

**Conclusion** We have successfully validated standard operating procedures for the production of ultra-thin DCD, in the attempt to obtain a valid alternative to amnion for the reconstruction of specific ocular regions (fornix, eye lids), where increased strength may be required. The thickness measurements at the end of processing suggest ultra-thin DCD obtained could represent a promising scaffold for regeneration of conjunctival tissue.

### 30 A NEW STEP ON AMNIOTIC MEMBRANE EXTRACT EYE DROPS (AMEED) DEVELOPMENT FOR THE TREATMENT OF SEVERE OCULAR SURFACE PATHOLOGIES

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**Introduction** Our tissue establishment developed a protocol for processing amniotic membranes as extracts to be re-hydrated and administered topically as eye drops, becoming a new approach to treat severe ocular surface pathologies. From 2015 to 2017 the safety and efficacy of the amniotic membrane extract eye drops (AMEED) were assessed in patients with severe ocular surface pathologies through clinical follow-up of ocular surface symptoms before and after regular application of the extract.

Between 2018 and 2019 a study of 36 patients (50 eyes) treated with topical AMEED was conducted comparing 2 groups of patients: Dry Eye Disease (DED) and Wound Healing Delay (WHD) showing global similar symptomatic improvement in both groups (DED 88.9% vs WHD 100%;  $p=0.486$ ) with the WHD group especially consisting in general relief (78%) and DED group reporting more pain improvement (44%) ( $p=0.011$ ). Regarding patients with autologous serum as previous treatment, no statistical differences were found in subjective or objective improvement. An overall success was achieved in 94.4% of the cases and no adverse events were found. From January 2020 to November 2021 a growth stage has been observed including more patients while optimizing and scaling the process from donation to clinical use.

**Materials and Methods** We record data of placenta donation and preparation of AMEED vials from 1/1/2020 to 30/11/2021 and its clinical use including the indications for treatment, number of requesting ophthalmologists and number of patients.

**Results** In the study period a total of 378 placentas were processed to obtain AMEED (61 in 2020 and 317 in 2021). The number of suitable vials obtained were: 1845 and 6464 respectively and 1946 vials are stored in quarantine pending release for clinical use.

A total of 9365 vials were sent for treatment of ocular surface pathologies to 31 hospitals (98% in Catalonia) and 69 requesting ophthalmologists.

The total number of patients treated was 204 and the indications for treatment were 82% DED and 18% WHD.

**Conclusion** After the new product development and introduction stages, a significant increase in the use of AMEED in Catalan hospitals was observed in 2020-2021. Follow-up data of these patients should be assessed to demonstrate its efficacy and achieve the maturity stage.

### 31 SETTING UP A BANK OF PRIMARY CELLS LINES OF PEDIATRIC AND ADOLESCENT SCLERA AND CHOROID TO STUDY POST-NATAL EYE GROWTH

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Twice as many teenagers in the UK are becoming short-sighted now, compared with the 1960s; many develop a dangerously high degree of short-sightedness (“progressive myopia”) with a risk of sight-threatening conditions in adulthood, such as retinal detachment and glaucoma. The rise in short-sightedness is even more dramatic in the Far East, where over 95% of young men are now shortsighted. One crucial feature in short-sightedness is that the eyeball becomes longer, as the white coat of the eye (sclera) is becoming softer and stretchable. We do not know how exactly this happens, but it must involve the cells that make the collagen in the sclera. At the moment lengthening of the eyeball cannot be reversed and the few existing treatments can only slow myopia progression, not stop it. New and better treatments are needed but a clear understanding of the molecular mechanisms of post-natal eye growth in humans is lacking. Critically, because myopia develops in childhood at a physiological location prohibiting biopsies, we are lacking an understanding of the cellular components involved in human eye growth and myopia, and especially how the tissues that build the eye structurally, the sclera and the choroid, are modulated during normal eye growth. We have recently begun to establish a biobank of primary fibroblasts from the sclera and choroid of pediatric, adolescent and adult tissue, to better understand how the cell populations change in those tissue as the eye grows and settles at its final adult size and shape. We have already been able to demonstrate significant differences in the cells from young and old eyes, as well as regional differences between the posterior and the anterior sections of the eye. We plan to analyse in detail the cellular profiles of the sclera during postnatal eye growth to identify markers of the different stages of eye growth (from infant to elderly). This will allow us to better understand normal eye growth and identify potential markers and new drug targets to prevent and treat myopia. Because pediatric donor tissue is so rare, our unique cell bank will be critical to the development of future studies.

### 32 CORNEAL GUTTAE AFTER DESCMET MEMBRANE ENDOTHELIAL KERATOPLASTY (DMEK)

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**Purpose** To report on the occurrence of corneal guttae after Descemet membrane endothelial keratoplasty (DMEK) in eyes operated on for Fuchs endothelial corneal dystrophy (FECD).

**Material and Methods** Case series of 10 eyes of 10 patients operated on for FECD at a tertiary referral center between 2008 and 2019. Average patient age was  $61 \pm 12$  years and 3