

Supplementary Online Content

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This supplementary material has been provided by the authors to give readers additional information about their work.

eAppendix 1. Cornea Preservation Time Study Group

Clinical Sites

Listed in order of number of patients enrolled in the CPTS are the clinical sites with site name, city, state, number of eyes enrolled (in parentheses), name of the principal investigator, and other investigators ordered alphabetically. The names of the coordinators ordered alphabetically are also included.

Central Pennsylvania Eye Institute, Hershey, PA (220). Investigators: George Rosenwasser, MD (PI), J.E.B. Fugate, OD. Coordinators: Alicia Burrows, Miriam Rosenwasser.

Verdier Eye Center, Grand Rapids, MI (107). Investigators: David Verdier, MD (PI), Mary Pat Chelsky, OD, Lyndsay Tomkins, OD. Coordinators: Samantha Ciganick, Paula Johnson, Devon Keeler, Brent Spoelstra, Pamela Van Duyn.

Cornea Associates of Texas, Dallas, TX (66). Investigators: Tyrone McCall, MD (PI), Walter Beebe, MD, Charles Bowman, MD, Aaleya Koreishi, MD. Coordinators: Paige Grona, Jennifer Hargrove, Maria Mendez.

University of Michigan/Kellogg Eye Center, Ann Arbor, MI (62). Investigators: Alan Sugar, MD (PI), Shahzad Mian, MD. Coordinators: Munira Hussain, Sonal Trivedi.

Michigan Cornea Consultants, Southfield, MI (59). Investigators: Steven Dunn, MD (PI), Christopher Chow, MD, David Heidemann, MD. Coordinators: Elizabeth Brazier, Elly Garden, Tina MacLeod.

Mid-Atlantic Cornea Consultants, Baltimore, MD (58). Investigator: Sudeep Pramanik, MD (PI). Coordinators: Jessica Byer, Jennifer Freter, Hillary Herman.

Northeast Ohio Eye Surgeons, Kent, OH (52). Investigators: Marc Jones, MD (PI), Katie Greiner, OD, Elizabeth Muckley, OD. Coordinator: John Valentine.

Devers Eye Institute, Portland, Oregon (50). Investigators: Mark Terry, MD (PI), Mike Straiko, MD. Coordinators: David Davis-Boozer, Mark Greiner, Zachary Mayko, Kelsey Oakes.

Dean Medical Center, Madison, WI (41). Investigator: Christopher Croasdale, MD (PI), Coordinators: Lynn Dombrowicki, Michelle Kole, Gayle Walheim-Brown.

Eye Associates Northwest, Seattle, WA (40). Investigator: Thomas Gillette, MD (PI). Coordinators: Jennifer Caillier, Michelle Corrigan, David Diaz, Christine Morchin.

Mercy-St. John's Clinic, Springfield, Missouri (39). Investigators: Shachar Tauber, MD (PI), Alison Hood-Kirar, OD. Coordinator: Crystal Trythall.

Focal Point Vision, San Antonio, TX (38). Investigators: Kenneth Maverick, MD (PI), James Lehmann, MD. Coordinators: Ashley Grizzard, Lisa Navarro.

University of Kentucky Department of Ophthalmology, Lexington, KY (34). Investigators: Woodford Van Meter, MD (PI), Douglas Katz, MD. Coordinators: Judy Beck, Lakisha Jeffries, Toni Scoggins, Jane Webb.

Minnesota Eye Consultants, Bloomington, MN (33). Investigators: David Hardten, MD (PI), Marlane Brown, OD, Ahmad Fahmy, OD, Mona Fahmy, OD, Benjamin Fogal, OD, Scott Hauswirth, OD, Richard Lindstrom, MD, Sherman Reeves, MD. Coordinators: Alex Belsaas, Lindsey Fallenstein, Sara Mork, Amanda Stehly, Joshua Tisdell.

Ophthalmic Partners of PA, P.C., Bala Cynwyd, PA (32). Investigators: Irving Raber, MD (PI), Brandon Ayres, MD. Coordinators: Samantha Campbell, Gordon Drever, Cathy Petrocella, Irene Spanelis.

Cincinnati Eye Institute, Cincinnati, OH, (31). Investigator: Michael Nordlund MD, PhD (PI). Coordinators: Jen Bradford, Tracy Cruz.

University of Illinois Chicago Eye and Ear Infirmary, Chicago, IL (31). Investigators: Elmer Tu, MD (PI), Ali Djalilian, MD, Maria Soledad Cortina, MD. Coordinator: Marie Dolores Byrne.

Northshore University Health System, Glenview, IL (26). Investigators: Marian Macsai, MD (PI), Joshua Herz, MD. Coordinators: Vicenta Martinez, Mira Shiloach.

Medical Eye Center, Medford, OR (25). Investigator: Matthew Oliva, MD (PI). Coordinators: Heather Smith, Toni Wild.

The Wilmer Eye Institute/Johns Hopkins, Baltimore, MD (25). Investigators: Yassine Daoud, MD (PI), Oliver Schein, MD, Walter Stark, MD. Coordinators: Holly Brown, Kaitlyn Hodges, Mary LoValvo, Regina Morgan, Kimberly Pratzner, Stacey Seabrook, Nadia Wong.

Mayo Clinic, Rochester, MN (23). Investigators: Sanjay Patel, MD (PI), Keith Baratz, MD. Coordinators: JaMario Ayers, Melissa Franzen, Rebecca Nielsen, Heidi Rubin, Diane Vogen.

University of Utah, Moran Eye Center, Salt Lake City, UT (23). Investigator: Mark Mifflin, MD (PI). Coordinators: Katie Farnsworth, Deborah Harrison.

Sadeer Hannush PC, Langhorne, PA (22). Investigator: Sadeer Hannush, MD (PI). Coordinators: Brian Sperling, Lisa Sperling.

The Ohio State University Wexner Medical Center- Havener Eye Institute, Columbus, OH (19). Investigators: Thomas Mauger, MD (PI), Andrew Hendershot, MD, Rebecca Kuennen, MD. Coordinators: Dana Doneski, Deniz Eren, Meredith Hiltbrand Andrea Inman Jonda Leser, Sara Oravec, Christopher Petec, Demarcus Williams.

Keck Medical Center of USC-Ophthalmology, Los Angeles, CA, (18). Investigators: Jonathan Song (PI), Neda Shamie, MD, J. Martin Heur, MD. Coordinators: Grace Chon, John Gil-Flamer, Yoon Hee Kim, Margaret Padilla, Amelia Weldon.

Ophthalmic Consultants of Boston, Boston, MA (16). Investigators: Michael Raizman, MD (PI), Nicoletta Fynn-Thompson, MD, Peter Rapoza, MD. Coordinators: Harrison Bannett, Emily Beem, Joanne Berry, Tina Callina, Amanda Campbell, Allison Coombs, Samantha Hulbert, Jennifer Moro Brent Richardson, Kimberly Santos, Angell Shi.

Bascom Palmer Eye Institute, Miami, FL (15). Investigators: Sonia Yoo, MD (PI), Michael Banitt, MD, Kendall Donaldson, MD, Carol Karp, MD. Coordinators: Maria Esquiabro, Ailen Gutierrez, Janika San Roman, Martha Tello, Ruth Vanderbrook, Patrick Waren.

Stein Eye Institute, University of California, Los Angeles, CA (14). Investigators: Anthony Aldave, MD (PI), Sophie Deng, MD. Coordinators: Marianne Bernardo, Zach Fenoglio, Serina Gonzales, Ellen Haupt, Mathew Margolis, Elaine Ngo.

Eye Care of San Diego, San Diego, CA (13). Investigator: John Bokosky, MD (PI). Coordinators: Jennifer Manke, Tracee McCoy, Mallory Moreno, Natasha Ozerskiy, Deborah Rodriguez.

New York Eye and Ear Infirmary, New York, NY (13). Investigators: John Seedor, MD (PI), David Ritterband, MD, Elaine Wu, MD. Coordinator: Alice Hong, Kristen Fry Yvonne Lyons, Katy Tai.

Eye Consultants of Maryland, Owings Mills, MD (12). Investigators: Verinder Nirankari, MD (PI), Jennifer Nottage, MD. Coordinator: William Bolt.

Corneal Associates, PC, Wills Eye Institute, Philadelphia, PA (11). Investigators: Kristin Hammersmith, MD (PI), Parveen Nagra, MD, Christopher Rapuano, MD. Coordinator: Megan DiLeo, William Garvey, Michael Lindsay, Sara Rapuano.

Cornea Consultants of Albany, Slingerlands, NY (11). Investigators: Robert Schultze, MD (PI), Robert Eden, MD. Coordinators: Katherine Cavanaugh, Joelle Rifenburg, Kamil San, Alice Titova.

University Hospitals Cleveland Medical Center, Cleveland, OH (9). Investigators: Pankaj Gupta, MD (PI), Kristina Thomas, MD. Coordinators: Lisa Ferguson, Sangeetha Raghupathy, Jessica Tag, Kalisha Washington.

Woolfson Eye Institute, Atlanta, GA (9). Investigator: R. Doyle Stulting, MD, PhD (PI), Coordinators: Jane Bryant, Deborah DiChiara, Aubrey Kirchner, Jodi Miller, Jesand Sylve.

Eye Consultants of Atlanta, Atlanta, GA (8). Investigator: W. Barry Lee, MD (PI). Coordinators: Kimberly Harber, Teresa Long.

University of Iowa Hospitals and Clinics, Iowa City, IA (8). Investigators: Kenneth Goins, MD (PI), Mark Greiner, MD, Anna Kitzmann, MD, Michael Wagoner, MD, PhD. Coordinators: Tammy Burdick, Constance Mullinnix.

Ophthalmology Associates, St. Louis, MT (7). Investigators: Gregg Berdy, MD (PI), Robert Brusatti, OD, Ranjan Malhotra, MD. Coordinators: Debi Gravemann, Jill Montgomery, Diane Sanders, Amy Young.

Center for Sight, Sarasota, Florida, (7). Investigators: William Lahners, MD (PI), James Lenhart, OD, Kyle Schaub, MD. Coordinators: Karen Hagin, Jamie Leeper, Tina Maler, Ginger Moritz, Gisela Santiago, Dawn Satterlee, Alyssa Willard.

University of California - San Francisco, San Francisco, CA (3). Investigators: Jennifer Rose-Nussbaumer, MD (PI), Bennie Jeng, MD. Coordinators: Ariana Austin, Puja Cuddapah, Dionna Fry, Alexandra Neiman, Cissy Yang.

Eye Banks

Listed in order of number of eyes enrolled in the CPTS are the eye banks with name, city, state, number of eyes in parentheses, and names of the principal investigators.

Eversight Michigan (formerly Midwest Eye-Banks Michigan), Ann Arbor, MI (226). Kristen McCoy

Gift of Life Donor Program Eye Bank, Hershey, PA (220). Nai Liang

KeraLink International (formerly Tissue Banks International), Baltimore, MD (132). Sameera Farazdaghi

Eversight Illinois (formerly Midwest Eye-Banks Illinois), Chicago, IL (88). Kristen McCoy

Sightlife, Seattle, WA (68). Caroline K. Hoover.

University of Texas Southwestern, Dallas, TX (66). Donna Drury

Lions Eye Bank of Delaware Valley, Philadelphia, PA (65). Gregory Dorn
Eversight Ohio (formerly Cleveland Eye Bank), Cleveland, OH (61). Kristen McCoy
Minnesota Lions Eye Bank, St. Paul, MN (56). Veronique Grimes
Lions VisionGift, Portland, OR (51). Chris G. Stoeger
Saving Sight, Kansas City, MO (47). Deborah Van Klinken
Lions Eye Bank of Wisconsin, Madison, WI (41). Mikelanne Schipper (now with Lions Eye Institute for Transplant & Research)
Iowa Lions Eye Bank, Coralville, IA (34). Gregory Schmidt
Lions Eye Bank of Lexington, Lexington, KY (34). Patrick Haley
Cincinnati Eye Bank, Cincinnati, OH (31). Tina Mays
Utah Lions Eye Bank, Salt Lake City, UT (23). Wade McEntire
Georgia Eye Bank, Atlanta, GA (17). Eric Meinecke
Florida Lions Eye Bank, Miami, FL (14). Elizabeth Fout-Caraza.
San Diego Eye Bank, San Diego, CA (13). Jeffrey G. Penta
Eye Bank for Sight Restoration, New York, NY (13). Patricia Dahl
Miracles in Sight (formerly North Carolina Eye Bank), Winston-Salem, NC (12). Michael Tramber
Lions Eye Bank at Albany, Albany, NY (11). Victoria Adler
Lions Eye Institute for Transplant & Research, Tampa, FL (7). Patrick Gore (now with Saving Sight), Wilfred Caraballo

Study Chair's Office, Case Western Reserve University and University Hospitals Eye Institute, Cleveland, OH. Jonathan H. Lass, MD (Study Chair), Helen Novotney, April Scorzino.

Coordinating Center, Case Western Reserve University and University Hospitals Eye Institute, Cleveland, OH. Loretta B. Szcotka-Flynn, OD, PhD (Director), Michelle Corrigan, Neda Farooqi, Lisa Ferguson, Lori Karpinecz, Michael Payne, Leslie Richards, Tatiana Riedel, Jessica Tag, Kalisha Washington.

Cornea Image Analysis Reading Center, Case Western Reserve University and University Hospitals Eye Institute, Cleveland, OH. Jonathan H. Lass, MD (Medical Director), Beth Ann Benetz, MA (Technical Director), Glenn Barton, Andrew Bear, Le'Rashaun Jones, Lori Karpinecz, Michele Kit, Mark Madere, Harry Menegay, PhD, Tanisha Rankins-Coker, Garth Wadleigh.

Data Management and Analysis Center, Jaeb Center for Health Research, Tampa, FL. Roy W. Beck, MD, PhD (Executive Director), Allison R. Ayala, MS (DMAC Director), Kenneth Arcieri, Darrell S. Austin, Daphne M. Auza, Mitchell Dupre, Amber Evans, Robin L. Gal, MSPH, Craig Kollman, PhD, Nadine E. Labell, Wendi Liang, MSPH, Alandra S. Powe MSPH.

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Executive Committee. Jonathan H. Lass, MD (Chair), Anthony J. Aldave MD, Allison R. Ayala, MS, Roy W. Beck, MD, PhD, Beth Ann Benetz, MA, Michelle M. Corrigan, Steven P. Dunn, MD, Robin L. Gal, MSPH, Ty L. McCall MD, Lisa Navarro, Sudeep Pramanik, MD, Maryann Redford, DDS, MPH, Kevin W. Ross, MS, MPH, George O. Rosenwasser, MD, Loretta B. Szczotka-Flynn, OD, PhD, Mark A. Terry MD, David T. Verdier, MD

Eye Bank Advisory Committee: Kevin W. Ross, MS MPH (Chair), Patricia Dahl, Donna C. Drury, Sameera M. Farazdaghi, Caroline K. Hoover, Jeffery G. Penta, Mark C. Soper, Chris G. Stoeger, Doyce V. Williams

Data and Safety Monitoring Committee

David C. Musch, PhD, MPH (DSMC Chair), William Bourne, MD, Kathryn A. Colby, MD, PhD, Marian Fisher, PhD, Rabbi Samuel Fishman, Maryann Redford, DDS, MPH

National Institutes of Health: National Eye Institute, Bethesda, MD. Maryann Redford, DDS, MPH, Steven Oversby, PsyD

eAppendix 2. Institutional Review Boards

Dean Institutional Review Board

Icahn Mount Sinai School of Medicine Institutional Review Board / New York Eye and Ear Infirmary of Mount Sinai Institutional Review Board

Johns Hopkins Institutional Review Board

Legacy Institutional Review Board

Mayo Clinic Institutional Review Board

Mercy Institutional Review Board

North Shore University Health System Institutional Review Board

The Ohio State University Biomedical Institutional Review Board

University Hospitals Cleveland Medical Center Institutional Review Board

University of California Los Angeles Institutional Review Board

University of California San Francisco Institutional Review Board

University of Illinois at Chicago Institutional Review Board

University of Iowa Institutional Review Board

University of Kentucky Institutional Review Board

University of Miami Institutional Review Board

University of Michigan Medical School Institutional Review Board

University of Southern California Health Sciences Campus Institutional Review Board

University of Utah Institutional Review Board

Wills Eye Hospital Institutional Review Board

eTable 1. Quality Control Repeat Grading Results^a

Difference between re-grades vs originals	All visits			By visit (Overall only, i.e. combining round 1 and round 2)				
	Overall	Round 1	Round 2	Pre-op	6M	12M	24M	36M
	N = 430	N = 215	N = 215	N = 100	N = 86	N = 90	N = 86	N = 68
Mean (SD) [Range]	3 (3) [0-19]	3 (3) [0-18]	3 (3) [0-19]	3 (4) [0-19]	3 (3) [0-14]	2 (2) [0-11]	2 (3) [0-14]	1 (1) [0-6]
n (%) of re-grades consistently non-analyzable	3 (1%)	1 (<1%)	2 (1%)	2 (2%)	0	0	0	1 (1%)
n (%) of re-grades <5% different	370 (86%)	190 (88%)	180 (84%)	78 (78%)	70 (81%)	79 (88%)	79 (92%)	64 (94%)
n (%) of re-grades 5-10% different	39 (9%)	15 (7%)	24 (11%)	14 (14%)	10 (12%)	8 (9%)	5 (6%)	2 (3%)
n (%) of re-grades >10% different	14 (3%)	7 (3%)	7 (3%)	6 (6%)	4 (5%)	2 (2%)	2 (2%)	0
n (%) of re-grades resulting in inconsistent gradability assessment	4 (1%)	2 (1%)	2 (1%)	0	2 (2%)	1 (1%)	0	1 (1%)

^a 7 Quality control image sets were flagged for a separate masked outlier review process, 4 of which resulted in regrading

eTable 2. Baseline Recipient Characteristics in Eyes with Graft Success^a

	Preservation Time Group	
	0-7 Days (N=485)	8-14 Days (N=460)
Age when Patient Enrolled^b (years) – Median (IQR)	70 (64, 76)	70 (64, 76)
Gender: Women - n (%)	296 (61)	279 (61)
Race/Ethnicity - n (%)		
White	451 (93)	428 (93)
African-American	11 (2)	12 (3)
Hispanic or Latino	13 (3)	15 (3)
Asian	4 (<1)	1 (<1)
American Indian/Alaskan Native	0	0
More than one race	4 (<1)	3 (<1)
Unknown/Not Reported	2 (<1)	1 (<1)
History of diabetes^c- n (%)	70 (14)	73 (16)
Current cigarette smoker^c- n (%)	23 (5)	23 (5)
Received any immunizations or vaccinations in last 3 months^c- n (%)	59 (12)	51 (11)
Study Eye Characteristics		
Prior glaucoma surgery- n (%)	10 (2)	11 (2)
Glaucoma medications currently being used - n (%)	28 (6)	32 (7)
Diagnosis- n (%)		
PCE without FECD	24 (5)	14 (3)
ACE without FECD	0	0
FECD ^{1,2}	461 (95)	446 (97)
Grade 0 ³	1 (<1)	1 (<1)
1	0	0
2	2 (<1)	2 (<1)
3	7 (1)	9 (2)
4	57 (12)	58 (13)
5	146 (30)	138 (30)
6	248 (51)	238 (52)
Evidence of a corneal abnormality other than FECD- n (%)		
No	451 (93)	436 (95)
Posterior Polymorphous	0	0
Keratoconus	1 (<1)	0
EBMD	28 (6)	22 (5)
Other	5 (1)	2 (<1)
Stromal corneal vessels present (but <u>not</u> visually significant) - n (%)	1 (<1)	1 (<1)
Central subepithelial or stromal scarring present (but could <u>not</u> impact postop stromal clarity assessment) - n (%)	20 (4)	29 (6)
Peripheral anterior synechiae present (non-gonioscopic)-n (%)	2 (<1)	1 (<1)
Pre-operative lens status - n (%)		
Phakic	251 (52)	265 (58)
Aphakic	0	0
Pseudophakic PC IOL	234 (48)	195 (42)
Post-operative lens status - n (%)		
Phakic	3 (<1)	2 (<1)
Pseudophakic PC IOL	482 (99)	458 (99)
IOP (mm Hg) – Median (IQR)	14 (12, 17)	14 (12, 17)

Abbreviations: FECD: Fuchs' endothelial corneal dystrophy; PCE: Pseudophakic corneal edema; ACE: Aphakic corneal edema; PC IOL: Posterior chamber intraocular lens; EBMD: epithelial basement membrane dystrophy

^a Includes eyes with graft success at 3 years and gradable image at 3 years (i.e., the primary ECD analysis cohort).

^b If participant had 2 study eyes, the data collected at time of enrollment of first eye are counted in both columns.

^c These patient-level questions were repeated at the time of enrollment of the second eye, so the answers could differ from one eye to the next.

eTable 3. CPTS Donor Characteristics in Eyes with Graft Success^a

	Preservation Time Group	
	0-7 Days N=485	8-14 Days N=460
Donor age (years)		
<=30	20 (4)	33 (7)
31-50	82 (17)	66 (14)
51-60	129 (27)	112 (24)
61-70	188 (39)	177 (38)
71-76	66 (14)	72 (16)
<i>Median (IQR)</i>	61 (52, 67)	61 (52, 67)
Gender: Women- n (%)	174 (36)	162 (35)
Race/Ethnicity - n (%)		
White	418 (86)	406 (88)
African-American	26 (5)	25 (5)
Hispanic or Latino	27 (6)	23 (5)
Asian	5 (1)	3 (<1)
American Indian/Alaskan Native	2 (<1)	0
More than one race	0	0
Native Hawaiian/Other Pacific Islander	2 (<1)	0
Unknown/Not Reported	5 (1)	3 (<1)
History of diabetes: Yes- n (%)	127 (26)	120 (26)
Cause of death- n (%)		
Cancer	90 (19)	82 (18)
Cardiovascular Disease	198 (41)	163 (35)
Cerebrovascular Accident	49 (10)	53 (12)
Drug Overdose	8 (2)	11 (2)
Motor Vehicle Accident	20 (4)	23 (5)
Organ Failure	11 (2)	15 (3)
Pulmonary Embolism	22 (5)	13 (3)
Respiratory Disease	33 (7)	34 (7)
Other Trauma	22 (5)	22 (5)
Other	32 (7)	44 (10)
How time of death determined- n (%)		
Last known alive	32 (7)	26 (6)
Pronounced	429 (88)	406 (88)
Cross-clamp	23 (5)	28 (6)
Established by core temperature	1 (<1)	0
Method of retrieval- n (%)		
In situ	481 (99)	460 (100)
Whole globe	4 (<1)	0
Refrigerated / On Ice: Yes- n (%)	439 (91)	411 (89)
Storage solution- n (%)		
Life 4°C	22 (5)	16 (3)
Optisol GS	463 (95)	444 (97)
Folds severity: - n (%)		
None	101 (21)	86 (19)
Mild	315 (65)	315 (68)
Moderate	69 (14)	59 (13)
Pleomorphism /Polymegethism- n (%)		
None	351 (72)	336 (73)
Mild	132 (27)	122 (27)
Moderate	2 (<1)	2 (<1)

Screening endothelial cell density — <i>cells/mm²</i>		
Mean (SD)	2746 (297)	2723 (284)
[Min, Max]	[2300, 3888]	[2304, 3663]
Lamellar dissection performed by- <i>n (%)</i>		
Eye Bank	342 (71)	326 (71)
Surgeon	143 (29)	134 (29)
Pre-operative endothelial cell density - For subset of corneas that were eye bank prepared (image obtained just after lamellar dissection)		
Mean (SD)	2749 (370)	2778 (386)
[Min, Max]	[1840,4793]	[970,4243]
Pre-operative endothelial cell density - For subset of corneas that were surgeon prepared (image obtained just prior to shipping)		
Mean (SD)	2736 (315)	2731 (344)
[Min, Max]	[2057,3577]	[1660,3759]
Death to preservation time – <i>hours</i>		
Median (IQR)	10 (7,14)	10 (7,14)
[Min, Max]	[0,20]	[0,22]

^a Includes eyes with graft success at 3 years and gradable image at 3 years (i.e., the primary ECD analysis cohort)

eTable 4. Four Year Endothelial Cell Density (cells/mm²) in Eyes with Graft Success^a

	N	Mean Screening ECD (SD)	Mean Preoperative ^b ECD (SD)	Mean Year ECD (SD)	Mean Percent ECL from Screening to 4 Year (SD)	P-value for 4 Year ECD
Overall	412	2731 (277)	2794 (354)	1578 (679)	43 (23)	
Preservation Time Group						.04 ^c
0-7 days	203	2728 (280)	2770 (323)	1620 (673)	41 (23)	
8-14 days	209	2734 (275)	2817 (381)	1537 (683)	44 (23)	
Preservation Time Subgroup						.07 ^d
0-4 days	54	2757 (260)	2809 (371)	1637 (719)	41 (24)	
5-7 days	149	2718 (288)	2756 (305)	1614 (658)	41 (23)	
8-11 days	135	2753 (287)	2810 (373)	1610 (700)	42 (24)	
12-14 days	74	2699 (249)	2829 (397)	1404 (635)	49 (22)	
Preservation Time (Days)						.009 ^e
0-3	23	2741 (271)	2710 (378)	1851 (651)	32 (23)	
4	31	2768 (255)	2883 (354)	1478 (736)	47 (23)	
5	44	2765 (303)	2717 (341)	1651 (581)	40 (20)	
6	55	2681 (268)	2760 (300)	1599 (667)	41 (24)	
7	50	2718 (294)	2788 (275)	1596 (722)	42 (24)	
8	27	2805 (292)	2821 (281)	1615 (670)	43 (20)	
9	43	2727 (307)	2768 (411)	1614 (655)	41 (23)	
10	33	2803 (267)	2929 (399)	1854 (795)	35 (26)	
11	32	2692 (272)	2730 (347)	1348 (613)	49 (24)	
12	39	2761 (278)	2933 (429)	1586 (662)	43 (21)	
13	27	2628 (206)	2684 (310)	1266 (533)	52 (20)	
14	8	2638 (154)	2807 (383)	980 (555)	63 (21)	

Abbreviations: ECD= Endothelial cell density; ECL=Endothelial cell loss

^a Includes eyes with graft success at 4 years and a gradable image at 4 years

^b Preoperative image ECD is missing for 4 and 6 eyes in this cohort, due to imaging not done or not gradable.

^c The 4 year analysis model paralleled that of the primary 3 year outcome, i.e., a mixed linear model evaluating 4 year ECD as the dependent variable, adjusting for screening ECD and corneal diagnosis (pre-defined to include in the model regardless of significance), as well as storage solution, lamellar dissection preparation by eye bank versus surgeon, and accounting for correlated data from participants with 2 study eyes or 2 donor corneas from the same donor. Random surgeon effects were explored using a mixed linear model (p-value=.02 for PT effect)

^d The same 4 year analysis model was used, except PT subgroups were analyzed as categorical. PT subgroups were also explored as ordinal, p-value=.04 and random surgeon effects were explored using a mixed linear model (p-value=.003 for PT effect).

^e The same 4 year analysis model was used, except PT was analyzed as continuous. Random surgeon effects were explored using a mixed linear model (p-value=.001 for PT effect).

eReferences

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3. Abbott RL, Fine BS, Webster J, R.G., Paglen PG, Spencer WH. Specular microscopic and histologic observations in nonguttate corneal endothelial degeneration. *Ophthalmology*. 1981;88(8):788-800.