

Whole Eye Transplant: Is The Future Really Bright?

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INTRODUCTION

“A whole eye transplant could be a holy grail for vision restoration,” said Jeffrey Goldberg, a renowned ophthalmologist.

Currently, there are 43 million blind people due to various reversible and irreversible causes.^{1,2}

Curing irreversible blindness is every ophthalmologist come true. One of the lucrative options currently being discussed and talked about is a whole eye transplant. It is not a new idea. Various experiments had all been done on animals but with little success. Though this option may appear very promising to hear and read, it comes with its own complex challenges. For a long time, it has remained a theoretical endeavor. In case of any transplant surgery, two targets need to be achieved:

- Anatomical Restoration
- Functional Restoration

In the case of a whole eye transplant, which has been recently performed, partial anatomical restoration was achieved, wherein on performing ERG, it was found that there was a positive response from the photoreceptor. Still, unfortunately, a vision was not restored.³

Major challenges for functional success remain rejection and failed establishment of a neuronal connection between the optic nerve and CNS. To increase the chances of success

CD34⁺ adult stem cells were incorporated into a human optic nerve during a transplant as it is both neuroprotective and helps in the replacement of damaged cells, but complete success was not obtained.

To sum up the journey has just begun, and there is a long way to go, and Yes! The future does appear to be bright.

“The mere fact that we transplanted an eye is a huge step forward, something that for centuries has been thought about, but it’s never been performed,” **-Dr. Eduardo Rodriguez** (who led the team for the first whole eye transplant).

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UP JOURNAL OF OPHTHALMOLOGY

An Official Journal of Uttar Pradesh State Ophthalmological Society,
UPSOS (Northern Ophthalmological Society, NOS)

p-ISSN: 2250-1916

DOI: 10.56692/upjo.2024120201

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How to cite this article: Mohan S, Singh A. Whole Eye Transplant: Is The Future Really Bright?. *UP Journal of Ophthalmology*. 2024;12(2): 32-33.

Received: 12-08-2024, **Accepted:** 14-09-2024, **Published:** 29-11-2024

