THE REBIRTH OF EXTENDED WEAR

Silicone hydrogels -
The future for extended wear

In the fifth and final part of our series on extended wear, Professor Deborah Sweeney, Kylie Knox and Professor Brien Holden speculate on the future development of high-DK products and other more permanent vision correction devices.
A reversible procedure, allowing modification by replacement or ablation of the lenticule surface if optical changes were required.

A relatively simple in-office procedure.

Less visual down-time for the patient.

Stable refractive correction, as it does not involve a stromal wound healing response.

Reduced ocular discomfort compared with PRK due to a bandage effect.

After removal of the central area of epithelium, the synthetic polymer onlay would be ‘designed’ to be placed on the corneal stromal surface and ‘encourage’ the epithelium to overgrow and attach to the lens (Figure 1).

Our surveys indicate that many ophthalmic surgeons believe that such a device is one of the most desirable for the correction of high refractive errors.

The issues which need to be overcome in the development of the onlay are movement through the implant of water, ions and nutrients – necessary for ocular health; and epithelial migration, proliferation and adherence over the synthetic implant. Currently, coated porous polymers are under investigation as the most promising materials to achieve these aims.

The future of contact lenses is based on a marriage between the patients’ need for convenience, comfort and vision, and the eye’s requirements for health. The union of these two elements will bring about safe, comfortable and effective vision correction for many millions of people in the next century. The onlay will take this program further offering hopefully, safe correction of higher refractive errors in an ‘additive’ manner without the need to destroy corneal tissue.

Figure 1. Corneal onlay procedure

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