

# **Comparison of synthetic glues and 10-0 nylon in rabbit lamellar keratoplasty.**

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## **Abstract:**

**PURPOSES:** To evaluate changes in mean keratometry and to compare wound repair with corneal lamellar grafts in rabbit eyes using human synthetic tissue adhesives and 10-0 nylon.

**METHODS:** Corneal grafts were made using a 6.0-mm-diameter trephine and blades in the eyes of 15 New Zealand white rabbits. Human fibrin tissue adhesive (Tisseel) was used in group 1, human fibrin tissue adhesive (Beriplast P) was used in group 2, polyethylene glycol adhesive (Coseal) was used in group 3, and 8 bite sutures with 10-0 nylon were used in group 4 (control) for lamellar keratoplasty. Four bite sutures were made with 10-0 nylon in groups 1, 2, and 3. Slit-lamp microscopy and keratometry were performed at 3 days and 1, 2, and 4 weeks after the surgery. Histopathologic and electromicroscopic examinations were performed 4 weeks after the surgery.

**RESULTS:** No inflammation or corneal toxicity was seen in groups 1 and 2. Histologically, a few inflammatory cells were seen in groups 3 and 4. Groups 1, 2, and 3 showed no statistically significant changes in mean keratometry at 4 weeks postoperatively compared with preoperative mean keratometry (Wilcoxon signed-rank test,  $P = 0.178$ ,  $0.208$ , and  $0.889$ , respectively). The control group showed significant changes in mean keratometry at 4 weeks postoperatively (Wilcoxon signed-rank test,  $P = 0.018$ ).

**CONCLUSIONS:** Human fibrin tissue adhesives were well tolerated in rabbit eyes, with no apparent

corneal toxicity. Polyethylene glycol adhesive showed more inflammation and insufficient wound repair compared with human fibrin tissue adhesives. Therefore, human fibrin tissue adhesives can be used as an alternative to sutures in lamellar keratoplasty.