Stuck in the middle with glue: Corneal indications for bioadhesives
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The sticky suggestion to use biocompatible glue in lieu of sutures dates back to 1968, where human fibrin glue (HFG) was initially indicated for corneal perforations.\(^1,2\) Today, biologic and synthetic glues have a myriad of adhesive applications on the cornea and beyond. The tacky twosome currently in use includes fibrin glue—made from human plasma—and its manmade counterpart, cyanoacrylate derivatives (CADs).\(^3\)

The principal indication for corneal adhesives continues to be in corneal perforations, melts and ulcerative disorders (including HSV, K. Sicca, alkali burns, radiation keratitis, rheumatoid arthritis and Stevens-Johnson Syndrome).\(^4\) In this capacity, not only have they been shown to delay or prevent the need for surgical intervention, but they also have displayed bacteriostatic properties.\(^4\) Multiple studies show efficacy in pterygium surgery, amniotic membrane transplantation and various forms of keratoplasty, where it serves as a quick and easy suture replacement.\(^3,4,5,6\) In refractive surgery, adhesives have been used with success in treating recurrent epithelial ingrowth (by forming a mechanical barrier to infiltrating epithelial cells), as a temporary basement membrane to decrease post-operative haze in PRK, and in cases of flap dislocation.\(^3,4,5,6\) Limbal stem cell transplantation, cataract surgery wound closure, epikeratophakia and keratophrostheses have also incorporated the tensile strength of corneal glue.\(^3,4,5,6\)

These adhesives also find a number of applications elsewhere in the eye, including glaucoma, lens, vitreoretinal, lid and adnexal surgeries.\(^6\) The challenge moving forward is to create the ideal adhesive—safe, effective, affordable and biocompatible—to accompany the paradigm shift in wound closure and to expand upon its potential. Research is currently being done on the use of bioadhesives as a drug and/or tissue delivery system, and practitioners are proverbially glued to their screens waiting on FDA approval of the latest materials already in use overseas.\(^4,5\) What remains clear with regard to ocular adhesives is that they remain convenient, widely applicable and sure to (and I do apologize for this last one) stick around.

References:

5. Hovanesian JA, Behesnilian A. Use of fibrin tissue adhesive in conjunctival, corneal, cataract and refractive surgery. US Ophthal Rev. 2007. Published online.

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