

Relative strength of photodynamic biologic tissue glue in penetrating keratoplasty in cadaver eyes.

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Abstract:

PURPOSE: To compare the relative strength of photodynamic biologic tissue glue (PBTG) with that of 10-0 nylon sutures in closing penetrating keratoplasty (PKP) wounds in cadaver eyes.

SETTING: Corneal Research Laboratory, University of Chicago, Chicago, Illinois, USA.

METHODS: A 7 mm central corneal trephination was performed on 8 recently enucleated human eyes. Each corneal button was removed and then resutured in its original position, using 4 interrupted 10-0 nylon cardinal sutures and PBTG (n = 7) or 16 interrupted 10-0 nylon sutures (n = 1). Wound leak and incisional bursting pressures were determined.

RESULTS: The average pressure at which wound leak and iris prolapse occurred was 124 mm Hg (range 70 to 180) and 185 mm Hg (range 90 to 300), respectively. The pressure required to create wound leak increased as the time between glue application and pressurization of the globe lengthened (mean 22 minutes, range 5 to 60 minutes), indicating that the bonding and stability of the adhesive increased with time. In contrast, the control eye developed wound leak at 70 mm Hg and iris prolapse at 300 mm Hg.

CONCLUSIONS: Photodynamic biologic tissue glue was comparable to sutures in providing adequate corneal wound strength in PKP in a cadaver eye model. Wound closure with PBTG may

reduce the number of sutures required in corneal transplantation and decrease the incidence of suture-related complications and allograft rejection.