# Fibrin glue as a suture substitute: Histological evaluation of trabeculectomy in rabbit eyes.

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Publication Date: 2006

## Abstract:

Purpose: To describe the outcome of the use of fibrin adhesive (Quixil) in penetrating trabeculectomy in a rabbit model. Methods: Fibrin adhesive was used experimentally to attach the conjunctiva and the scierai flap in two groups of 17 New Zealand albino adult rabbits (34 eyes). In the first experiment (20 eyes), the fibrin adhesive was used to reattach the tissue after conjunctival peritomy and scierai flap only in 14 eyes (experiment I). In 6 eyes (controls), the conjunctiva was attached with nylon sutures. In the second experiment (14 eyes), the fibrin adhesive was used after conjunctival peritomy, scierai flap, and penetrating trabeculectomy in 8 eyes (experiment II). In a control group of 6 eyes, nylon sutures were used to attach the scieral flap and the conjunctiva after penetrating trabeculectomy. Biomicroscopy and histopathological examinations were performed on postoperative days 1, 3, 7, 14, 21, and 30. Intraocular pressure was measured before and after surgery in the second experiment. Main outcome measures are histological presence of adhesive in the tissue, degree of capillary congestion, inflammatory reaction, collagen density [scar formation] and clinical (IOP measurements before and after surgery, conjunctival chemosis, anterior chamber reaction, presence of filtering bleb and wound leakage). Results: In experiments I and II, the adhesive was well identified histologically in the tissue as an amorphic eosinophilic substance for up to day 3 and nearly disappeared by day 7. An acute inflammatory reaction was noted for up to 14 days, which converted to chronic inflammation with collagen deposits and scar formation by day 30. Similar inflammatory reaction was observed in the control group. The adhesive had no adverse effects on ocular tissue compared with sutures. One eye in experiment II demonstrated wound

dehiscence. Intraocular pressure dropped from 17.35 mmHg preoperatively to 8.28 mmHg on postoperative day 1 in experiment II, and from 17.2 mmHg to 11.5 mmHg in the controls. No significant change in intraocular pressure was noted in experiment I. Conclusions: The fibrin adhesive had no adverse effects on ocular tissue compared with sutures. It might serve as an effective substitute for conjunctival and scierai wound closure in trabeculectomy surgery. 