

The importance of daily disposable soft contact lenses in piggyback lens use in keratoconus

Purpose: To compare the affects of myopic or hyperopic soft daily disposable contact lens (CL) use, in piggyback application for keratoconus, via visual acuity (VA) and rigid gas-permeable (RGP) lens power.

Methods: Twenty-eight eyes of 23 patients were included in the study. Piggyback CL fittings were combined with Senofilcon-A (Acuvue max daily disposable) soft CL of -3.00 D, +3.00 D and Rose K2 RGP CL. Corneal topography was taken on the naked eye and after piggyback application. Mean central keratometry, over-refraction, and VA were recorded and analyzed.

Results: The mean central keratometry was 6.61 ± 0.3 in naked eye, 7.53 ± 0.15 in -3 D CL, and 7.47 ± 0.17 in +3 D CL. In comparison to the naked eye, the mean central keratometry flattened with both negative and positive lens powers ($p < 0.01$ in all cases). There was a significant difference between groups in the mean RGP over-refraction ($p < 0.01$). Estimated RGP's final power increased significantly with positive in comparison with negative lens powers ($p < 0.01$). The mean VA with -3 D CL was 0.70 ± 0.16 (range: 0.40-0.90) and the mean VA with +3 D CL was 0.66 ± 0.17 (range: 0.30-1.0). Visual acuity did not change significantly between the different soft lens powers assessed ($p = 0.07$).

Conclusion: The use of negative-powered soft lenses in piggyback fitting reduces RGP lens power without impacting VA in keratoconus subjects.