Many of you wanted to have more communication in the Eye Banking field. That is the reason why Eurobio presents you the first issue of the Cornea News, the newsletter dedicated to the eye bank activities and their new releases. To inaugurate this first issue, Diego Ponzin, in charge of the famous Fondazione Banca degli Occhi del Veneto (FBOV) of Mestre, Italy, has done us the honor of writing the Edito. All our staff thank him for his kind collaboration. This first issue will be largely devoted to the age of cornea donors.

**EDITO**

Eye banking and donor age

Diego Ponzin, M.D., Fondazione Banca degli Occhi del Veneto

A number of conditions, senile and *post mortem* degeneration, can affect the suitability to transplantation of donor corneas.

Age criteria for cornea donors are not well defined and vary between eye banks and surgeons.

The diameter of the infant cornea stops growing after 2 years of age, and the curvature probably reaches adult dimension during the second semester of life. While the small diameter, thinness and elasticity of the infant cornea may cause technical problem for the surgeon, it has been suggested in the past that corneas from donors older than 65 years could undergo higher endothelial cell loss after penetrating keratoplasty. Other authors have stated that diagnosis of the recipient and the surgeon’s experience are more important than donor age in determining graft survival. In fact, five-year graft survivals for cornea transplants at moderate risk for failure are similar using corneas from donors older or younger than 66 years.

In countries that experience a shortage of suitable corneal tissues, any age restriction should be carefully evaluated, because age alone is a poor criterion for cornea selection. After a thorough evaluation, the clinical outcome is independent from donor age.

Elderly donors, however, influence the efficiency of the eye bank, because increase the discard rate. As the modern eye banking is associated to high structural and operational costs, in order to maintain a 60% suitability rate, which is in line with the international experiences, an upper age limit can be justified, if the procurement programs are successful

* references are on the third page
Should there be an age limit for corneas gift in France?

For several years now, we have been witnessing the population ageing. Thus, according to the INSEE (French National Institute of Statistics and Economics Studies), in 2050, for every 100 inhabitants aged between 20 and 59, there will be 69 inhabitants aged at least 60, which double the 2005 ratio. This natural trend is linked to the increase of life expectancy and the decrease of birth rate and could result in a significant increase of tissue donors aged 85 or over.

Is it rational to reduce the age of cornea donors with the observation of these estimations or can we expect by then to have correctly increase public awareness and to be able to collect enough cornea on younger subjects?

This review aims to present two hypotheses, one to show that imposing an age limit reduces the operating cost of a tissue bank without decreasing its transplant activities; and one demonstrating that grafts from donors aged 85 or over are quite acceptable for transplantation.

A preliminary study was conducted from May 9 to 16, 2012, with the French eye bank to determine whether an age limit is implemented. Among the fifteen eye banks in France, all responded to the study.

Ten banks do not have an age limit, four banks have an age limit greater than or equal to 85 years and one bank has an age limit of 80 years. But this latter bank is conducting a study and recently raised this age limit, proof that there is a real concern of eye banks on that matter.

Finally, another interesting fact, some banks require an age limit at the request of surgeons who do not wish to transplant corneas from donors older than 90 years.

Data collected and written by C. Albrecht, Cornea Product Specialist, Eurobio

Imposing an age limit reduces operating costs for Eye Banks without reducing the number of transplanted corneas.


Between 2004 and 2008, the number of corneas donated increased as well as the proportion of corneas donated by donors over 76 years. However this has not been correlated to the increase of transplanted corneas. The reason of this difference is simple: statistically, the proportion of corneas from patients over 76 years is less often transplanted than those from younger patients.

These different observations conducted the cornea banks in Turin to introduce an age limit of 75 during one year in the collecting center of the Hospital and to follow the inherent results.

The first consequence of this required age limit was a sharp decrease in the number of collected corneas (a decrease of more than 32% from 2008 to 2009), with a stable number of transplanted corneas (367 in 2008 vs 381 in 2009).

The introduction of this age limit did not impact the number of transplanted patients. But the activity of the bank changed and costs have been reduced. Indeed, the harvest itself has a material and human costs estimated to 253.57€ per corneas by the bank of Turin, regardless the tissue fate.

The results of this study tend to go along the lines of the age limit introduction for the corneas donation. It is however important to note that in Italy, the supply exceeds the demand for corneas and this country exports many tissues.

This means some corneas are more often discarded in Italy when they could be considered as perfectly transplantable in other circumstances.

For a country where a bank has more difficulties to get enough tissues to cover its needs, it could be regrettable to systematically discard corneas when among them a great number could have been good for transplantation.
The second study will precisely show that corneas from patients over 85 years can be very good tissues for patients that are waiting for transplantation.

Unlike Italy, France is a country where it is more difficult to collect all the necessary corneas to cover the needs for transplantation. The ageing population is therefore to consider when selecting donors.

The St Etienne bank completed a study on more than 400 corneas to investigate on the fate of corneas after organ culture and sometimes even after the transplant.

**Corneal harvesting from donors over 85 years of age: cornea outcome after banking and grafting**


The aim of the study is to evaluate the suitability of corneas from very old donors (> 85 years old) for graft after organ culture but also the outcome in patients after perforating keratoplasty.

The different results from the study led to several conclusions. At first, we note that corneas from older donors are discarded based on low endothelium quality. However, the number of corneas selected for organ culture is still important (46.1% vs 54.8% for younger donors, not significant).

Moreover, if the cellular endothelial density is significantly different at the beginning of the preservation in organ-culture (in favor of corneas from donors younger than 85), this difference disappear after organ culture. It means the cellular loss in corneas from older donors is less important compared to corneas from younger donors.

This suggests that corneas from donors aged over 85 are often of poorer quality, but those of acceptable qualities are really stable in culture, whereas younger ones have a greater cellular loss.

After the patients have been grafted, there was no significant difference on several indicators (visual acuity, astigmatism, rejection, ocular hypertension). Performances of grafted corneas are not influenced by the donor age. These data have been collected 20 months after transplantation.

**CONCLUSION**

Considering the important number of corneas from old donors that can be used for grafting, the current difficulty to cover all needs and the ageing of population, it seems important to consider that old donors should not be deemed off-limits for corneal collection in France.

However, another data was not taken into consideration in those studies and would deserve to be considered. It regards post mortem delay when harvesting. Indeed, the longer the delay, the more tissues are damaged. Therefore, combining very old donors and post mortem delay could be a real reason not to collect, for then have to discard tissues almost every time.

It is then still necessary today to communicate on the importance of tissue donation and on its own will. It is the only way to facilitate the hospital coordination work and thus reduce post-mortem delay for tissue collection.

**Other sources:**


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