

## Commentary: Utilization rate of corneal tissue obtained from donors over 75 years of age in Western India for keratoplasty

Elderly corneal tissues are usually not utilized based on the belief that these tissues would have poorer tissue quality in terms of lower endothelial count, arcus, scars or haze in the stroma, and pseudophakic status of donors. However, some of these myths have been put to rest with the Cornea Donor Study (CDS), which suggested that the cumulative 5-year graft survival was 86% in both below and above the age of 66. There was no significant difference between donor age and outcomes of keratoplasty.<sup>[1]</sup> The upper cutoff of donor age was 75 years; therefore, the outcomes of such donor corneas were unknown. Lack of knowledge regarding older donors aged >75 years has led to fears of possible graft failure due to which tissues are seldom used.<sup>[2]</sup> They have attempted to address a key area of corneal utilization among cornea donors aged >75 years. Their study is relevant in the context that 36.5% of all tissues were utilized, and the tissues that were phakic and had higher endothelial cell density had a higher chance of being utilized.

In a recent analysis of utilization patterns of cornea from a large cohort of tissues, we found that utilization rates dropped to 10% beyond the age of 80 years and endothelial cell density (ECD) had a statistically significant effect on utilization of corneas from elderly donors. Our study found that ECD had a positive relationship with the utilization rate from the fourth decade onward.<sup>[3]</sup>

The indications of keratoplasty have also broadened over the last few decades with the popularization of lamellar keratoplasty. In such a scenario, the ECD does not play a significant role in anterior deep lamellar keratoplasty, while tissues with higher cell count may be used for DSEK despite anterior corneal scar or senile arcus.

Feilmeier *et al.*<sup>[4]</sup> recommended that in Southeast Asia, therapeutic indications far outnumber indications for optical keratoplasty, and therefore, glycerol preserved corneal tissues can effectively assist in providing tectonic support; such eyes may be visually rehabilitated later with optical keratoplasty. During the recent pandemic, we published our experience with glycerol preserved corneas. Among 31 transplants performed during the lockdown from March 24 to May 31, 2020, 12 keratoplasties were performed using glycerol corneal tissues. As the preservation time for glycerol corneal tissue is almost indefinite, elderly corneas that are otherwise unsuitable for optical tissues may be preserved in glycerol for emergency usage.<sup>[5]</sup>

Normal human corneal endothelium undergoes changes in cell density and cell morphology with age. Laing *et al.*<sup>[6]</sup> reported an increase in endothelial cell area to double the baseline from the age of 20 to 80 years, as well as statistically significant changes in cellular pleomorphism. The variability of endothelial morphology between both eyes is also statistically significant. These findings suggest that elderly corneas may have a potential for primary graft failure owing to poorer endothelial reserve and variability between both eyes. This has been the basis for a conservative approach by corneal surgeons with regard to utilizing tissues from elderly donors.

In conclusion, based on the evidence, about a third of all elderly corneal tissues can be utilized and donor age is not a criterion for outcomes of keratoplasty. Lamellar keratoplasty further increases the feasibility of utilization of elderly donors. Lastly, in developing nations and during pandemic times, glycerol-preserved corneal tissues are a reliable source for performing tectonic keratoplasty in an emergency.

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