Docket #: S21-059

DesRhex-Corneal Descemetorhexis Surgical Device

Stanford researchers have developed a device to create consistently perfectly circular descemetorhexis at a predictable depth for use in surgery. Descemetorhexis is an important step in surgical procedures aimed at the replacement and/or removal of Descemet's membrane, often prior to transplantation of a donor cornea. Complications can arise from an imperfectly created descemetorhexis, like stromal scarring or even corneal perforation. These complications may lead to detachment at the graft edge, requiring regrafting in another procedure. Current methodology in descemetorhexis requires a freehand approach that is imprecise and dependent on surgeon skill. There is a lack of a device to aid in more precise, consistent descemetorhexis creation.

Stanford researchers have developed the DesRhex, a handheld surgical device that aids for positioning and scoring to create consistently shaped descemetorhexis. The DesRhex is made from both polymer and metallic elements, and contains two arms on the distal end, one for positioning/stabilization and the other for scoring/cutting the Decemet's membrane. The DesRhex enables successful descemetorhexis creation with minimal damage to neighboring anatomic structures and is technically easy for a surgeon to use. This device could be of specific use in a number of surgeries concerning the Descemet's membrane to improve surgical outcomes for corneal transplant procedures.

Stage of Development
Prototype

Applications

- Aid in ophthamologist surgeries dealing with descemetorhexis:
    - Descemet's membrane endothelial keratoplasty (DMEK) surgery

    - Descemet's stripping endothelial keratoplasty (DSEK) surgery
    - Descemetorhexis without endothelial keratoplasty (DWEK) surgery
    - Descemet's stripping only (DSO) surgery

Advantages

- Creation of consistent centration shape and depth of descemetorhexis (opposed to current state-of-the-art freehand technique that lacks consistency)

Patents

- Published Application: 20220287883
- Issued: 12,029,686 (USA)

Innovators

- Michael Mbagwu
- David Buickians
- David Myung

Licensing Contact

Jon Gortat

Licensing & Strategic Alliances Director for Physical Science

Email