Effects of tissue adhesive (Tisseel) on corneal wound healing in lamellar keratoplasty in rabbits.

Authors: Kim MS, Kim JH

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Abstract:

The purpose of this study was to compare corneal wound healing between suture and sutureless lamellar keratoplasty in the rabbit eye. The tissue adhesive (Tisseel, Vienna) a commercially available two component adhesive system based on human fibrinogen, which is activated by thrombin, was used. 8.0mm half-thickness lamellar keratoplasties (autotransplants) were performed on the twenty-four rabbit eyes with tissue adhesive and the other eyes were operated with 10-0 nylon continuous suture as a control, respectively. At varying periods postoperatively, they were killed and the eyes were immediately enucleated and examined by transmission electron microscopy and light microscopy. The procedure was completed by the application of a bandage soft contact lens. Seventy-one percent of the glued lamellar keratoplasty grafts were retained and in six eyes, focal white opacities at the bed and graft interface were noted. There was no change in corneal contour, with the only irregularity being at the graft/host junction in the tissue adhesive group. Histopathologic examination of the glued eyes demonstrated the presence of a layer of eosinophilic material between the corneal bed and the lamellar graft but a minimal inflammatory response was observed in the early postoperative days. At fourteen days the adhesive was no longer visible and at three weeks, the graft was well healed. We believe that this study indicates a potential adjunctive role for tissue adhesive in corneal wound healing.