pre and Post SLT

A Spectrum of Post SLT Changes

Figure 1:

Figure 2:

Figure 3:

Figure 4:

Figure 5:

Figure 6:

Figure 7:

Figure 8:

Summary

• SLT appears to cause transient endothelial changes immediately postoperatively that appear to resolve within a few days and do not affect vision

• The cause is unknown but we are investigating potential mechanisms

• Endothelial changes do not appear to be caused by direct laser damage

• Further study is required to investigate this finding

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