The Effect of Two Weeks and Twenty-Four Hours Soft Contact Lens Cessation Times on Corneal Refractive Surgery Outcomes

Aoife Lloyd McKernan  
*Dublin Institute of Technology, aoifemarie.lloyd@dit.ie*

Luisa Simo Mannion  
*Plymouth University*

Veronica O’Dwyer  
*Dublin Institute of Technology*

Follow this and additional works at: [http://arrow.dit.ie/scschphyot](http://arrow.dit.ie/scschphyot)

Part of the *Physics Commons*

**Recommended Citation**  
The effect of two weeks and twenty-four hours soft contact lens cessation times on corneal refractive surgery outcomes

INTRODUCTION

Soft contact lens (SCL) wear can reduce accuracy of pre-operative corneal measurements and outcomes of corneal refractive surgery (CRS)[1,2]. Hypoxia induced by occlusion of SCLs can result in reduced corneal metabolism[3,4] and alterations to endothelial structure resulting in increased light scatter and less light transmission[5]. This may affect corneal healing following CRS. The time required for resolution of SCL-induced corneal changes can vary and can be longer than 2 weeks[6,7]. Despite this, prior to CRS, a standard SCL cessation time is advised for all patients. This cessation time varies according to governing bodies. United States Food and Drug Administration (FDA) guidelines recommend that SCL be left out for at least 2 weeks prior to initial consultation[8]. Whereas, the Royal College of Ophthalmologists in the United Kingdom recommend removing SCL for 1 day before CRS[9]. Short SCL cessation times prior to CRS may be insufficient for resolution of SCL-induced corneal changes.

HYPOTHESIS

Visual and refractive CRS outcomes would be worse in a SCL group compared to a non-contact lens (NCL) group and worse in a SCL group who ceased SCL wear for 24 hours when compared to those who ceased SCL wear for two weeks prior to examination and treatment.

METHODS

CRS outcomes of dominant eyes for two groups of previous full-time SCL-wearing patients were analysed retrospectively: those who ceased SCL wear for two weeks (n = 45) and twenty four hours (n = 49) prior to examination and treatment. In both groups results were compared to a NCL control group (2 weeks SCL group n = 45, 24 hours SCL group n = 49).

RESULTS

The demographics of the groups tested can be seen in Table 1. There was a trend towards superior CRS outcomes for efficacy, predictability and safety in the two weeks SCL cessation group compared to NCL group. These results were significantly better for LogMAR UDVA in the SCL group and maintained to the six month post-operative visit (Table p = 0.03, NCL/SCL). These findings were reiterated in the 24 hours SCL cessation group where the trend towards superior CRS outcomes for efficacy, predictability and safety in the SCL group compared to the NCL group was continued. UDVA efficacy outcomes following LASIK/PRK were significantly better in the SCL group at the six month post-operative visit (p = 0.03, Table 3).

CONCLUSION

Previous SCL wear did not negatively impact on the outcomes of CRS. Both SCL cessation times of 2 weeks and 24 hours did not result in negative outcomes compared to a NCL control group. While these results were statistically significant, the number of letters difference in UDVA between the SCL and NCL groups was low. Therefore one cannot conclude that these results are clinically significant, as the standard uncertainty value for visual acuity outlined in the International Standards Organisation guidelines is two letters of Snellen VA (0.04 LogMAR), with a 95% confidence level of 4 letters[10]. It is likely that the SCL wearers had previously adapted to some under-correction of astigmatism in their SCLs and to the increased surface irregularity with SCL wear[11]. Therefore previous SCL wearers may have cope with the faster topography profile following CRS (Figure 1) and post-operative haze[12]. However, these results are surprising when one considers the effect of the larger image size on VA in the NCL group following CRS. One would expect this would improve VA in this group compared to the SCL group who were accustomed to the larger image size in SCLs, compared to spectacle lenses pre-operatively[13].

Acknowledgements

The staff and ophthalmologists at Eye Laser Ireland and Ultrasite Ireland.

References