

[Sutureless lamellar keratoplasty by microkeratome combined with fibrin tissue adhesive in rabbits]. [Chinese]

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Abstract:

OBJECTIVE: To evaluate the feasibility and safety of sutureless lamellar keratoplasty by microkeratome combined with fibrin tissue adhesive.

METHODS: Twenty-four New Zealand white rabbits were divided into two groups, the donor grafts and recipient beds were made by the microkeratome, the grafts were glued over the stoma bed using the commercial product Tisseel in one group; and grafts without tissue adhesive were used as the control group. Corneal refractive power was measured by automated keratometer preoperatively and in 3 days, 2 weeks, 1 and 3 months postoperatively. Rejection and cornea transparency were observed. Confocal microscopy was used to observe corneal wound healing response and to measure the keratocyte and endothelium densities in vivo. Corneal wound healing was also evaluated using light and fluorescence microscopy.

RESULTS: Ninety-two percent (11/12 eyes) of the glued grafts were retained in the Tisseel group, whereas all grafts were lost in the control group. All survived grafts were clear 1 month after surgery. However, in the control group, severe haze in the grafts occurred 2 weeks postoperatively. Confocal microscopy showed that there was a significant decrease of the keratocyte density surrounding the lenticule-host interface, and no changes occurred in the posterior keratocyte and endothelium. Histopathologic observations demonstrated the presence of a line of amorphous eosinophilic substance in the lenticule-host interface at 3 days after surgery, but the line disappeared after 1

month. Fluorescence microscopy showed no detectable regenerated stromal tissue.

CONCLUSIONS: This initial study demonstrates sutureless optical lamellar keratoplasty performed by microkeratome combined with fibrin tissue adhesive is a simple and safe technique. Stromal wound healing response to this surgery is minimal. Fibrin tissue adhesive has no influence on the cornea optical property.