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Korea presents innovative eye surface reconstruction method

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Developed a new method for performing sutureless amniotic membrane transplantation using the mussel adhesive protein



A team of scientists at South Korea-based Pohang University of Science and Technology (POSTECH) has developed a new method for performing sutureless amniotic membrane transplantation using the mussel adhesive protein.

The eye is the first sensory organ that recognizes the presence or shape of an object. The conjunctiva is a thin mucous membrane that covers the front half of the eyeball. It protects the eye by secreting mucus and tears for lubrication, and prevents microorganisms from entering. However, since it is exposed to the air, it is susceptible to damages by microorganisms, bacteria, or dust. In fact, if fibrovascular tissues are left to propagate on its surface, they can lead to diseases like pterygium, which can cause visual deterioration. To treat such conditions, an operation to remove and regenerate the damaged conjunctiva is performed.

The scientists have applied a light-curable protein bioadhesive named FixLight to an animal model that simulated the transplantation of the amniotic membrane on an actual ocular surface. As a result, it was confirmed that the operation could be completed more than five times faster than the traditional suture method and the therapeutic effect of the conjunctival regeneration through stably bonded amniotic membranes could successfully replace the conventional procedure.

Professor Hyung Joon Cha of POSTECH explained, “We confirmed the effectiveness of a new amniotic membrane transplantation method for conjunctival reconstruction in an actual animal model using the mussel adhesive protein, an original biomaterial.” He added, “It is anticipated to be highly useful as a safe bioadhesive to replace sutures in various medical fields.”