

14th World Congress on **STEM CELL RESEARCH**

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DELIVERY OF STEM CELLS TO THE RETINA: RESEARCH FINDINGS**Ayşe Oner***Acibadem Health Group, Turkey*

Stem cells are unspecialized and immature cells. These cells are highly proliferative and can transform to specialized mature cells. They also have the potential to repair tissue and restore function after injury. The mechanism of stem cell applications are:

1. Cell replacement
2. Nutritional support
3. Anti-apoptosis
4. Synapse formation

There are numerous advantages of stem cell therapy in the eye. The amount of stem cells required is low, which is important in terms of cost. The surgical approach is quite easy, and the transplanted cells can be easily monitored with the imaging methods. The fellow eye can be used as a control. Long-term immunosuppressive treatment is not required due to the immune privilege of the eye. Surgical approach may be as follows:

1. Intravitreal
2. Vitrectomy and Subretinal
3. Suprachoroidal
4. Retrobulbar/Subtenon
5. Intravenous

There are some disadvantages of intravitreal and subretinal implantation of stem cells. Uncontrolled bleb extension or cell reflux out of the bleb through the retinotomy and into the vitreous cavity may happen. Reflux of subretinally injected cells or intravitreal injection of cells may cause some side effects like development of epiretinal membranes or retinal traction. The migratory potential of transplanted cells is not well appreciated. Suprachoroidal, retrobulbar or subtenon implantation of stem cells seems to be safer than vitrectomy with subretinal injection and intravitreal injection. There is no removal of the vitreous and no iatrogenic complications. The results of our clinical studies including suprachoroidal implantation provide evidence of beneficial effects of stem cell implantation in degenerative retinal and optic nerve diseases. To optimize the cell delivery technique and to evaluate the effects of stem cell therapy on visual acuity and the quality of life of these patients, future studies with larger number of cases will be necessary.

Biography

Ayşe Oner worked at "Erciyes University, Faculty of Medicine, Department of Ophthalmology" between 1997-2019. She was a professor in ophthalmology between 2013-2019. Currently working at Acibadem University Atakent Hospital and Acibadem Kayseri Hospital. Also, about to finish a stem cell PhD program in GENKOK (Genome and Stem Cell Center)