

Bank (RTB). However, University research had also stopped due to the pandemic and there was a situation where the RTB had good quality tissue without any users. Rather than discarding the tissue, a decision was made to store the tissue for future use by cryopreservation.

Materials and Methods An established protocol for cryopreserving heart valves was adapted. Individual corneas were placed into wax histology cassettes then inside a Hemofreeze heart valve cryopreservation bag with 100 ml cryopreservation medium (10% Dimethyl sulphoxide). They were frozen in a controlled rate freezer (Planer, UK) to below -150°C and stored in vapour phase over liquid nitrogen (VPLN) below -190°C. To assess morphology, six corneas were cut in half, one half was processed for histology whilst the other half was cryopreserved, stored for 1 week then thawed and processed for histology. The stains used were Haematoxylin and Eosin (H&E) and Miller's with Elastic Van Gieson (EVG).

Results Comparative histological examination indicated that there were no visible, major, detrimental changes in morphology in the cryopreserved group as compared to the controls. Subsequently, a further, 144 corneas were cryopreserved. Samples were assessed for handling properties by eye bank technicians and ophthalmologists. The eye bank technicians felt that the corneas may be suitable for training purposes such as DSAEK or DMEK. The ophthalmologists said that they had no preference between the fresh or cryopreserved corneas, and both would be equally suitable for training purposes.

Conclusion Time expired, organ-cultured corneas, can be successfully cryopreserved using an established protocol by adapting the storage container and conditions. These corneas are suitable for training purposes and may prevent discard of corneas in future.

4 NEW STRATEGIES IN THE BARCELONA EYE BANK TO MINIMIZE THE IMPACT OF THE COVID-19 PANDEMIC

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Since the start of the pandemic, the tissue donation in Catalonia (Spain) has decreased drastically. At the beginning of the lockdown (from March to May 2020) there was a drop of around 70% in donation of corneas and of approximately 90% in donation of placentas. Despite the fast updating of standard operating procedures, we had big difficulties in different points. For instance, in the availability of the transplant coordinator for the donor detection and evaluation, in obtaining the necessary PPE (personal protective equipment), or in the resources available in the quality control laboratories for screening. This, added to the collapse that hospitals suffered due to the large number of patients hospitalized each day, made donation levels slowly rebound.

In order to provide solutions to all patients, we tried to adapt quickly to these emerging changes.

In the case of corneas, we found a scenario that we had never had before. Although the cornea transplant plummeted at the beginning of the confinement (decreased by 60% compared to 2019), we run out of corneas -even for emergency situations- at the end of March.

This situation led us to develop a new type of therapeutic solution in our Eye Bank. The cryopreserved cornea for tectonic purposes is a tissue that is kept frozen at -196°C and can be preserved for up to 5 years. Therefore, it is a tissue that allows us to respond to possible emergencies in subsequent similar situations.

Regarding amniotic membrane for ocular care indications, the strategy was completely different. For this kind of tissue, we carried out an adaptation of our processing with two different purposes. On the one hand, to make sure that we could inactivate the SARS-CoV-2 virus, if it was there. On the other hand, to increase the donation of placentas. For this, changes in the transport medium and in the antibiotic cocktail were performed. In addition, an irradiation step was added to the final product.

Little by little, it seems that the donations of corneas and placentas have been recovering. However, it is necessary to think about future contingency strategies in case a stop in donation is repeated.

5 THE IMPACT OF THE PANDEMIC ON OCULAR TISSUE PROCUREMENT : THE EXPERIENCE OF FONDAZIONE BANCA DEGLI OCCHI DEL VENETO

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Introduction Since 21 February 2020, the day that the first Italian COVID-19 case was identified, the organizational and regulatory conditions for ocular tissue donation have undergone numerous changes in order to guarantee safety and quality. Herewith we report the key responses of the procurement programme to these challenges.

Materials and Methods A retrospective analysis of the ocular tissue procured between 1 January 2020 and 30 September 2021 is reported.

Results 9224 ocular tissues were procured during the study period (weekly average: 100 ± 21 tissues, mean \pm SD; down to 97 ± 24 , if only 2020 is considered). During the first wave, the weekly average reached 80 ± 24 tissues, a significant reduction if compared to the first 8 weeks of the year (124 ± 22 tissues/week, $p < 0.001$), falling to 67 ± 15 tissues/week during the lock-down period. Considering the ocular tissues collected in the Veneto Region alone, the weekly mean was 68 ± 20 , a reduction when compared to the first 8 weeks of the year (102 ± 23 , $p < 0.001$), arriving at 58 ± 15 tissues/week during the lock-down period. The percentage of healthcare professionals who tested positive during the first wave was on average 12% of the positive cases in the whole country, and equal to 18% in the Veneto Region alone. During the second wave, the mean weekly recovery of ocular tissue was 91 ± 15 and 77 ± 15 in the Veneto Region, compared to positive cases of healthcare professionals of 4% across Italy and in the Veneto Region. During the third wave, the overall weekly mean recovery rate was 107 ± 14 , and 87 ± 13 in the Veneto Region, with only 1% of positive cases among healthcare professionals in Italy and in the Veneto Region.

Conclusions The most dramatic decrease of ocular tissue recovery occurred during the first wave of COVID-19, notwithstanding the lower number of infected people. This

phenomenon can be attributed to different factors: a high percentage of positive cases and/or contacts among potential donors; the number of infections among healthcare professionals, favoured by the lack of personal protection equipment and the still partial knowledge of the disease; the exclusion of donors with bilateral pneumonia. Subsequently, the system was better organized with the assimilation of new knowledge about the virus, overcoming the initial fears about transmission and thus guaranteeing the resumption and maintenance of donations.

6 THE IMPACT OF COVID-19 ON CORNEAL TRANSPLANTATION IN ENGLAND

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Introduction/Background At the beginning of the COVID-19 pandemic, eye banks around the world had to assess the impact of SARS-CoV-2 infection in potential ocular tissue donors and decide how to characterise donors to meet ongoing demand for tissue for transplantation.

NHSBT eye banks normally issue cornea grafts for over 4000 transplants per annum (pre-pandemic). SARS-CoV2 RNA screening is not a requirement for eye donor characterisation. Donor authorisation is based on review of donor medical and contact history and any available COVID test results (e.g. from hospital testing or as part of organ donor characterisation). After retrieval, globes are disinfected with PVP-iodine, and corneas stored in organ culture.

This presentation explores the impact of COVID-19 on corneal donation and transplantation in England.

Methods UK Transplant Registry data were analysed on all corneal donors and transplants in England from 1 January 2020 to 2 July 2021. All laboratory confirmed SARS CoV-2 infections were collected by Public Health England from 16 March 2020. Information was available until mid-November 2021.

To assess the possibility of transmission through a transplanted graft, cases with a diagnosis of infection within 14 days post transplant were identified for further review.

Results 4130 corneal grafts were performed in England. We are aware of 222 recipients who tested positive for SARS-CoV2. 2 of these have been reported to have died within 28 days of testing positive. The diagnosis of SARS-CoV2 infection in these 2 recipients had been made beyond 30 days post transplant.

In 3 of the 222 infected recipients, the interval between transplant and infection was within 14 days (all 3 recipients alive). 2 of the 3 donors were fully characterised organ donors (universally screened for SARS-CoV-2 RNA in upper and lower respiratory tract samples), and one was an eye only donor who had tested negative in hospital 2 days prior to death.

Conclusions The linkage of large registries allows collection of useful data in a large cohort of patients transplanted during the COVID-19 pandemic. The incidence of COVID-19 and characteristics of corneal transplant recipients who tested positive for SARS-CoV2 were found to be similar to those for the general population of England.

These data have not identified any epidemiological evidence for transmission of COVID-19 through corneal transplantation, and offer reassurance about the safety and quality systems that are in place to allow ongoing corneal transplantation during the pandemic.

Theme 2 – Donation and procurement

7 CURRENT PRACTICE OF HEALTHCARE PROFESSIONALS IN HOSPICE AND HOSPITAL PALLIATIVE CARE SETTINGS RELATED TO EYE DONATIONS PART OF END-OF-LIFE CARE: A NATIONAL SURVEY

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Background Around 53% of the world's population have no access to the benefits of sight saving and sight restoring transplantation surgery due to a short fall in the supply of ophthalmic tissue that is only available via eye donation (ED). In England the National Health Services Blood and Transplant (NHSBT) seeks to have a consistent and sustained supply of eye tissue to satisfy current demand, however, historically and currently there is gap between supply and demand. Data reports that between April 2020 - April 2021, 3,478 corneas were donated a 37% decrease on the previous year figure of 5,505 corneas. In view of this shortfall other routes to supply are needed with Hospice Care and Hospital Palliative care settings being a potential route.

Aim As Health Care Professionals (HCPs) are the gatekeepers to the option of ED being raised with patients and family members this presentation will share findings from a national survey carried out with HCPs across England between November/December 2020 seeking knowledge related to i) current practice across the ED pathway, 2) views of HCPs toward embedding ED in routine end of life care planning; and 3) what current informational, training, or support needs are reported by survey participants.

Findings One hundred and fifty-six participants completed the online survey, representing an 8% response rate (of n=1894 approached). Responses to a 61-item questionnaire indicated that: the majority of respondents were aware of ED as an end-of-life option, however, despite the reported perception of most participants that discussing ED was not distressing to patients and family members the option of ED was only discussed IF the patient or family member first raised the topic. Currently most care settings do not actively encourage the option of ED being discussed with patients and/or their family members, nor is ED routinely discussed in multi-disciplinary meetings. Furthermore, when asked about training related to ED, 64% of participants (n = 99/154) said they had unmet training needs.

Conclusion Findings from this survey indicate a paradoxical stance toward ED among HCPs in hospice and palliative care settings; that is, substantial support for and positive attitudes toward inclusion of ED in end-of-life planning (including within their own practice), aligned with low levels of activity in offering the option. There is very little evidence of eye donation being embedded in part of 'routine' practice, and this may be linked to unmet training needs.