



University of Michigan
Kellogg Eye Center

Prosthetic Replacement of the Ocular Surface Ecosystem | PROSE

Information for Patients and Doctors



BOSTON FOUNDATION *for* SIGHT

Treatment Description

PROSE (prosthetic replacement of the ocular surface ecosystem) is a pioneering treatment model developed by Boston Foundation for Sight (BFS) to restore vision, support healing, reduce symptoms and improve quality of life for patients suffering with complex corneal disease. PROSE uses FDA-approved custom designed and fabricated prosthetic devices to replace or support impaired ocular surface system functions that protect and enable vision.



Benefits

- Reestablishes a healthy and stable ocular surface environment that supports healing and reduces symptoms
- Improves vision by masking surface corneal irregularities and transmitting a sharp image to the back of the eye
- Prevents damage by protecting and shielding the cornea and conjunctiva against the environment and eyelids



For many of the thousands of patients suffering with complex corneal disease, PROSE can be the ideal, and sometimes only, treatment capable of restoring vision and dramatically reducing eye pain and light sensitivity.

Indications

Ocular Surface Disease

Dry Eye Syndrome

Chronic ocular graft versus host disease (GVHD)
Sjögren's syndrome
History of LASIK or other refractive surgery

Limbal Stem Cell Deficiency

Stevens-Johnson syndrome (SJS)/
toxic epidermal necrolysis syndrome (TENS)
Aniridia
Cicatricial conjunctivitis/ocular cicatricial
pemphigoid
Chemical/thermal injury

Epidermal Ocular Disorders

Goldenhar syndrome
Ectodermal dysplasia
Atopy
Epidermolysis bullosa

Neurotrophic Keratitis

Herpes zoster (shingles)
Herpes simplex (ocular herpes)
Familial dysautonomia
Moebius syndrome
Trigeminal nerve dysfunction
Post-surgical

Corneal Exposure/Lagophthalmos

Anatomic
Paralytic
• Acoustic neuroma

Corneal Ectasia/ Irregular Astigmatism

Corneal Degenerations and Dystrophies

Keratoconus
Keratoglobus
Pellucid marginal degeneration
Terrien's marginal degeneration
Salzmann's nodular degeneration
Meesmann's corneal dystrophy

Post Operative Astigmatism

Cornea transplant (penetrating
keratoplasty or PK, PKP)
Radial keratotomy (RK)
Phototherapeutic keratectomy (PTK)
Photorefractive keratectomy (PRK)
Epikeratophakia
LASIK
Open globe injury

Corneal Scarring

After trauma
After infection



Devices Used in PROSE

The prosthetic devices created during PROSE are transparent domes, about the size of a nickel, made of gas-permeable plastic that allows oxygen to reach the ocular surface. Devices fit under the eyelids and rest on the sclera (the relatively insensitive white tissue) of the eye, vaulting the damaged cornea and creating a new smooth optical surface that protects the eye from the environment and blink trauma. The devices are filled with sterile saline at the time of insertion, creating a reservoir of fluid that continuously bathes the ocular surface with oxygenated artificial tears.



PROSE Creates:

- A new transparent, smooth optical surface over the irregular, damaged or diseased cornea
- An expanded artificial tear reservoir that provides constant lubrication while maintaining necessary oxygen supply

Prosthetic devices have three important zones performing different functions:

Optic Zone – replaces the optical power of a healthy cornea in combination with the fluid reservoir

Transitional Zone – assures sufficient vault over any cornea shape, independent of base curve

Haptic Zone – maximizes ocular surface system function by precisely aligning the shape of the haptic bearing with the shape of the patient's eye

The mathematical description of contours using spline functions that are integral to the Design to Fit (DTF)TM CAD/CAM system allow devices to be created of almost infinitely variable shapes with smooth transitions between zones.

Treatment Process



PROSE interdisciplinary treatment teams include a cornea specialist ophthalmologist and an optometrist who has completed an intensive nine - week PROSE Clinical Fellowship at Boston Foundation for Sight. PROSE treatment teams work with each patient, his/her support system and other medical providers to form a collaborative care network in which all members work to understand each patient's specific needs and reach treatment goals together.

PROSE Clinical Fellows use Boston Foundation for Sight's proprietary DTF CAD/CAM system to directly control the design and assure that each prosthetic device precisely fits the patient's unique eye shape and maximizes ocular surface system function. Devices are manufactured at BFS' state-of-the-art lab using Precitech ultra-precision diamond Nanoform computerized numerical command (CNC) lathes, typically used to manufacture high-tech parts for the aerospace industry.



Steps in the Treatment Process

- Referral from primary eye care provider, medical doctor or cornea specialist
- Initial medical review by our doctors
- Determination of insurance coverage and potential eligibility for financial assistance (2-6 weeks)
- PROSE treatment (4 - 12 day-long visits)
- Periodic follow-up visits as required
- Annual evaluation by the PROSE provider

Patients continue to be followed by their primary eye care provider throughout treatment, and ongoing care is coordinated with primary providers and the PROSE treatment team.

Call Us Today for a Consultation!

Call us today to learn more or set up a consultation. We are available to answer all of your questions. Please call Molly Wheaton today! (734) 232-8400



About Kellogg Eye Center PROSE Clinic

The PROSE Clinic at the Kellogg Eye Center is located at the University of Michigan Medical Center, one of the largest medical centers in the world. Our PROSE clinic opened in 2010 with the addition of PROSE Clinical Fellow Karen S. DeLoss, OD. We offer a comprehensive approach to the management of ocular surface disease, including dry eye syndrome, with more than 45 doctors with various specialties and sub-specialties available to our patients.

The University of Michigan Kellogg Eye Center is a nationally recognized center for vision care and research. Kellogg ophthalmologists conduct 128,000 patient visits each year, offering an exceptional range of services. At the University medical campus in Ann Arbor, we have a comprehensive ophthalmology clinic as well as seven subspecialty clinics. We serve the region through eight community offices in Ann Arbor, Brighton, Canton, Livonia, Milford, West Bloomfield and two locations in Ypsilanti.

Dr. DeLoss and our PROSE program coordinator Molly Wheaton would be happy to assist you with any questions you may have regarding candidacy, billing, insurance or scheduling. It is our goal to make the approval and treatment process as easy as possible for our patients.

Contact Information

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About Boston Foundation for Sight

Boston Foundation for Sight (BFS) is an internationally renowned nonprofit eye health care organization specializing in complex corneal disease research, education, treatment and patient care. Their 13,000 square foot facility in Needham, MA, includes a state-of-the-art manufacturing lab, a medical institute staffed with seven doctors and a dozen technicians/trainers, a Clinical Research Center and a new Patient and Community Support Center.

Please visit their website for more information: www.bostonsight.org or call 781-726-7337.



Research Highlights

PROSE treatment “significantly improved visual acuity and visual functioning in patients with corneal ectasia, irregular astigmatism and ocular surface disease....”

- American Journal of Ophthalmology 2010; 149: 54-61

Fit of prosthetic devices “could be attained in all candidate eyes (n = 89) with corneal ectasia. 93.1% of eyes achieved visual acuity of 20/40 or better.” PROSE treatment “yielded significant increase in visual function... with high tolerance (wearing failure 8%) at 6 months.”

- Poster Presentation, World Cornea Congress VI, April 2010

PROSE Clinic Network

In addition to the Kellogg Eye Center at the University of Michigan and Boston Foundation for Sight, there are eleven top-ranked specialty eye care institutes located in academic medical centers in the U.S. and clinics abroad that offer PROSE treatment. Each PROSE clinic is independently operated by PROSE partners who manage scheduling and insurance and provide ongoing care.

Doheny Eye Institute, University of Southern California, Los Angeles

Illinois Eye and Ear Infirmary, University of Illinois College of Medicine, Chicago

North Shore - Long Island Jewish Health System, Great Neck, NY

Weill Cornell Eye Associates, Weill Cornell Medical College, New York City

Alkek Eye Center, Baylor College of Medicine, Houston, TX

Brooke Army Medical Center, San Antonio, TX

LV Prasad Eye Institute, Hyderabad, India

Sankara Nethralaya, Chennai, India

The Eye Super Specialities (TESS), Mumbai, India

Noor Eye Hospital, Tehran, Iran

Nagoya Eye Clinic, Nagoya, Japan