Is tisseel a viable option in posterior lamellar keratoplasty?.

Authors: Oberg TJ, Friday JW, Ursea R, Snyder RW

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Abstract:

PURPOSE: It is well known that Tisseel Fibrin Sealant provides an excellent tissue adhesive. However, its thick and viscuous nature makes it nearly impossible to apply it in a uniform and thin layer. We propose applying the sealant phase as a dry powder and polymerizing it in-vivo by exposing it to thrombin solution after a graft has been placed.

METHODS: For each experiment two rabbit corneal buttons were affixed to each other using either Tisseel or thrombin plus dry fibrinogen component, the tensile strength of the bond was then tested in the tension box. Balanced salt solution was used as an aqueous substitute.

RESULTS: Tisseel was demonstrated to create significant adhesive tensile force (expressed as N/m) between corneal buttons ($P < 10$). Using only the dry fibrinogen component followed by injection of the thrombin solution directly into the balanced salt solution did not significantly alter the strength of the bond ($P = 0.18$).

CONCLUSION: The use of the dry fibrinogen component followed by injection of thrombin solution into the balanced salt solution, without the accompanying fibrinolysis inhibitor, is equally effective in adhesive strength when compared to complete Tisseel. This technique may be used in lamellar corneal surgery, although there would be potential difficulties with its application in the in vivo setting.