

A Clinical Comparison Of Limbal And Paralimbal Superior Epithelial Arcuate Lesions (SEALS) In High DK SCL Extended Wear

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INTRODUCTION

It was observed that events of SEALS with high Dk SCL EW tended to 'cluster' either close to the limbus (limbal) or slightly further away (paralimbal) (Figure 1)



Figure 1

PURPOSE

To determine if the symptoms, clinical signs, lens fitting and surface characteristics with SEALS in the two locations were different.

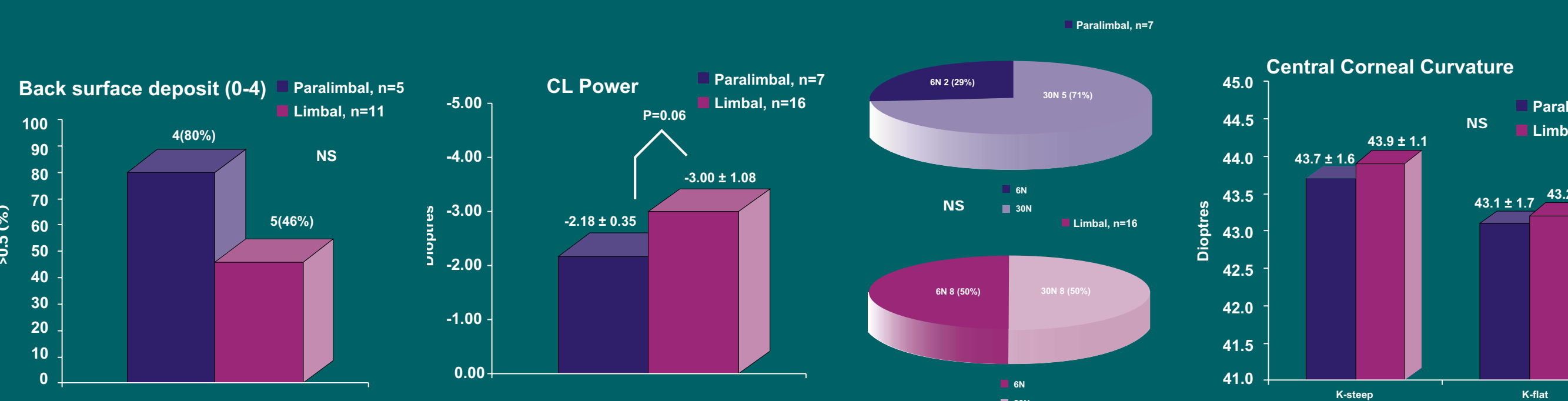
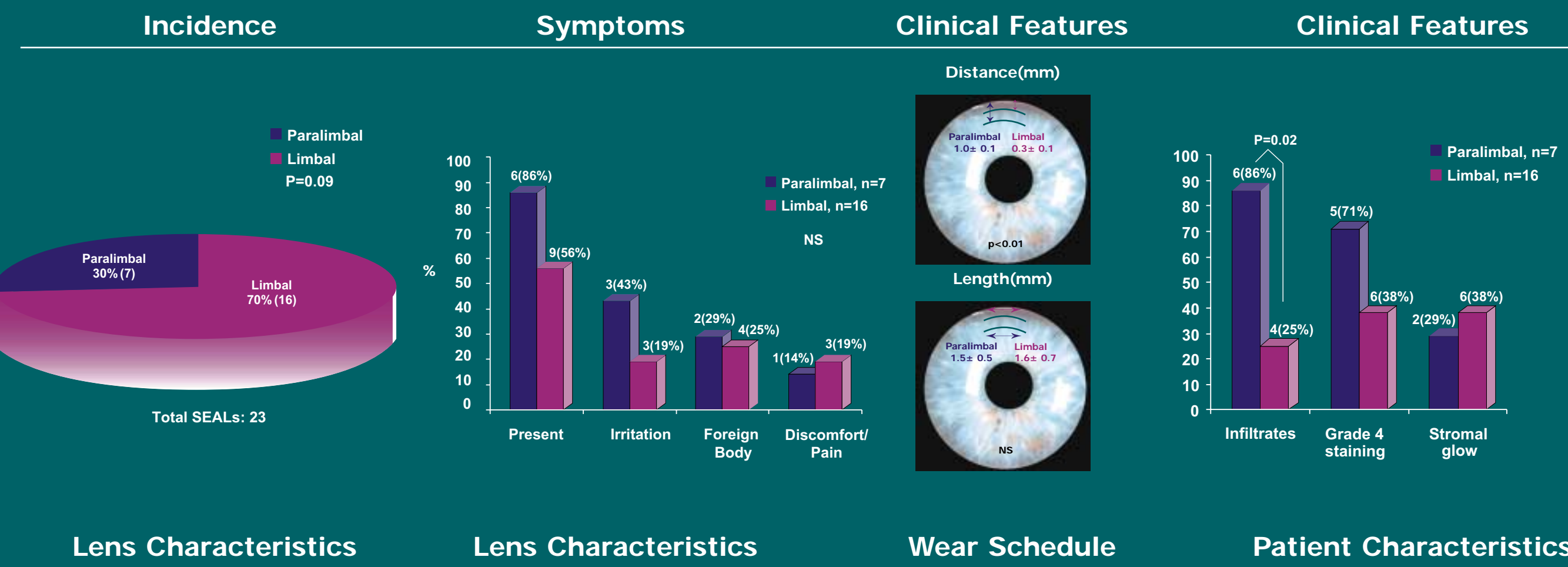
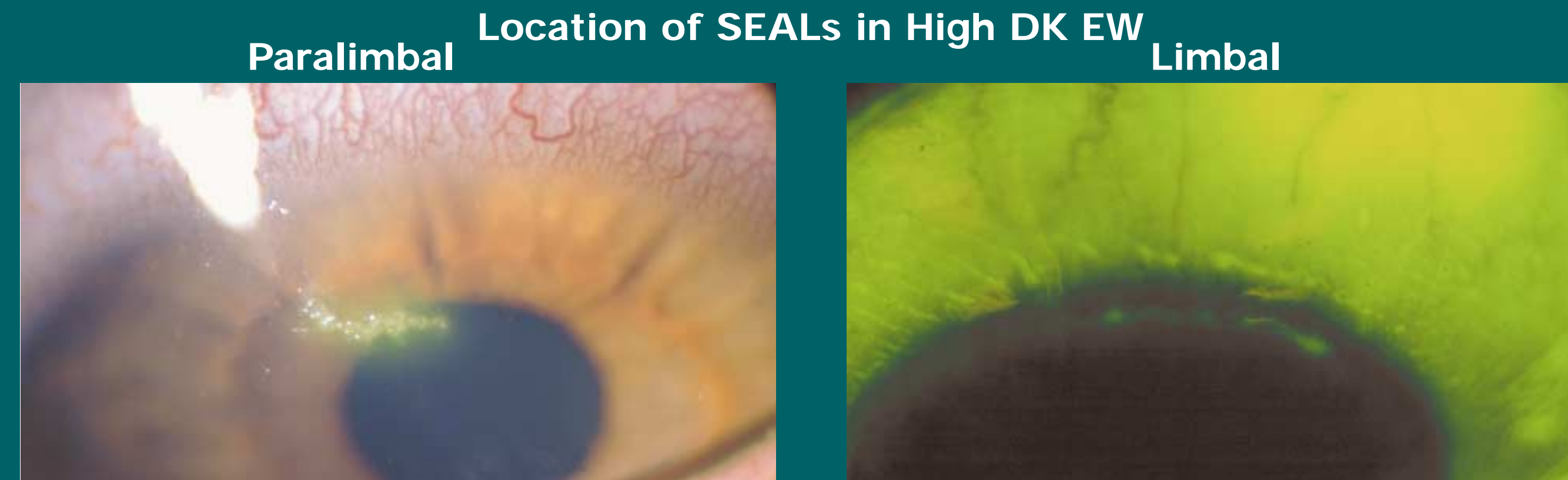
METHOD:

- Retrospective analysis of first event of SEALS in 23 eyes of 18 patients.
- Presence or absence and type of symptoms recorded.
- Clinical features of the SEALS assessed using the Zeiss slit lamp biomicroscope.
- Distance from the limbus (measured from visible iris) and length of each SEAL measured using a 16x eyepiece graticule in 0.1mm steps with the eye in primary gaze.
- Presence or absence of underlying diffuse infiltration noted.
- Coalescent punctate staining classified as Grade 3 and patch staining as Grade 4, in accordance with CCLRU Grading Scales.
- Presence or absence of stromal glow of fluorescein noted.
- Lens characteristics recorded at the time of event included:
 - Back surface deposits (0-4, 0.1)
 - Back surface debris (0-4, 0.5)
 - Wettability (0-5, 0.1)
 - Centration (mm)
 - Primary gaze movement (mm)
 - Tightness (0-100%, push up test)
- Contact lens power (D), wear schedule (6 or 30N EW) and central corneal curvature (D) recorded for all cases.
- All subjects wore lotrafilcon A, 24% water content lenses (Dk: 140 barrers, Young's modulus: 1.2 MPa) bilaterally.

RESULTS

SEALS: Typical Signs and Symptoms

- Full thickness epithelial split.
- Between 10 and 2 o'clock and within 3mm of limbus.
- Usually arcuate although can be linear.
- "Heaping" of epithelial tissue often present at edges (white, raised, irregular appearance).
- Underlying diffuse infiltration may be observed.
- Often asymptomatic, sometimes "foreign body" sensation reported



DISCUSSION

- SEALS in the paralimbal cornea are more likely to provoke an infiltrative response, and be associated with Grade 4 (patch) staining and symptoms, compared to SEALS adjacent to the limbus.
 - This may be indicative of different responses from the two locations of the cornea and/or a difference in the severity of the mechanical trauma at these locations.
- Paralimbal SEALS are more likely to be associated with lower power lenses.
 - Thinner peripheral thickness profiles of lower power lenses may lead to greater "shear forces" and this may influence the location and severity of the SEAL responses⁽¹⁾.
- SEALS in the paralimbal region are more likely to be associated with higher back surface deposition compared to SEALS occurring closer to the limbus.

CONCLUSION

- SEALS in the paralimbal cornea are more likely to be associated with underlying infiltration, patch staining and symptoms compared to SEALS adjacent to the limbus.
- Paralimbal SEALS are more likely to be provoked by lower power lenses and are associated with more deposited lenses than limbal SEALS.
- At this time it is not possible to ascertain whether the greater infiltration and discomfort is associated with difference in the ocular response of the cornea to the stimulus, or whether the stimulus is greater in the paralimbal area.

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