

CURRICULUM VITAE

STEVEN THOMAS CHARLES, M.D.

PLACE OF BIRTH: Raleigh, North Carolina

CITIZENSHIP: United States

EDUCATION:

1969	M.D. - University of Miami School of Medicine
1965-69	University of Miami School of Medicine
1963-65	University of Oklahoma (Engineering/Pre-Med)
1962-63	North Carolina State College (Engineering)
1961-62	University of Miami (Engineering)

BOARD CERTIFICATION: 1974 American Board of Ophthalmology

PRACTICE: 7/75 to present Vitreoretinal Surgeon - private practice, Charles Retina Institute, 6401 Poplar Avenue, Suite 190, Memphis, Tennessee 38119

FELLOWSHIP: 7/73-7/75 Clinical Associate, National Eye Institute, National Institute of Health, Bethesda, Maryland. Retinal consultant to National Naval Medical Center, Bethesda, Maryland

RESIDENCY: 7/70-7/73 Ophthalmology Residency, Bascom Palmer Eye Institute, Miami, Florida

INTERNSHIP: 6/69-6/70 Straight medicine, Jackson Memorial Hospital, Miami, Florida - HEW
Research Fellowship in Ophthalmology concurrent with internship

MILITARY SERVICE: 7/73-7/75 Commissioned officer in U.S. Public Health. Senior Assistant Surgeon, National Eye Institute Bethesda, Maryland. Clinical Associate, National Eye Institute, Bethesda, Maryland.

MEDICAL**LICENSURE:**

1970 National Board of Medical Examiners Parts I, II and III.
1970 State of Florida License #0015740
1974 State of Tennessee License #MD008675
1987 State of Utah License #871777001205
1987 State of Arkansas License #N-7376
1991 State of Mississippi License #12969
1991 State of Alaska License #AA2727
1993 State of New Mexico License #93-21
1994 State of Kentucky License #30237
1994 State of Alabama License #18617
1995 State of California #G 082052
1996 State of Idaho #M-6945
1996 State of Washington #MD00033615
1997 State of Missouri #MD 112201

PROFESSIONAL SOCIETIES (COLLEGE):

Phi Kappa Phi Engineering Honor Society
American Society of Mechanical Engineers

HONORS (MEDICAL SCHOOL):

Dean's List
C. V. Mosby Scholarship Award
\$1,000 Academic Scholarship Award
Honorary Mention, Student Research Day
Upjohn Award for Best Student Clinical Years

MEDICAL SOCIETY AFFILIATIONS:

Memphis/Shelby County Medical Society (1975)
Mid-South Medical Association
American Medical Association (1975)
American Academy of Ophthalmology (1977)
The Macula Society (1977)
Tennessee Academy of Ophthalmology (1977)
Tennessee Medical Association (1977)
The Retina Society (1980)
The Ultrasound Society (1978)
American Society of Retinal Specialists (1983)
The Club Jules Gonin (1989)

MEDICAL SOCIETY AFFILIATIONS (cont.):

The Association for Research in Vision & Ophthalmology-ARVO (1984)
Arkansas Medical Society (1994)
National Medical Association (1995)
Southern Medical Association (2000)
New Mexico Ophthalmology Society (2001)
Ophthalmic Anesthesia Society - Board Member & Vice President (2002)
Florida Medical Association (2008)

ENGINEERING SOCIETY AFFILIATIONS:

American Society of Mechanical Engineers
Institute of Electronic and Electrical Engineers
Laser Electro Optic Society
Society of Photo Instrumentation Engineers

HOSPITAL STAFF APPOINTMENTS:

Baptist Memorial Hospital (principal affiliation)
Baptist Women's Hospital
Baptist Rehabilitation, Germantown
Methodist Healthcare Systems
Regional Medical Center at Memphis Hospital
LeBonheur Children's Medical Center, Memphis
North Mississippi Medical Center, Tupelo, Mississippi

UNIVERSITY APPOINTMENTS:

Clinical Professor of Ophthalmology, University of Tennessee, College of Medicine,
Memphis

Adjunct Associate Professor in the Department of Biomedical Engineering, University of
Tennessee, Memphis, January 1992.

Adjunct Faculty Member in Biomedical Engineering
Department, University of Memphis 1988-present

EDITORIAL BOARDS:

Retina: The Journal of Retinal and Vitreous Diseases, 1982- present
Video Journal of Ophthalmology, 1984-present

Ocular Surgery News, 1992-1997
Review of Ophthalmology, 1994-present
Vitreoretinal Surgery and Technology, 1998-present

COMMUNITY/MEDICAL BOARD POSITIONS:

Telecommunications/Computers Work Group, Future Memphis, 1983
Executive Board, International Society of Diagnostic
Ultrasound, 1984
Medical Advisory Board, South Texas Eye Foundation, 1984 - present
American Board of Eye Surgeons and American College of Eye Surgeons 1986-present
Biomedical Research Zone, 1987-1989
Medical Advisory Board, Orbis International, 1989-1999
Fellow, American College of Surgeons, 1989-1993
Board Member, Helen Keller Eye Research Foundation
Medical Director for Tennessee Eye Health Network, 1994
Chairman for Science and Technology Committee at the Tennessee Academy of
Ophthalmology, 1995
Fellow, International Society of Ophthalmic Endoscopy, Inc., 1998
Fellow, International College of Surgeons, 1999

TECHNOLOGY COMPANY BOARD POSITIONS:

InnoVision Medical, Chairman of Board and Founder 1986-1991
Technology Application Board-Ballistic Missile Defense Organization 1987-present
Ioptex Research, Inc. Scientific Advisory Board 1987-1991
MCT Investors 1988-present
InSight 1989-2004
MicroDexterity Systems, Founder & Chairman 1991-2009, acquired
CamPlex, President, 2012-present

TECHNOLOGY COMPANY BOARD POSITIONS:

Micro Vision, Advisory Board, 1994-1999
Virtual Vision, Advisory Board, 1994-1996

AVIATION RATINGS:

Single engine land and sea
Multi-engine
Commercial
Instrument
Citation Type Rating (jet)
Single Engine Float Plane Rating

PATENTS:

USP 3,993,064 - Mechanical Syringe Drive for Vitreous Surgery

USP 4,045,630 - Chin Operated Switch for Motorized Microscope, 3 Axis Movement

USP 4,395,258 - Linear Intra-ocular Suction Device

USP 4,493,698 - Method of Performing Ophthalmic Surgery Utilizing a Linear
Intra-Ocular Suction Device

USP D325,086 - Ocular Unit for Eye Surgery (OCM)

USP 5,176,628 - Vitreous Cutter

USP 5,464,025 - Tubing Management System

USP 5,710,870 - Decoupled Six Degree of Freedom Robot
Manipulator

USP 5,784,542 - Decoupled Six Degree of Freedom
Teleoperated Robot System

USP 5,858,345 - In Vivo Polymerizable Ophthalmic
Compositions

USP 5,943,914 - Master-Slave Micromanipulator Apparatus

USP 6,000,297 - Master-Slave Micromanipulator Method

USP 6,016,607 - Coordinated X-Y Stage Apparatus

USP 6,124,037 - Articles Coated With In Vivo Polymerizable
Ophthalmic Compositions

USP 6,180,687 - In Vivo Polymerizable Ophthalmic Compositions
and Methods of Using

USP 6,330,837 - Parallel Mechanism

USP 6,626,834 - Spiral Scanner with Electronic control

USP 6,665,554 - Medical Manipulator for use with an Imaging Device

PATENTS:

USP 6,676,669 - Surgical Manipulator

USP 7,141,048 – Vitreoretinal Instrument

USP 7,193,169 – Charles Footswitch

BASCOM PALMER EYE INSTITUTE - RESIDENT'S DAY PAPERS:

1969 "The Effect of Intraocular Pressure on Pupil Size"

1970 "The Early Receptor Potential in Experimental Retinal Detachment"

1971 "Retinal Function in Detached Retinas"

1972 "The Role of Light in Photoreceptor Degeneration in Retinal Detachment"

1973 "Cone Dysfunction Syndromes"

MEDICAL STUDENT PAPERS AT NATIONAL MEETINGS:

"The Relation of Intraocular Pressure to Pupil Size", Symposium on the Pupil, Bethesda, Maryland, May 1969.

"Retinal Function in Totally Detached Retina: A Study of ERP in Experimental Retinal Detachment", presented with Robert Machemer, M.D., ARVO Spring National Meeting, Sarasota, Florida, April 1971.

"Experimental Deprivation of Choroidal Blood Flow on the Owl Monkey, II Early Receptor Potential", ARVO Atlantic Section Meeting, Miami Beach, Florida, November 1974.

COURSES ATTENDED DURING RESIDENCY AND FELLOWSHIP:

First International Congress on Ultrasound in Ophthalmology, Philadelphia, Pennsylvania, 1968.

COURSES ATTENDED DURING RESIDENCY AND FELLOWSHIP (cont.):

Armed Forces Institute of Pathology, Course in Ophthalmic Pathology, 1973.

Port Huron Course on Vitreous Surgery, Port Huron, Michigan, 1974.

OTHER HONORS, AWARDS, ETC.:

Listed in "Best Doctors in the U.S.", by John Pekkanen, 1982

Listed in "The 400 Best Doctors in America", Good Housekeeping magazine, March 1991

Professor L.P. Agarwal Gold Medal, September 1991

Listed in "The Best Doctors in America", written by Steven Naifeh and Gregory W. Smith, published by Woodward/White, Aiken, South Carolina (First & Second Edition)

Excellence in Technology Award, EyeCare Technology Magazine & Expo, 1993

Front cover **Today's Healthcare** magazine, May 1994

Cover story in **Discover** magazine "Surgery in Cyberspace", December 1994, Vol. 15, Number 12.

Featured in "Doc in a Box" article in special issue of **Time** magazine, "The Frontiers of Medicine", Fall 1996.

Listed in "Best Ophthalmologists in America", **Ophthalmology Times**, October 15, 1996.

Finalist in the Second Annual Memphis Business Journal Health Care Heroes, May 4, 2000.

Distinguished Service Award, Department of Ophthalmology, University of Tennessee, Memphis, June 9, 2000.

Senior Achievement Award, American Academy of Ophthalmology, 2000.

Alcon Innov8 Award, October 26, 2000.

Senior Honor Award Winner, The Vitreous Society, November 2000.

Hermann Wacker Prize Recipient of the Club Jules Gonin, September 3, 2002.

Feature Story (Top 12 Innovators of the Past 20 Years) in **Ocular Surgery News**, Vol. 20, No. 17, September 1, 2002.

2003 Hall of Fame Recipient, The University of Miami , School of Medicine, May 10, 2003.

Listed in “Best Doctors in America” 2005-2006.

OTHER HONORS, AWARDS, ETC.:

Listed in “Best Doctors in America” 2007-2008

Ophthalmology Lifetime Achievement Award for Vitreoretinal Excellence, Mediterranean Retina III, Istanbul, Turkey, June 2008.

NAMED & SPECIAL LECTURES:

Tenth Bodenheimer Lecture - May 1983

Paul Cibis Memorial Lecture - May 1983

Sigmund Schutz Professorship Lecture - March 1991

A. Raymond Pilkerton Retinal Lecture - June 1992

James Travis Robison Lecture - May 1995

Vitreous Society Founders Lecture - September 1997

Lois A. Young Memorial Lecture - September 1997

Edward W.D. Norton Lecture - June 1998

Herman Wacker Prize Recipient Lecture - September 2002

The Taylor Smith Lecture – March 2004

The First Annual E. Michael Van Buskirk Lecture - June 2004

Henry Van Dyk Memorial Lecturer - June 2006

Mark Tso Lecture – August 2006

Krill Memorial Lecture – December 2006

Edgar L. Thomas Lecture – March 2008

STEVE CHARLES ALUMNI CLUB: (9/91-present, INDIA)

Chairman - P.N. Nagpal, M.D.

Secretary - Amar Agarwal, M.D.

Jr. Secretary - Rajeev Sharma, M.D.

Treasurer - Chander Neroor, M.D.

STEVE CHARLES GOLD MEDAL AWARD PRESENTED TO:

Bert Glaser, M.D. - 1991

Edward W.D. Norton, M.D. - 1993

Michael Knorz, M.D. - 1994

SURGICAL OBSERVERS:

1,500

FELLOWSHIP PROGRAM:

1 yr. Clinical Fellowship - 15

Clinical Preceptorship - 22

VITRECTOMIES: 24,000 7/1/75-present

SURGERY PERFORMED IN:

France	Russia	Sweden	Cuba	Italy
Philippines	China	Belgium	India	
Netherlands	Jamaica	Greece	Peru	

INTERNATIONAL TEACHING:

England	Germany	Italy
Kuwait	Japan	Israel
Colombia	Finland	Australia
Brazil	Austria	Canada
Bermuda	Switzerland	Spain
Singapore	Denmark	

RESEARCH

First year medical school: Experimental canine ocular surgery at Coral Gables Veterans Administration Hospital, Surgical Research Laboratory.

Summer 1966: Visual evoked cortical potentials and electrophosphores, with Thorne Shipley, Ph.D., at Bascom Palmer Eye Institute (BPEI).

Second year medical school: Clinical pupillography and instrumentation, with J.A. Singer, M.D., at BPEI.

Summer 1967 and third year medical school: Simultaneous electroretinography and pupillography, operating room television, afferent pupillary defects in retinal rivalry and amblyopia, pupillomotor perimetry and the effect of intraocular pressure on pupil size, with Drs. E.W.D. Norton, J.T. Flynn, D.I. Hamasaki, R.L. Brunner, R.H. Bresky at BPEI.

Summer 1968 and fourth year medical school: Including six month research elective in ophthalmology at BPEI: Clinical electroretinography and electro-oculography, clinical pupillography, the early receptor potential in experimental retinal detachment, the effect of visual deprivation on the visual system, and clinical ultrasound, with Drs. J.T. Flynn, R. Machemer, O.J. Grusser. Course work in biomedical engineering and computer programming.

During internship: HEW Research Fellowship for 12 months in extra hours. Early receptor potential in experimental retinal detachment, with Dr. R. Machemer; experimental ocular siderosis with Drs. D.R. Anderson and L. Mascuilli; experimental deprivation of choroidal blood flow, with Dr. H. Buettner, all at BPEI.

During the first year of residency: ERP in experimental retinal detachment, development of an automated, ocular fundus simulator for teaching, with Dr. M.S. Gordon and J.M. Parel.

During second year of residency: The role of light in the retinal detachment induced degeneration of the rods and cones, with Dr. R. Machemer; the ERG in cyanate treated rabbits, with Dr. D. Harkness, both

at BPEI.

During internship and all residency years: Developed and operated a Retinal Function Laboratory at BPEI with ERG, EOG, ERP, VER, dark adaptation, photostress, retinal profiles, and color vision testing. Correlated results with clinical data in approximately 700 cases. Collected and reported series of vitreo-tapeto-retinal degeneration, drusen, fundus flavimaculatus, Oguchi's disease, choroideremia, X-linked retinitis pigmentosa, vitelliform macular degeneration, and cone dysfunction syndromes.

National Eye Institute: Performed over 50 clinical trans pars plana vitrectomies and assisted on 50. Developed a monkey anterior chamber assay for human vasoproliferative factor.

During Private Practice: Clinical research and prospective data bases developed for ROP, EMP, PVR, diabetic clear media TRD, submacular surgery, macular hole and giant break series. Technology development areas include: robotics, fluidics, tissue cutting, confocal retinal imaging, telecommunications, information systems, 3D ultrasound, tracker stabilized photocoagulation, advanced laser indirect, man-machine interface, foot pedals, materials science, design and manufacturing technologies.

Principal Investigator for the following clinical trials:

- Eyeteck AMD Study
- Eli Lilly Diabetic Study
- Alcon Surgical Study
- Alcon AMD Study

SCIENTIFIC DISCOVERIES

1968: Discovery of the cause of the fixed, dilated pupil of angle-closure glaucoma.

1968: Discovery of an afferent pupillary defect during retinal rivalry in amblyopia.

1970: Discovery of the presence of the early receptor potential (ERP) in detached retina.

1971: Discovery of the role of exposure to ambient illumination in the degeneration of photoreceptors in detached retina.

SURGICAL TECHNIQUES DEVELOPED

Internal fluid/gas exchange, 1973

Internal drainage of subretinal fluid, 1973

Bipolar bimanual diathermy, 1974

Endophotocoagulation, 1974

Scissors segmentation of epiretinal membranes, 1974

Anterior loop traction dissection, 1976

Retinotomy, 1978

Retinectomy, 1978

Subretinal surgery, 1978

Inside-out membrane dissection techniques, 1979

Scissors delamination of epiretinal membranes, 1979

Delamination prior to posterior hyaloid face truncation ("en bloc"), 1979

Needle external drainage of subretinal fluid, 1980

CLINICAL CONCEPTS

Glial recurrence in proliferative diabetic retinopathy vitrectomy, 1975

Retrolenticular neovascularization (anterior hyaloideal fibrovascular proliferation), 1979

Anterior loop traction, 1975

Compartmentalization concept (barrier concept), 1979

PVR enhancing effect of silicone/gas retinal interface, 1979

PVR enhancing effect of lens/IOL, 1979

Role of anterior hyaloid face and lens in anterior segment neovascularization, 1979

EQUIPMENT DEVELOPED

Internal drain cannula (tapered/bent) for subretinal fluid, 1973

Spinning illuminated E for controlled low vision testing, 1974

Coaxial cannula, 1974

Zeiss endophotocoagulator adapter, 1974

Subretinal fluid drainer, 1974

Real time, gray scale B scan ultrasound, 1975

Real time color encoding in B scan ultrasound, 1975

Real time central vector in B scan ultrasound, 1975

Fenestrated muscle hook, 1975

4mm/20 gauge infusion cannula, 1976

Filter for fluorescein angiography during vitrectomy

Microretinal retractor, 1976

Flute needle, 1976

Irrigating fundus contact lens with integrated handle and fluid connection, 1976

Bipolar bimanual intraocular diathermy clips, 1976

Suction only modality of the foot pedal, 1977

Log III portable xenon endophotocoagulation adapter, 1978

Modified Sutherland Scissors for delamination, 1978

Infusion sleeve (Charles), 1978

Subretinal Scissors, 1979

MicroVit proportional scissors, 1979

Subretinal forceps, 1979

Illuminated intraocular foreign body forceps, 1979

MicroVit (MVS) vitrectomy system, 1979

Volumetric power gas injector, 1979

Ocutome air-operated vertical scissors, 1980

Coherent 900 argon laser endophotocoagulator adapter, 1980

Microvitreoretinal (MVR) blade, 1980

Stable head rest for operating table, 1980

Charles drape for fluid collection, 1983

9mm non-slotted tire for scleral buckling, 1983

Delamination oscillatory cutter system, 1984

Ocular Connection Machine, 1986

Laser Imaging Work Station, 1986

Innovit Cutter, 1986

Surgical instrumentation cart, 1986

Surgeon Controlled Positioner, 1993

BIBLIOGRAPHY

1. Brenner RL, Charles S, Flynn JT: Pupillary responses in rivalry and amblyopia. *Arch. Ophthalmol.* 82(1):23-29, July 1969.
2. Bresky RH, Charles S: Pupil motor perimetry. *Am. J. Ophthalmol.* 68(1):108-112, July 1969.
3. Charles S, Hamasaki DI: The effect of intraocular pressure on the pupil size. *Arch. Ophthalmol.* 83(6):729-733, June 1970.
4. Charles S: Pupillography. *Neuro-Ophthalmology Symposium of the University of Miami and the Bascom Palmer Eye Institute*, J.L. Smith, editor, Volume 5, Chapter 7, pp. 88-91, 1970.
5. Masciulli L, Anderson DR, Charles S: Experimental ocular siderosis in the squirrel monkey. *Am. J. Ophthalmol.* 74(4):638-661, October 1972.
6. Charles S: A simplistic approach to patients with hereditary disorders of the retina. *Neuro-ophthalmology Symposium of the University of Miami and the Bascom Palmer Eye Institute*, Vol. 6, C. V. Mosby Company, 1972.
7. Buettner H, Machemer R, Charles S, Anderson DR: Experimental deprivation of choroidal blood flow - retinal morphology, early receptor potential, and electroretinography. *Am. J. Ophthalmol.* 75(6):943-952, June 1973.
8. Charles S, Machemer R: Experimental retinal detachment in the owl monkey X: The early receptor potential. *Am. J. Ophthalmol.* 77(4):509-512, April 1974.
9. Charles S, Machemer R: Experimental retinal detachment in the owl monkey XI: The role of light in photo-receptor atrophy. *Am. J. Ophthalmol.* 78(2):233-235, August 1974.
10. Charles S: Physiology of the retina. *Clinical Ophthalmology*, Volume 3, Chapter 2, Thomas Duane, Editor, Harper & Row, 1976.
11. Charles S, McCarthy C, Eichenbaum D: A chin operated switch for motorized three-axis microscope movement. *Am. J. Ophthalmol.* 80(1):150-151, July 1975.
12. Charles S, McCarthy C, Eichenbaum D: A mechanical syringe drive for vitreous surgery. *Am. J. Ophthalmol.* 79(5):879-880, May 1975.
13. Charles S, White J. Dennison C, Eichenbaum D: Bimanual, bipolar intraocular diathermy.

Am. J. Ophthalmol. 81(1):101-102, January 1976.

14. Charles S: New advances in ophthalmology through technology. Tennessee Medical Alumnus, Winter 1976, pages 7-10.
15. Charles S: Ancillary techniques to trans pars plana vitrectomy. New and Controversial Aspects of Vitreoretinal Surgery, Alice McPherson, Editor, C. V. Mosby Company, 1977.
16. Charles S: Electrical signals of the retinal microcircuitry. Physiology of the Human Eye and Visual System, Chapter 12, Raymond E. Records, Editor, Harper & Row, 1977.
17. Charles S: Fluid-gas exchange in the vitreous cavity. Ocutome Newsletter 2(2):1, June 1977.
18. Charles S: Trans pars plana and posterior chamber lensectomy with the Girard phako-fragmentor and automated suction. Current Concepts in Cataract Surgery, Selected Proceedings of the Fifth Biennial Cataract Surgical Congress, Jared Emery, Editor, C.V. Mosby Company, 1978.
19. Charles S: Four Papers: Intravenous Fluorescein for Anterior Segment Microsurgery; Bipolar Bimanual Diathermy; Chin Switch; Ocutome. Current Concepts in Cataract Surgery, Selected Proceedings of the Fifth Biennial Cataract Surgical Congress, Jared Emery, Editor, C. V. Mosby Company, 1978.
20. Charles S: Common sense in retinal function testing. Neuro-Ophthalmology Update, Volume 9, Chapter 40, J. Lawton Smith, editor, Masson Publishing USA Inc., 1977.
21. Charles S, Wang C: Linear suction control system. Ocutome/Fragmatome Newsletter 4(3):1, September 1979.
22. Charles S: Endophotocoagulation. Ophthalmology Times, September 1979, pp 68-69.
23. Charles S: Endophotocoagulation. Ocutome/Fragmatome Newsletter 5(3):1, September 1980.
24. Charles S: Trans pars plana lensectomy update. Ocutome/Fragmatome Newsletter 5(3):1, September 1980.
25. Charles S: Microvitreoretinal blade. Ocutome/Fragmatome Newsletter 5(3):9, September 1980.
26. Charles S: Flute needle. Ocutome/Fragmatome Newsletter 5(3):9, September 1980.
27. Charles S: Vitrectomy for retinal detachment. Trans. Ophthal. Soc. UK 100(4):542-549, 1980.
28. Charles S: Clinical applications of vitreo-retinal surgery - the Ocutome system. Highlights of

- Ophthalmology Monthly Letter (Mini-Highlights), Volume XVI, Chapter 4, 1980, pp 178-216.
29. Charles S: The operability of inoperable cases. J. Am. Intraocular Implant Soc. 6:126, April 1980.
 30. Charles S, Wang C: A linear suction control for the vitreous cutter (Ocutome). Arch. Ophthalmol. 99:1613, 1981.
 31. Charles S, Wang C: A motorized gas injector for vitreous surgery. Arch. Ophthalmol. 99:1398, 1981.
 32. Charles S, Wang C: Pneumatic intraocular microscissors. Arch. Ophthalmol. 99:1251, 1981.
 33. Charles S: The microretinal retractor. Arch. Ophthalmol. 99:1252, 1981.
 34. Charles S: Illuminated intraocular foreign body forceps for vitreous surgery. Arch. Ophthalmol. 99:1399, 1981.
 35. Charles S: Bipolar bimanual diathermy (letter). Arch. Ophthalmol. 99:1868, 1981.
 36. Charles S, Flinn C: The natural history of diabetic extramacular traction retinal detachment. Arch. Ophthalmol. 99:66-68, 1981.
 37. Charles S: Vitreous Microsurgery. Williams & Wilkins Company, Baltimore, 1981.
 38. Charles S: Endophotocoagulation. Retina 1(2):117-120, 1981.
 39. Charles S, Wang C: Pneumatic intraocular microscissors. Ophthalmol. Digest, March 1982, p 6.
 40. Charles S: Retrolental fibroplasia, stage 5. Letter published in Collected Letters of International Correspondence Society of Ophthalmologists and Otolaryngologists, Series XXVII, May 30, 1982, pp 73-74.
 41. Charles S: Diabetic retinopathy. Ophthalmology Times, June 1, 1982.
 42. Charles S: An approach to the blind eye. Neuro-Ophthalmology 1982, Chapter 5, J. Lawton Smith, editor, Masson Publishers USA Inc., 1982.
 43. Charles S: Epiretinal membranes: delamination hailed as an improved therapy. Ophthalmology Times 7(16):52, November 1, 1982.
 44. Charles S: Delamination Advised for Treating Stage V Retrolental Fibroplasia Ophthalmology Times 7(17):11, November 15, 1982.
 45. Charles S: Proliferative vitreoretinopathy. Current Ocular Therapy, Second Edition, F. T.

- Fraunfelder, M.D. and F. Hampton Roy, M.D., editors, W. B. Saunders Company, 1983.
46. Charles S: Obsolescence of the flute needle. *Ocutome/Fragmatome Newsletter* 7(3):1-3, Summer 1982.
 47. Charles S: An internal gas-fluid exchange method seen as fast and effective. *Ophthalmology Times* 7(18):15, December 1, 1982.
 48. Charles S: An extrusion method is advocated for complete internal fluid drainage. *Ophthalmology Times* 7(19):23, December 15, 1982.
 49. Charles S: Pars plana vitrectomy for traction retinal detachments. Chapter 25 in *Diabetic Retinopathy*, Hunter Little, M.D., editor, Thieme-Stratton, Inc., New York, 1983.
 50. Charles S: Endophotocoagulation. Chapter 26 in *Diabetic Retinopathy*, Hunter Little, M.D., editor, Thieme-Stratton, Inc., New York, 1983.
 51. Wang CCT, Charles S: Microsurgical instrumentation for vitrectomy, Part 1. *Journal of Clinical Engineering* 8(4), October-December 1983, pp 321-328.
 52. May DR, Freedland RJ, Charles S, Wang CCT, Bakos J: Ocular hypothermia: anterior chamber perfusion. *British Journal of Ophthalmology* 67(12):807-813, 1983.
 53. Charles S: Vitreous Surgery for Retrolental Fibroplasia. Chapter 27 in *Advanced Techniques in Ocular Surgery*, Frederick A. Jakobiec, M.D. and Jesse Sigelman, M.D., editors, W. B. Saunders Company, Philadelphia, 1984.
 54. Charles S: Removing IOL barrier proves helpful for retinal detachment. *Ocular Surgery News*, February 1985.
 55. Charles S: Intraocular lenses as a barrier in vitreoretinal disease. *Cataract: The Journal of Cataract Surgery* 2(7):24, September 1985.
 56. Charles S: Anterior segment vitrectomy. *Surgery of the Eye*, Denis Carroll, M.D., editor, Churchill Livingstone Inc., New York, 1987.
 57. Charles S: Controlled drainage of subretinal and choroidal fluid. *Retina* 5(4):233-234, 1985.
 58. Charles S: The role of intraocular lenses in complex cases of retinal detachment. Personal interview with Benjamin Boyd, M.D., editor, *Highlights of Ophthalmology*, 1985.
 59. Charles S: The barrier concept. *Secondary Lens Implantation*, Kenneth J. Hoffer, M.D., editor.
 60. Charles S: Vitreous instrumentation for IOL removal/replacement. *Secondary Lens Implantation*, Kenneth J. Hoffer, M.D., editor.

61. Charles S: Vitrectomy with ciliary body entry for retrolental fibroplasia. Chapter 20 in Retinopathy of Prematurity, Alice McPherson, M.D., editor, B. C. Decker, Inc., Philadelphia, 1986.
62. Charles S: Pars plana vitrectomy for traction retinal detachments. In Diabetic Renal-Retinal Syndrome 3 - Therapy, Eli R. Friedman, M.D. and Francis A. L'Esperance, Jr., M.D., editors, Grune & Stratton, Inc., Orlando, Florida, 1986, pp 283-295.
63. Charles S: Outpatient vitreoretinal surgery. Outlook, Newsletter of the Outpatient Ophthalmic Surgery Society, Fall 1986.
64. Charles S: Definition of academic medicine. The Cataract Surgeon, Fall 1986 issue.
65. Blacharski P, Charles S: Endocyclophotocoagulation. Ophthalmic Laser Therapy 2(1), 13-18, 1987.
66. Charles S: Endophotocoagulation. Ophthalmic Laser Therapy 2(1):5-12, 1987.
67. Blacharski P, Charles S: Surgical Instrumentation Cart. Archives of Ophthalmology 105:278-279, February 1987.
68. Blacharski P, Charles S: Thrombin infusion to control bleeding during vitrectomy for Stage V retinopathy of prematurity. Archives of Ophthalmology 105:203-205, February 1987.
69. Charles S: Vitreous Microsurgery, Second Edition. Williams & Wilkins, Baltimore, 1987.
70. Charles S: Electrical Signals of the Retinal Microcircuitry and the Visual Cortex. Physiology of the Human Eye and Visual System, Chapter 12, Raymond E. Records, Editor, Harper & Row, 1987, Second Edition.
71. Charles S: Digital Versus Analog. Advances in Ophthalmic Ultrasound, Monograph, CooperVision, October 1987.
72. Stern W, O'Donnell F, Charles S (consultant): Vitrectomy Techniques for the Anterior Segment. American Academy of Ophthalmology Focal Points 1987: Clinical Modules for Ophthalmologists.
73. Newsome D, Chader G, Wiggert B, Yeo J, Welch R, Liss R, Lee L, Blacharski P, Charles S: Interphotoreceptor Retinoid-Binding Protein (IRBP) Levels in Subretinal Fluid from Rhegmatogenous Retinal Detachment and Retinopathy of Prematurity. Archives of Ophthalmology 106:106-110, January 1988.
74. Charles S: Birth Defects. Vitreoretinal Surgery for Retinopathy of Prematurity 24:287-293, 1988.
75. Charles S: Laser Endophotocoagulation. Laser Photocoagulation of Retinal Disease,

- Chapter 6, Kurt Gitter, M.D., Howard Schatz, M.D., Lawrence Yannuzzi, M.D., and H. Richard McDonald, M.D., Editors. Pacific Medical Press 1988, San Francisco, California.
76. Osterloh M, Charles S: Surgical Decompression of Branch Retinal Vein Occlusions. Archives of Ophthalmology 106:1469-1471, October 1988. Also published simultaneously in the Chinese language Archives of Ophthalmology.
 77. Charles S: Management of Epiretinal Membranes. Ophthalmic Practice, Vol. 6, No. 4:158 & 178, December 1988.
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