Purpose: To report the post-operative binocular function of patients with Boston type I keratoprostheses implantation for unilateral visual impairment.

Methods: Seventeen patients who underwent implantation of a Boston type I keratoprosthesis, and had a best-corrected visual acuity better than 20/50 in the contralateral eye prior to surgery were evaluated. All subjects prospectively underwent sensory testing of binocular function including Bagolini lenses, Worth-4-dot test, stereoacuity at distance and near, and double Maddox rods. In addition, an assessment of ocular rotations and alignment was performed on each subject.

Results: Twenty patients with best-corrected visual acuity better than 20/50 in the contralateral eye at the time of keratoprosthesis surgery were identified. Seventeen of the 20 patients underwent binocular visual testing, with 16/17 (94%) demonstrating binocular function. Second-degree fusion at near was demonstrated via the Worth-4-dot test in 13/17 (76%) of the patients. Third degree fusion at near was demonstrated in 7/17 (41%) of patients. Patients with better post-operative sensory binocular function tended to be of younger age (p=0.05) and have better post-operative visual acuity (p=0.006). Five patients were found to have some degree of ocular misalignment. Overall, patients with strabismus had worse binocularity (p=0.04).

Conclusion: Implantation of the Boston type I keratoprosthesis in patients with good preoperative visual acuity in the fellow eye is associated with useful binocular function in greater than 90% of patients.