

CURRICULUM VITAE

Edward C. Benzel, MD

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DATE OF BIRTH: December 13, 1948: Spokane, Washington

FAMILY: Wife: Mary
Children: Morgan, Jason, Brian, Matthew

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EDUCATION:

B.S. Chemical Engineering, Washington State University, Pullman, Washington, 1971

M.D. Medical College of Wisconsin, Milwaukee, Wisconsin, 1975

POSTGRADUATE TRAINING:

First Postgraduate Year (Surgery), Medical College of Wisconsin Affiliated Hospitals, Milwaukee, Wisconsin, 1975-1976

Residency, Medical College of Wisconsin, Neurosurgery, Milwaukee, Wisconsin, 1976-1980

Fellowship in Spine Surgery and Spinal Cord Injury, Medical College of Wisconsin (Wood VA Medical Center and Milwaukee County Medical Center), Milwaukee, Wisconsin, 1980-1981

HONORS:

- Phi Kappa Phi Honor Society, 1971
- Tau Beta Pi Honor Society, 1971
- Board of Trustees of the Student American Medical Association, 1974-1975
- Millman Award, Medical College of Wisconsin, 1975 (This award is bestowed upon the senior student who best exemplifies the characteristics of an ideal physician. The recipient of the award is chosen by his classmates and is considered the outstanding candidate for the degree of Doctor of Medicine).
- Fellow of the American College of Surgeons, October, 1990
- Faculty Excellence in Teaching (Apple for Teacher Award) for Post-Graduate Clinical (Resident) Teaching, 1995
- Lifetime Achievement Award, American Academy of Neurological and Orthopaedic Surgeons, 1996
- Teacher of the Year Award, Cleveland Clinic, Department of Neurosurgery, 2001
- Teacher of the Year Award, Cleveland Clinic, Department of Neurosurgery, 2002
- North American Spine Society's 2004 Henry Farfan Award
- Scholarship in Teaching Award, Cleveland Clinic Lerner College of Medicine of Case Western Reserve University, 2005
- Certificate of Recognition for participation in the Marving R. Dunn Poster Session in Advancing Competence in Graduate Medical Education. 2006 Accreditation Council for Graduate Medical Education (ACGME) Annual Meeting.
- Pioneer in Spine Surgery, North American Spine Society, 2006
- North American Spine Society's 2007 David Selby Award
- Finalist, ACGME's Parker J. Palmer "Courage to Teach" Award, 2007
- Honoree of the 3rd Annual Charity Ball, Chiari & Syringomyelia Foundation, March 13, 2010
- Paul C. Bucy Award in Neurosurgical Education, The Chicago Review Course in Neurosurgery, February 4, 2011
- World Federation of Neurological Societies William Beecher Scoville Prize, 2011 Congress of Neurological Surgeons Annual Meeting, Washington, DC, October 3, 2011
- Honoree of the 13th Brazilian Congress of Spine Surgery, for "Outstanding Contribution to Medical Science Worldwide" Sao Paulo Brazil February 2013
- Honored Guest - Congress of Neurological Surgeons 2014 Annual Meeting, Boston, Massachusetts, October 18-22, 2014.

SPECIAL PRESENTATION TO THE PRESIDENT OF THE UNITED STATES

Benzel, EC: Spine Sensor Technology. Presented to President George W. Bush on Tuesday, July 10, 2007

POSTGRADUATE EMPLOYMENT:

- Assistant Professor of Neurosurgery, Medical College of Wisconsin, 1980-1981
- Assistant Professor of Surgery, Division of Neurosurgery, Louisiana State University, Shreveport, Louisiana, 1981-1986
- Chief, Division of Neurosurgery, Louisiana State University, Shreveport, Louisiana, 1982-1989
- Associate Professor of Surgery, Louisiana State University, Shreveport, Louisiana, 1986-1989
- Staff Neurosurgeon, VA Medical Center, Shreveport, Louisiana, 1981-1989
- Professor and Chief, Division of Neurosurgery, University of New Mexico, 1989-1999
- Staff Neurosurgeon, VA Medical Center, Albuquerque, New Mexico, 1989-1999
- Staff Neurosurgeon, Carrie Tingley Hospital, Albuquerque, New Mexico, 1989-1999
- Chief, Division of Neurosurgery and Staff Neurosurgeon, Lovelace Medical Center, Albuquerque, New Mexico, 1993-1999
- Staff Neurosurgeon, Cleveland Clinic Foundation, 1999 – present
- Director, Spinal Disorders; Department of Neurosurgery; Cleveland Clinic Foundation, 1999-2003
- Vice Chairman, Department of Neurosurgery, Cleveland Clinic Foundation, 2002-2006
- Chairman, Cleveland Clinic Spine Institute (CCSI), 2003-2007
- Director, Cleveland Clinic Center for Spine Health (formerly CCSI), 2007 – 2009
- Professor of Surgery, Cleveland Clinic Lerner College of Medicine of Case Western Reserve University (CCLCM of CWRU), July 2004 – present
- Chairman, Cleveland Clinic Department of Neurosurgery, 2007 – present

LICENSURE AND CERTIFICATION:

Illinois	License No: 36106348	Expiration 07/31/2014
New Mexico	License No: 89-153	Expiration 07/01/2017
New York	License No: 223600-1	Expiration 11/30/2015
Ohio	License No: 35-077403	Expiration 07/01/2015
Wisconsin	License No: 20229-020	Expiration 10/31/2015

Certified by the American Board of Neurological Surgeons, 1986

Tenured Full Professor, University of New Mexico, July 1990

MEDICAL ADVISORY BOARDS

Advanced Bio-Surfaces, Inc., 1997-2003

Member, Spine Advisory Panel – Orthovita 1999-2003

Nuvasive 1999-2003

Oratech 1998-2002

American Syringomyelia Alliance Project, Inc. 1999-2006

Chiari & Syringomyelia Foundation 2006 - present

ProNeuron – 2002-2008

Spinemark, 2004-2009

CONSULTING

- Site Visit, Dixie Regional Medical Center, St. George, Utah, October 2-3, 2014

MEMBERSHIPS (past and present):

American Association for the Advancement of Science
American Association of Neurological Surgeons
American College of Surgeons
American Congress of Rehabilitation Medicine
American Medical Association
American Paraplegia Society
American Spinal Injury Association
Cervical Spine Research Society
Congress of Neurological Surgeons
Council of Spine Societies
Joint Section Disorders of the Spine and Peripheral Nerves Section of the AANS/CNS
Joint Section on Neurotrauma and Critical Care of the AANS/CNS, 1995-present
Louisiana State Medical Society, 1981-1989
Louisiana State Neurosurgical Society 1981-1989
Lumbar Spine Research Society, (a founding member) 2008-present
Neurotrauma Society
New Mexico State Neurosurgical Society (a founding member) 1994-1999
North American Spine Society, 1994-present
Pediatric Section of the AANS/CNS
Rachidian Society (a founding member), 1992-present
Rocky Mountain Neurosurgical Society, 1993-present
Shreveport Medical Society
Society for Neuroscience
Society of Critical Care Medicine
Society of Neurological Surgeons, 1994-present
Turkish Neurosurgical Society, 2007-present (honorary member)
World Spine Society, August 2003-present (became World Spinal Column Society in 2009)

DUTIES AND RESPONSIBILITIES:**Publishing:**

- Editorial Reviewer, *Neurosurgery* (ad hoc), 1990-1994
- Editor Member, American Association of Neurological Surgeons Publications Committee, 1990-2003
- Editorial Review Board, *Neurosurgery*, 1994-present
- Reviewer (ad hoc), *Anesthesiology*, 1995-present
- Editorial Reviewer, *Journal of Neurosurgery* (ad hoc), 1995-1997
- Member, Editorial Review Board, *Journal of Neurosurgery*, 1997-present
- Item writer (Test question writer) for Spinal Cord Injury Medicine Certification Examination, 1995-1998
- Reviewer (ad hoc), *Cancer*, 1996
- Member, International Advisory Board, *Spinal Surgery* (Official Journal of the Japanese Society of Spinal Surgery), 1997-present
- Reviewer (ad hoc), *Annals of Biomedical Engineering*, 1998
- Member, Editorial Board, SpineUniverse.com, 2000-present
- Editorial Member – Feature Author, *SpineLine*, 2000
- Member, Editorial Board, *Contemporary Spine Surgery*, 2000-present
- Associate Board Member – *Spine*, 2000-present
- Associate Editorial Board Member, *The Spine Journal*, 2000-present
- Reviewer (ad hoc), *Croatian Medical Journal*, 2000
- Co-Chairman, Editorial Board – *Journal of Neurosurgery*, 2003-2004
- Editorial Member, Spinal Disorders Section of Faculty of 1000 Medicine, 2005-present
- Advisory Board, *Journal of Neurosurgery*, 2008-present
- Editor, *Journal of Craniovertebral Junction and Spine*, 2009-present

DUTIES AND RESPONSIBILITIES:**International:**

- Ambassador, Bone & Joint Decade (2000-2010), United States National Action Network, 2002-present
- Practical Clinic Director – “Cervical Spine Instability: Instrumentation and Other Methods of Management” American Association of Neurological Surgeons Annual Meeting. Toronto, Canada, April 22, 2001
- Chairman, World Spine Society, 2003-2007
- Chairman, World Spine II Congress: The Second Interdisciplinary Congress on Spine Care, Chicago, IL, August 10-13, 2003
- Co-Director – “Introduction.” Aegean Spine Review, Izmir, Turkey, November 15, 2003
- Co-Chairman – Planary Session. 30th Annual Conference of the Egyptian Society of Neurological Surgeons (ESNS). Cairo, Egypt, March 23, 2005
- Chairman, World Spine III Congress: The Third Interdisciplinary Congress on Spine Care, Rio de Janeiro, July 31-August 3, 2005
- Course Co-Director – Aegean Spine Review 2005. World Spine Society, Cleveland Clinic Foundation, and Ege University, Izmir, Turkey, November 6-12, 2005
- Chairman, World Spine IV Congress: The Fourth Interdisciplinary Congress on Spine Care, Istanbul, Turkey, July 29-August 1, 2007
- Co-Director, Egyptian Spine Hands-On Review. Cairo, Egypt. August 2-8, 2007
- Chairman, Industry Relation Committee, World Spine Society, 2007-present
- International Advisory Committee, 2nd International Levantine Forum, Antalya, Turkey, 2008
- Organizing Committee, 2nd International Levantine Forum, Antalya, Turkey, 2008
- Director, Cleveland Spine Review, Hilton Rose Hlal Resort, Montego Bay, Jamaica, May 7-9, 2014

DUTIES AND RESPONSIBILITIES:**National:**

- Member, American Association of Neurological Surgeons Publications Committee, 1990-present
- Member, Cervical Spine Research Society Research Committee, 1991-1994 and 1999-present
- Member, Joint Section on Disorders of the Spine and Peripheral Nerves Research Committee, 1992-1995
- Member, State of New Mexico Trauma Advisory Committee, 1991-present
- Member, AANS/CNS Devices and Drugs Committee, 1992-present
- Director - American Association of Neurological Surgeons Professional Development Courses on "Lumbar Spine Stabilization - Hands On." 1992
- Director - American Association of Neurological Surgeons Professional Development Course on "Lumbar Spine: Segmental Stabilization - Hands-On." Albuquerque, NM June 1992
- Director - American Association of Neurological Surgeons Professional Development Course on "Lumbar Spine Stabilization - Hands-On." Los Angeles, CA, August 1992
- Director - Specialized Spinal Instrumentation Applications: Degenerative Lumbar Instability. Las Vegas, NV, October 1992
- Director - American Association of Neurological Surgeons Professional Development Course on "Lumbar Spine Stabilization - Hands-On." San Antonio, TX, October 1992
- Director - American Association of Neurological Surgeons Professional Development Course on "Lumbar Spine Stabilization - Hands On." St. Louis, MO, December 1992
- Member, AANS Spine Task Force, 1993-present
- Member, Program Committee of the American Paraplegia Society, 1993-present
- Member of Joint Section on Spinal Disorders Executive Committee, 1993-present
- Member, Cervical Spine Research Society Program Committee, 1993
- Guest Examiner, American Board of Neurological Surgeons: Houston, November 9-12, 1993
- Director - Practical Clinics VII and XVI: Surgical Management of Thoracolumbar Instability. American Association of Neurological Surgeons Annual Meeting. Boston, MA, April 1993
- Director - American Association of Neurological Surgeons Professional Development Course on "Lumbar Spine Stabilization – Hands-On." San Francisco, CA, May 1993
- Chairman and Coordinator - Epilepsy in the Decade of the Brain: A Conference with A. Earl Walker. Albuquerque, NM, November 1993
- Director - American Association of Neurological Surgeons Professional Development Course on "Surgical Exposure of the Spine." Albuquerque, NM, November 1993
- Member, AANS Coordinating Committee for Continuing Education, 1994-1999
- Member, AANS Professional Development Committee, 1994-present
- Program Committee Chairman, Cervical Spine Research Society, 1994
- Director - Practical Clinics 108 and 119: Surgical Management of Thoracolumbar Instability (Lecture on Construct Design and Deformity Correction). American Association of Neurological Surgeons Annual Meeting. San Diego, CA, April 1994
- Director - American Association of Neurological Surgeons Professional Development Course on "Spine Surgery - Hands-On." Albuquerque, NM, May 21-27, 1994
- Co-Director - Congress of Neurological Surgeons Premeeting Course. Thoraco-Lumbar Stabilization. Chicago, IL, October 1994
- Director - American Association of Neurological Surgeons Professional Development Course on "Thoracic and Lumbar Stabilization - Hands On." Washington DC, November 1994
- Member, North American Spine Society Clinical Research Committee, 1995-present
- President Elect, Joint Section on Disorders of the Spine and Peripheral Nerves, 1995-1996
- Director - Spinal Biomechanics. Special Course at Joint Section on Disorders of the Spine and Peripheral Nerves. February 1995

DUTIES AND RESPONSIBILITIES:**National (continued):**

- Co-Director - American Association of Neurological Surgeons Professional Development Course on "Advanced Thoracic and Lumbar Spine Surgery - Hands-On." New Orleans, LA, March 1995
- Director - American Association of Neurological Surgeons Premeeting Course. Surgical Management of Thoracolumbar Instability. Orlando, FL, April 1995
- Director - American Association of Neurological Surgeons Professional Development Course on "Spine Surgery - Hands-On." Albuquerque, NM, May 1995.
- Co-Director - American Association of Neurological Surgeons Professional Development Course on "Advanced Thoracic and Lumbar Spine Surgery - Hands-On." Chicago, IL, September 1995
- Co-Director - Congress of Neurological Surgeons Premeeting Course. Introduction to Thoracolumbar Stabilization - Hands-On (Course 14). San Francisco, CA, October 1995
- Co-Director - Congress of Neurological Surgeons Premeeting Course. Advanced Techniques in Thoracolumbar Stabilization - Hands-On. San Francisco, CA, October 1995
- President, Joint Section on Disorders of the Spine and Peripheral Nerves, 1996-1997
- Member, Joint Section on Disorders of the Spine and Peripheral Nerves Outcomes Committee, 1997-98
- Chairman, AANS Professional Development Committee, 1996-1999
- Chairman, Society of Neurological Surgeons (Senior Neurosurgery Society) ad hoc Committee on Disorders of the Spine and Peripheral Nerve, 1996-present
- Director - Special Course on Spinal Biomechanics at Joint Section on Disorders of the Spine and Peripheral Nerves. Orlando, FL, February 1996
- Associate Chairman - Advanced Thoracic and Lumbar Spine Management - Hands-on. New Orleans, LA, March 1996
- Director - Spinal Biomechanics. 1996 American Association of Neurological Surgeons Annual Meeting. Minneapolis, MN, April 1996
- Co-Director - Practical Clinic 010; Thoracic and Lumbar Stabilization Techniques. 1996 American Association of Neurological Surgeons Annual Meeting. Minneapolis, MN, April 1996
- Co-Director - Practical Clinic 021; Thoracic and Lumbar Stabilization Techniques. 1996 American Association of Neurological Surgeons Annual Meeting. Minneapolis, MN, April 1996
- Director - Spinal Biomechanics Workshop. 58th Annual Surgical Update, International College of Surgeons, United States Section. Washington, DC, May 1996
- Member of New Mexico Institute of Neuroimaging Board of Directors, 1997-1999
- Member, North American Spine Society Ethics Committee, 1997-present
- Director - Spinal Biomechanics Course. Joint Section on Disorders of the Spine and Peripheral Nerves Annual Meeting. Newport Beach, February 1997
- Director - Practical Clinic 001. Spinal Biomechanics. American Association of Neurological Surgeons Annual Meeting. Denver, CO, April 1997
- Member, North American Spine Society Legal Committee, 1999-present
- Chairman, North American Spine Society Ethics Committee, 1999-2003
- Member, Council on Spine Societies (AANS Representative), 1997-present
- Director - American Association of Neurological Surgeons Annual Meeting Practical Clinic. Spinal Biomechanics (001). Philadelphia, PA, April 1998
- Director - Spine Surgery Hands-On. Albuquerque, NM, May 1998
- Director - Spinal Biomechanics. Congress of Neurological Surgeons Annual Meeting (Course 008). Seattle, WA, October 1998
- Director - Spine Surgery Hands-On. Albuquerque, NM, May 1999
- Director - Spinal Biomechanics (Course 007). Congress of Neurological Surgeons Annual Meeting. Boston, MA, October 1999

DUTIES AND RESPONSIBILITIES:**National (continued):**

- Chairman, Council on Spine Societies, 1999-2001
- Director – Practical Clinic 009: “Spinal Biomechanics.” American Association of Neurological Surgeons Annual Meeting. San Francisco, CA, April 8, 2000
- Chairman, Editorial Committee, Cervical Spine Research Society, 2001 – present
- Member, Board of Directors, Cervical Spine Research Society, 2001 – present
- Chairman – Advanced Spinal Techniques: Cadaver Workshop. Dallas, TX, March 29-31, 2001
- Director – “Spinal Biomechanics and Clinical Management Decision Making”. Congress of Neurological Surgeons Annual Meeting. San Diego, CA, September 29, 2001
- Member, Board of Directors, North American Spine Society, 2002-present
- Director, Clinical Care Council, North American Spine Society, 2002-present
- Guest Examiner, American Board of Neurological Surgeons: Houston, November 12-15, 2002
- Director – “Cervical Spine Instability: Instrumentation and Other Methods of Management”. American Association Annual Meeting, Chicago, Illinois, April 7, 2002.
- Director – “Spinal Biomechanics & Clinical Management Decision Making”. 2002 Congress of Neurological Surgeons Annual Meeting, Philadelphia, PA, September 21, 2002
- Director – “Cervical Spine Instability: Instrumentation and Other Methods of Management.” 2003 Annual Meeting, American Association of Neurological Surgeons, San Diego, California, April 26, 2003
- Course Director – “Applied Spinal Biomechanics.” Congress of Neurological Surgeons 55th Annual Meeting. Boston, Massachusetts, October 8, 2005
- Course Director – “Pain of Spinal Origin: A Comprehensive Approach.” Congress of Neurological Surgeons 55th Annual Meeting. Boston, Massachusetts, October 9, 2005
- Member, Chiari & Syringomyelia Foundation, 2006-
- Course Director – “Applied Spinal Biomechanics.” Congress of Neurological Surgeons Annual Meeting, Chicago, Illinois, October 7, 2006
- Course Director – “Pain of Spinal Origin: A Comprehensive Approach.” Congress of Neurological Surgeons Annual Meeting, Chicago, Illinois, October 8, 2006
- Editorial Board, Cervical Spine Research Society, 2008-2013
- Board of Directors, Cervical Spine Research Society, 2008-2013
- Course Co-Director – First International Symposium on Stereotactic Body Radiation Therapy and Stereotactic Radiosurgery. Cleveland Clinic Center for Continuing Education, Orlando, FL, February 23-25, 2007
- Member, Senior Advisory Council, American Association of Neurological Surgeons & Congress of Neurological Surgery - Section on Disorders of the Spine & Peripheral Nerves, 2008-
- Member, Scientific Technical Review Panel (STRP) for the Blast Spinal Cord Injury Program (BSCIP) on behalf of the Uniformed Services University of Health Sciences (USUHS), a branch of the U.S. Military, 2008 (through August 31, 2010)
- Member, Medical Research Board, Chiari and Syringomyelia Foundation, 2008-
- Member, Executive Committee, Chiari and Syringomyelia Foundation Scientific and Educational Advisory Board, 2008-2012
- Program Chair, Lumbar Spine Research Society, 2008-2010
- Board of Directors, Lumbar Spine Research Society, 2011-
- Secretary, Cervical Spine Research Society, 2011-2013
- Chairman, Chiari and Syringomyelia Foundation Scientific and Educational Advisory Board, 2010-2012
- Member, Scientific Forum Grant/Spine Care Peer Review Committee, Orthopaedic Research & Education Foundation, 2011-2012
- Panel of Experts, CDC Mild TBI, 2012-
- Member, Cervical Spine Research Society, Long Range Planning Committee, 2014-
- Member, Pediatric Mild Traumatic Brain Injury Guideline Workgroup Meeting, October 16-17, 2014

DUTIES AND RESPONSIBILITIES:**Local:**

- Medical Director of the Northwest Louisiana Rehabilitation Center, 1982-1989
- Utilization Review Committee, Louisiana State University, 1983-1988
- Board of Advisors, Louisiana Head Injury Foundation, 1986-1989
- Respiratory Care Advisory Committee, Louisiana State University, 1986-1989
- Infection Control Committee, Louisiana State University, 1988-1989
- Biomedical Ethics Committee, University of New Mexico, 1989-1995
- Respiratory Advisory Committee, University of New Mexico, 1990-1997
- Curriculum Committee, University of New Mexico, 1990-1994
- Member, Advisory Board of the New Mexico Donor Program, 1993-1997
- Chairman, Cleveland Clinic Foundation Regional Spine Network Committee, 1999-present
- Chairman, Cleveland Clinic Foundation Spine Database Committee, 1999-present
- Medical Co-Director, Cleveland Clinic Foundation Spine Research Laboratory, 1999-present
- Director – Symposium on Spine Surgery That Has Failed: A Multidisciplinary Approach. Cleveland, OH, May 5-7, 2000
- Director – “The CCF Center for Clinical Effectiveness and Outcomes Measurement,” Symposium On Spine Surgery That Has Failed: A Multidisciplinary Approach. Cleveland, OH, May 7, 2000
- Director - Spine Review – Hands On 2000. Cleveland, OH, August 2000
- Co-Director, Neurosurgery Residency Program, Cleveland, Clinic Foundation, 2001
- Director - Spine Review – Hands On 2001. Cleveland, OH, May 12-18, 2001
- Vice Chairman, Department of Neurosurgery, April 2002-2006
- Director, Neurosurgery Residency Program, Cleveland Clinic Foundation, May 2002-present
- Member, Measurement Team, World Class Service Initiative, Cleveland Clinic Foundation, October 2002-2004
- Director – Spine Review Hands-On 2003, Wyndham Hotel, Cleveland, Ohio, August 14-20, 2003
- Director – Spine Review Hands-On 2004, InterContinental Hotel, Cleveland, Ohio, May 19-25, 2004
- Director – Spine Review Hands-On 2005, InterContinental Hotel, Cleveland, Ohio, July 13-19, 2005
- Director – Spine Review Hands-On 2006, InterContinental Hotel, Cleveland, Ohio, July 19-25, 2006
- Director – Spine Review Hands-On 2007, InterContinental Hotel, Cleveland, Ohio, July 18-24, 2007
- Director – Spine Review Hands-On 2008, Embassy Suites Hotel, Independence, Ohio, July 16-22, 2008
- Director – Spine Review Hands-On 2009, Lutheran Hospital, Cleveland, Ohio, July 22-28, 2009
- Director – Spine Review Hands-On 2010, Lutheran Hospital, Cleveland, Ohio, July 7-13, 2010
- Site Surveyor & Advisor – Cleveland Clinic Abu Dhabi, Sheikh Khalifa Medical City, Wooridul Spine Center (Dubai), June 7-9, 2011
- Director – Spine Review Hands-On 2011, Lutheran Hospital, Cleveland, Ohio, July 13-19, 2011
- Spine Prospective Clinical Research Peer Review Committee Member, Orthopaedic Research and Education Foundation, Rosemont, Illinois, 2012
- Co-Director – International Symposium on Spine Tumor Innovations, Cleveland, Ohio, July 9-10, 2012
- Co-Director – Spine Review Hands-On 2012, Lutheran Hospital, Cleveland, Ohio, July 11-17, 2012
- Co-Director – Spine Review Hands-On 2013, Lutheran Hospital, Cleveland, Ohio, July 10-16, 2013
- Co-Director – Spine Review Hands-On 2014, Lutheran Hospital, Cleveland, Ohio, July 9-15, 2014

CROCKARD INTERNATIONAL FELLOWSHIP

Bassem I. Awad, MBBCh was awarded this 3 month fellowship at the 25th Annual Meeting of the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves. He will spend a 3 month period at the Cleveland Clinic Center for Spine Health under the supervision of Dr. Edward Benzel and Dr. Michael Steinmetz.

NEUROSURGERY RESIDENTS TRAINED**University of New Mexico:**

Mark Adams, MD, 1993-1998

John Caruso, MD, 1994-1996

Matthew Kern, MD, 1994-1997

Cary Alberstone, MD, 1994-1999

Regan Gallaher, MD, 1995-1999

Brett Henderson, MD, 1996-1999

John German, MD, 1996-1999

Michael Sandquist, MD, 1997-1999

Michael Steinmetz, MD, 1998-1999

Jeffery Gross, MD, 1998-1999

Cleveland Clinic:

Greg Harrison, MD, 2001

George Markarian, MD, 2001

James Evans, MD, 2002

William McCormick, MD, 2000-2003

Edwin Cunningham, MD, 2000-2003

Robert Kowalski, MD, 2000-2004

Jurgen Luders, MD, 2000-2004

Ajit Krishnaney, MD, 2000-2005

Michael Steinmetz, MD, 2000-2005

Ali Chahlavi, MD, 2000-2006

Sam Borsellino, MD, 2000-2006

John Butler, MD, 2000-2007

Shaye Moskowitz, MD, 2000-2007

Alex Mason, MD, 2000-2007

Vivek Gonugunta, MD, 2001-2008

Jorge Gonzalez-Martinez, MD, PhD, 2001-2008

Raymond Turner, MD, 2002-2008

John Park, MD, 2002-2009

Girish Hiremath, MD, 2002-2009

G. Alex Jones, MD, 2003-2008

Vitaly Siomin, MD, 2003-2009

Kene Ugokwe, MD, 2003-2009

Mark Bain, MD, 2004-2010

Christopher Iannotti, MD, PhD, 2004-2010

Sean Nagel, MD, 2004-2010

Julie Chen, MD, 2005-2011

Nick Marko, MD, 2005-2011

Dani Bidros, MD, 2006-2011

Tarun Bhalla, MD, 2007-2012

Miguel Lopez-Gonzalez, MD, 2007-2012

Alejandro Spiotta, MD, 2007-2012

Gwyneth Hughes, MD, 2008-2013

James Liu, MD, 2008-2013

Virgilio Matheus, MD, 2008-2013

Amer Khalil, MD, 2007-2014

Bjorn Lobo, MD, 2007-2014

Sumeet Vadera, MD, 2007-2014

NEUROSURGERY RESIDENT-CLINICAL/RESEARCH FELLOWS TRAINED IN SPINE**University of New Mexico:**

Mark D'Alise, MD (Southwestern University), 1995-1996
Dan Resnick, MD (University of Pittsburgh), Feb-May 1997
Andy Wakefield, MD (University of Connecticut), Nov-Dec 1997
Jeffery Gross, MD (University of California – Irvine), 1997-1998
Niteen Andalkar, MD (University of Rochester), 1998-1999

Cleveland Clinic:

Jaime Nieto (UCLA), 2001
William Mitchell (Jefferson University), 2002
Anthony Virella (UCLA), 2003
Paul Park (University of Michigan), 2004
Sam Critides (Bethesda), 2004
G. Alexander Jones (Louisiana State University), 2005

POSTGRADUATE SPINE RESEARCH FELLOWS TRAINED**University of New Mexico:**

Jae Won Doh, MD, 1995-1996
Won Choi, MD, Aug 1996
Sait Naderi, MD, Sept-Nov 1996
Mehmet Zileli, MD, Nov 1996-Jan 1997

Tunc Oktenoglu, MD, Nov 1997-1999
Koang-Hum Bak, MD, 2000
Cheol Ji, MD, 2000

Cleveland Clinic:

Daisuke Togawa MD 1999-2005
Byung-Ho Jin, MD, 2000-2002
Jun Pil Eun, MD, 2001
Suleyman Cayli, MD, 2002
Moon Jun Sohn, MD, 2002-2003
Cumhur Kilincer, MD, 2002-2003

Niteen Andalkar, MD, 2002-2003
Farzad Parizi MD 2003
Soo Hyun Hwang MD, 2003-2004
Wen-Hsing Hsu MD, 2003-2004
Atilla Akbay MD, 2003-2004
Yukihiro Nakagawa MD, 2005-2006

POSTGRADUATE CLINICAL FELLOWS TRAINED IN MEDICAL SPINE**Cleveland Clinic:**

Paula Lidestri, MD 2005-2006

Rajesh Iyer, MD 2005-2006

Farzad Sabet, MD 2005-2006

Sarah Schuler, MD 2005-2006

Linda Okereke, MD 2006-2007

Christopher Lin, MD 2006-2007

Samir Shaia, MD 2006-2007

Adeel Amad, MD 2007-2008

Ehsan Alam, MD 2007-2008

Brian Goldberg, MD 2007-2008

Sepideh Haghpanah, MD 2007-2008

Neil Chatterjee, MD 2008-2009

Timothy Yoon, MD 2008-2009

Eric (Kano) Mayer, MD 2008-2009

Carolyn Keeler, DO 2008-2009

Madhu Mehta, MD, 2009-2010

Minjin Kim, MD, 2009-2010

Edward Kim, MD, 2009-2010

Lincoln Likness, MD, 2009-2010

Caroline Koo, MD, 2010-2011

Stephen Knuff, MD, 2010-2011

Ambika Bhat, MD, 2010-2011

Sultan Zaidan, MD, 2010-2011

Joann Eid, MD, 2011-2012

Ali Shah, MD, 2011-2012

Sachin Bansal, MD, 2012-2013

Kush Goyal, MD, 2012-2013

Garett Helber, MD, 2012-2013

Van Maila, MD, 2012-2013

Dean Balagtas, DO, 2013-2014

Rodrigo Cayme, DO, 2013-2014

Chad Ermis, MD, 2013-2014

Akbar Khan, DO, 2013-2014

William Gray, DO, 2014-2015

Raghu Maddela, MD, 2014-2015

Abhishek Reddy, DO, 2014-2015

Joshua Scheidler, MD, 2014-2015

POSTGRADUATE CLINICAL FELLOWS TRAINED IN SURGICAL SPINE**University of New Mexico:**

Perry A. Ball, MD, 1991-1992

Nevan G. Baldwin, MD, 1992-1993

Bruce M. McCormack, MD, 1993-1994

Andrea L. Halliday, MD, 1994-1995

David G. Malone, MD, 1994-1995

Justin Park, MD, 1995-1996

Michael Schneier, MD, 1995-1996

Timothy Cohen, MD, 1995-1996

Simcha Weller, MD, 1996-1997

Joe Ordonez, MD, 1997-1998

Manny Morone, MD, 1997-1998

Eldan Eichbaum, MD, 1998-1999

Darryl DiRisio, MD, 1998-1999

POSTGRADUATE CLINICAL FELLOWS TRAINED IN SURGICAL SPINE**Cleveland Clinic:**

Jorge Lastra, MD, 1999-2000
Andrew Wakefield, MD, 2000
Steven Will, MD, 1999-2000
Steven Leon, MD, 2000-2001
Christopher Kager, MD, 2000-2001
James Harrop, MD, 2001-2002
Jean Coumans, MD, 2001-2002
Ashwini Sharan, MD, 2001-2002
Branko Prpa, MD, 2001-2002
Brett Babat, MD, 2002-2003
Todd Stewart, MD, 2002-2003
Richard Schlenk, MD, 2002-2003
Anis Mekhail, MD, 2002-2003
Richard Placide, MD, 2002-2003
Akhil Jay Khanna, MD, 2003-2004
Paul Holman, MD, 2003-2004
James Lu, MD, 2003-2004
Kai Lewandrowski, MD, 2003-2004
Daniel Shedid, MD, 2003-2005
Robert Kowalski, MD, 2004-2005
Yu-Po Lee, MD, 2004-2005
Rod Claybrooks, MD, 2004-2005
Monty DeWal, MD, 2004-2005
Eric Roger, MD, 2004-2006
Eve Tsai, MD, 2005-2006
Samir Lapsiwala, MD, 2005-2006
Niteen Andalkar, MD, 2005-2006
Stephen Ritter, MD, 2005-2006
Khalid Abbed, MD, 2006-2007
Jeremy Amps, MD, 2006-2007
Eric Klineberg, MD, 2006-2007
Alexander Mohit, MD, 2006-2007
Dhruv Pateder, MD, 2006-2007
Artem Vaynman, MD, 2006-2007
William Montgomery, MD, 2006-2008
Cristian Brotea, MD, 2007-2008
Richard Burg, MD, 2007-2008
Paul Kim, MD, 2007-2008
William Lavelle, MD, 2007-2008
Vincent Miele, MD, 2007-2008
Ron Riesenburger, MD, 2007-2008
David Gwinn, MD, 2008-2009

Saad Chaudhary, MD, 2008-2009
Robert Talac, MD, 2008-2009
Andrew Utter, MD, 2008-2009
Srinivas Prasad, MD, 2008-2009
Lawrence Alexander, MD, 2009-2010
Nathaniel Brooks, MD, 2009-2010
Scott Lollis, MD, 2009-2010
Ran Harel, MD, 2009-2010
Daniel Hoh, MD, 2009-2010
Sharad Rajpal, MD, 2009-2010
Daniel Refai, MD, 2009-2010
John Shin, MD, 2009-2011
Frank Bishop, MD, 2010-2011
Eli Hothem, MD, 2010-2011
Christopher Iannotti, MD, PhD, 2010-2011
Joshua Landa, MD, 2010-2011
Fernando Techy, MD, 2010-2011
Gandi Varma, MD, 2010-2011
Deb Bhowmick, MD, 2011-2012
Todd Francis, MD, 2011-2012
Suzanne Tharin, MD, 2011-2012
Stephen Tolhurst, MD, 2011-2012
Matheus Virgilio, MD, 2011-2012
Dang-Hai Zhang, MD, 2011-2012
David Anderson, MD, 2012-2013
Perry Dhaliwal, MD, 2012-2013
Mark Kayanja, MD, 2012-2013
Saavedra Manuel, MD, 2012-2013
Tiffany Perry, MD, 2012-2013
Jason Taub, MD, 2012-2013
Basheal Agrawal, MD, 2013-2014
Colin Buchanan, MD, 2013-2014
Konstantino Margetis, MD, 2013-2014
Sergiy Nesterenko, MD, 2013-2014
Vedant Vaksha, MD, 2013-2014
Santaram Vallurupallim, MD, 2013-2014
Paul Porensky, MD, 2014-2015
Ryan Brennan, MD, 2014-2015
Andrew Torre-Healy, MD, 2014-2015
Sina Pourtaheri, MD, 2014-2015
Matthew Karek, MD, 2014-2015
Colby Fagin, MD, 2014-2015

GRANTS:

1. Basic Science Research Grant (Louisiana State University, Shreveport), 1983: The Design and Evaluation of a Rat Ventral Spinal Cord Injury Model. Principal Investigator: Benzel EC. Amount - \$1,500
2. Research Allocation Grant (University of New Mexico), 1989: Pilot Study of the Prognostic Significance and Clinical Impact of Cytometry for Acoustic Neuromas and Posterior Fossa Meningiomas. Principal Investigators: Kesterson L, Dressler LG. Co-Investigators: Shelton C, Bartow SA, Benzel EC. Amount - \$6,000
3. Contract Grant (Baker Cummins Pharmaceuticals, Inc), 1990-1991: The Effect of the Dosage and the Timing of Administration of Nalmefene on Neurologic Outcome and Volumetric Assessment of Neuropathology Following Submaximal Cortical Trauma in the Rat. Principal Investigator: Benzel EC. Co-Investigator: Feeney DM. Amount - \$17,000
4. Research Allocation Grant (University of New Mexico), 1991: Pilot Study of the Effects of Glucose on Neurological Outcome in the Rat Spinal Cord Injury Model. Principal Investigator: Benzel EC. Amount - \$16,000
5. Contract Grant (Health South Rehabilitation Center, Inc), 1990-present; Head Injury Outcome Study. Principal Investigator: Benzel EC. Amount - \$62,500 to date.
6. Danek Publication Grant (Danek Group, Inc.) 1993. Benzel EC. Amount - \$10,000
7. Biomechanical Program Grant, 1993-1994: A Biomechanical Study of the Crossed Screw Fixation Technique in the Sheep Spine. Principal Co-Investigators: Benzel EC and Baldwin NG. Amount - \$40,000
8. Thoracic and Lumbar Spine Instrumentation: A Biomechanical Evaluation of Optimal Construct Design, 1996-1997: Resident Fellowship Research Award. Weller SJ, Benzel EC, Baldwin NG. Amount - \$30,000
9. National Football League (NFL) Charities Grant, 2011: To study the Role of Cervical Spine in Youth Football related concussion. Principal Co-Investigators: Benzel EC and Bartsch A. Amount - \$100,000
10. Prospective Clinical Research Grant from The Orthopaedic Research and Education Foundation (OREF), 2012: Principal Co-Investigators: Benzel EC and Bartsch A. Amount - \$200,000
11. Federal Aviation Administration Grant, 2013-2015: Determining Loss of Consciousness in Fighters and Development of Associated Injury Assessment Reference Values. Principal Co-Investigators: Benzel EC and Bartsch A. Amount - \$749,761.

INVESTIGATIONAL CONTRACTS:

1. A Randomized Prospective Study of the Effect of Erythropoietin on Blood Transfusions for Elective Surgery. (Chicuga-Upjohn), 1990-1991: Principal Investigators: Kesterson L, Benzel EC. Amount - \$60,000 (closed)
2. North American Symptomatic Carotid Endarterectomy Trial, 1990 - present: Principal Investigator: Bruno AK. Co-Investigator: Benzel EC. Amount - \$19,000
3. A randomized Trial of Tirilazad (U74006F) in Patients with Moderate and Severe Head Injury, 1990-present: Principal Investigator: Benzel EC. Co-Investigators: Marchand E, Willis BK. Amount - \$42,000 to date
4. A Randomized Trial of GM1 Ganglioside (Sygen) in Patients with Spinal Cord Injury, 1992-1997: Principal Investigator: Benzel EC. Co-Investigators: Marchand E, Anson J, Baldwin N. Amount - \$284,212.50
5. MEMS Technology Platform for Implantable Medical Applications, Project Director: Roy, S. Investigators from The Cleveland Clinic Foundation: Roy S, Fleischman A, Cornhill JF, Benzel, EC, Ferrara LA, Ouriel K; Investigators from NASA Glenn Research Center: Miranda F, Simons R; Investigator from BF Goodrich Advanced Micromachines: Izad A; Investigator from Glennan Microsystems Initiative: Merrill W. – Technology Action Fund - \$1,050,000
6. Transfacet Mechanics: Short & Long Term Cycling at the Bone-Metal Interface. Principal Investigators: Ferrara L, Benzel EC. NuVasive Corporation, \$35,000. 2001
7. Biomechanics of Dynamized Implants. Principal Investigators: Ferrara L, Benzel EC. DePuy Acromed, \$200,000 per year for three years. 2001-2003
 - ❖ Biomechanical Comparison of Multisegmental Fixation of the Spine. Investigators: McCormick W, Ferrara L, Benzel EC. Utilization of aforementioned DePuy Acromed grant, 2001
 - ❖ Biomechanics Dynamized Implants. Investigators: Pil EJ, Ferrara L, Benzel EC. Utilization of aforementioned DePuy Acromed grant, 2001
 - ❖ Biomechanics Dynamized Implants. Investigators: Jin B, Ferrara L, Benzel EC. Utilization of aforementioned DePuy Acromed grant, 2001

PATENTS:

1. United States Patent 5,681,312: Spine Construct with Band Clamps. Hansen A. Yuan; Edward C. Benzel; Alex Dinello; Michael H. Wefers; Aaron C. Smith (inventors) - issued 10/28/97
2. United States Patent 5,800,433: Spinal Column Retaining Apparatus. Edward C. Benzel; Alex Dinello; Hansen Yuan; Michael Wefers (inventors) - issued 9/1/98
3. United States Patent 5,843,082: Cervical Spine Stabilization Method and System. Edward C. Benzel (inventor) - issued 12/1/98
4. United States Patent 5,713,900: Apparatus for Retaining Bone Portions in a Desired Relationship. Edward C. Benzel (inventor) - issued 2/3/98
5. United States Patent 6,036,693: Cervical spine Stabilization Method & System. Edward C. Benzel (inventor) - issued 3/14/00
6. United States Patent 6,193,720: Cervical Spine Stabilization Method & System. Edward C. Benzel (inventor) - issued 2/27/01
7. United States Patent 6,214,005: Spinal Column Retaining Apparatus. Edward C. Benzel (inventor) - issued 4/10/01
8. United States Patent 6,706,005: Apparatus and Methods for Assessing Loads on Adjacent Bones. Shuvo Roy; Lisa Ferrara; Aaron Fleischman; Edward C. Benzel (inventors) – issued March 2004
9. United States Patent 7,182,736 B2: Apparatus and Method for Assessing Loads on Adjacent Bones. Shuvo Roy, Aaron Fleischman, Edward C. Benzel, Lisa Ferrara (inventors) – issued February 2007
10. United States Patent 7,491,179 B2: Apparatus and Method for Assessing Loads on Adjacent Bones. Shuvo Roy, Aaron Fleischman, Edward C. Benzel, Lisa Ferrara (inventors) – issued February 17, 2009
11. United States Patent 13,047,857: Apparatus for Replacing a Damaged Spinal Disc. Kari B. Zimmers, James E. Barber, Keith Duke, James M. Kuras, Rebecca Blice, Tawny Bragg, Edward Benzel, Isador Lieberman, E. Raymond Ross (inventors) – issued September 20, 2012

Foundation of Healthcare Communications (formerly Relationship Centered Physician Communication Course)

- Attended 'Train the Trainer' for Foundation of Healthcare Communication Course, January-February 2012
- Facilitated full-day course, 'Train the Trainer' for Foundation of Healthcare Communication Course:
 - 2012: Jan 31; Feb 1; March 5, 6, 26; April 30
- Facilitated full-day Foundation of Healthcare Communication Course:
 - 2012: July 26; Aug 9; Sept 20; Nov 8; Dec 21
 - 2013: March 15; April 25; June 27; July 24, 25; Aug 8; Sept 5; Oct 17, 24; Nov 7, 21; Dec 13, 19
 - 2014: Jan 9, 16, 17; Feb 14, 27; April 25; Sept 25; Oct 10
- Physician Communication Panelist half-day course, Cleveland Clinic 'Day of Culture', January 2013
- Taught a 30 minute 'Train the Trainer' for Foundation of Health Care Communication Course, January 9, 2013
- Facilitated a half-day Foundation of Healthcare Communication Course for Residents, March 13, 2013
- Facilitated a full-day Foundation of Healthcare Communication Course, Sheikh Khalifa Medical City, May 25-27, 2013

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL:

- Visiting Professor - University of Virginia. Charlottesville, VA, February 1986
- Visiting Professor - Henry Ford Hospital. Detroit, MI, February 1987
- Speaker - "Indications for Halo application," Luncheon seminar. Congress of Neurological Surgeons. Atlanta, GA, October, 1989
- Speaker - "Indications and techniques for thoracic and lumbar stabilization," Luncheon seminar. Congress of Neurological Surgeons. Los Angeles, CA, October, 1990
- Visiting Professor - Southwestern University. Dallas, TX, September 1990
- Instructor - American Association of Neurological Surgeons Professional Development Course on the "Lumbar Spine." St. Louis, MO, May 1991
- Instructor - American Association of Neurological Surgeons Professional Development Course on the "Lumbar Spine." San Francisco, CA, June 1991
- Instructor - American Association of Neurological Surgeons Professional Development Course on the "Lumbar Spine." Boston, MA, July 1991
- Instructor - American Association of Neurological Surgeons Professional Development Course on the "Lumbar Spine: Segmental Stabilization - Hands-On." Los Angeles, CA, September, 1991
- Instructor - American Association of Neurological Surgeons Professional Development Course on the "Lumbar Spine: Segmental Stabilization - Hands-On." St. Louis, MO, November 1991
- Instructor - American Association of Neurological Surgeons Professional Development Courses on "Cervical Spine Stabilization - Hands On." 1992
- Speaker - "The TSRH Spinal Instrumentation System," Presented at the Symposium on Spinal Instrumentation. Joint Section on Disorders of the Spine and Peripheral Nerves. Miami, FL, February 1992
- Instructor - Symposium on Thoracic and Lumbar Spine Trauma, "Biomechanics of Lumbar and Lumbosacral Spine Fractures." Joint Section on Disorders of the Spine and Peripheral Nerves. Miami, FL, February 1992
- Instructor - American Association of Neurological Surgeons Practical Clinic (numbers 1 and 11), "Surgical Management of Thoracolumbar Instability." ANNS Annual Meeting. Includes lecture, "Application of the Texas Scottish Rite Rod System." San Francisco, CA, April 1992
- Speaker - Special Course III, "Contemporary Management of Acute Spinal Cord Injury: Expectations and Methods of Rehabilitation." American Association of Neurological Surgeons Annual Meeting. San Francisco, CA, April 1992
- Speaker - "Complications of Spinal Instrumentation," Luncheon Seminar (Number 82). American Association of Neurological Surgeons Annual Meeting. San Francisco, CA, April 1992
- Instructor - American Association of Neurological Surgeons Professional Development Course on the "Cervical Spine." Pittsburgh, PA, June 1992
- Instructor - Fourth Annual Spine Workshop. U.S. Uniformed Health Services. Bethesda, MD, June 1992
- Instructor - Practical Course in Spinal Instrumentation. Medical College of Wisconsin. Milwaukee, WI, July 1992
- Instructor - Specialized Spinal Instrumentation Applications: Degenerative Lumbar Instability. San Francisco, CA, September 1992
- Speaker - The University of New Mexico, "Experience with Magnetoencephalography and Magnetic Source Imaging," Breakfast Seminar. Congress of Neurological Surgeons. Washington DC, November 1992
- Speaker - "Surgical Options in Lumbar Disc Disease," Luncheon Seminar. Congress of Neurological Surgeons. Washington, DC, November 1992
- Instructor - American Association of Neurological Surgeons Professional Development Course on the "Cervical Spine - Hands On." Los Angeles, CA, November 1992
- Speaker - "Advances in the Management of Spine Trauma," Presented at 11th Annual Trauma Symposium. William Beaumont Army Medical Center, El Paso, TX, November 1992
- Speaker - "Anatomy and Biomechanics," Lumbar Stabilization Seminar. American College of Surgeons (Southern California Chapter) Annual Meeting. Santa Barbara, CA, January 1993

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Instructor - Cervical Spine Stabilization Course. Joint Section on Disorders of the Spine Annual Meeting. Tucson, AZ, February 1993
- Instructor - Consultants Corner. Joint Section on Disorders of the Spine annual meeting. Tucson, AZ, February 1993
- Speaker – “Degenerative Spondylolisthesis and Scholiasts,” General Session IV: Natural History and Treatment Options in Degenerative Lumbar Spine Disease. Joint Section on Disorders of the Spine Annual Meeting. Tucson, AZ, February 1993
- Instructor - American Association of Neurological Surgeons Professional Development Course on the "Cervical Spine – Hands-On." Toronto, Canada, June 1993
- Instructor - Actualizacion en Cirugia de Columna Vertebral (Indicaciones y Resultados del Sistema TSRH) (plus a hands-on workshop). Mexico City, Mexico, July 1993
- Instructor - Introduction to Thoracolumbar Instrumentation. Congress of Neurological Surgeons Pre-meeting Course (Lecture on Biomechanics). October 1993
- Speaker – “Anatomical Basis of Spinal Instability,” General Scientific Session II: Anatomical Principles of Spinal Surgery. Congress of Neurological Surgeons Annual Meeting. Vancouver, October 1993
- Speaker - “Technical Considerations in Graft Harvest and Spinal Arthrodesis,” Special Course II: Principles of Bone Grafting and Arthrodesis. Congress of Neurological Surgeons Annual Meeting. Vancouver, October 1993
- Instructor and Lecturer - (Posterior Cervical Wiring Techniques). Spine Section Pre Meeting Posterior Cervical Spine Stabilization Course. Ft. Lauderdale, FL, February, 1994
- Moderator - Breakfast Seminar at American Association of Neurological Surgeons Annual Meeting. Techniques for Surgical Fusion (# 015). San Diego, CA, April 1994
- Touring Professor - Thoracic and Lumbar Spine Biomechanics. Kobe (Japanese Spine Research Society), Niigata University, Toho University. Tokyo, Japan, June 1994
- Guest Faculty - 29th Meeting of the Canadian Congress of Neurological Sciences. Course 1: Cervical Spine Instrumentation. St. Johns, Newfoundland, June 1994
- Visiting Professor - Baylor University. 5th Annual George Ehni Visiting Lecturer (and workshop). September 1994
- Speaker - “Surgery of the Spine,” 11th Annual Conference of the American Association of Spinal Cord Injury Nurses. Las Vegas, NV, September 1994
- Speaker - “Management of Acute Spinal Cord Injury,” 40th Annual Meeting of the American Paraplegia Society. Las Vegas, NV, September 1994
- Speaker - “Degenerative Lumbar Spine Disease: Overview,” Special Course II: Treatment of Degenerative Disease of the Lumbar Spine. Congress of Neurological Surgeons Annual Meeting. Chicago, IL, October 1994
- Visiting Professor - University of Oregon Health Sciences Center. Portland, OR, November 1994
- Instructor - Operative Treatment of Cervical Myelopathy. Cervical Spine Research Society, Fourth Instructional Course on Cervical Spine Disorders. Baltimore, MD, December 1994
- Visiting Professor - University of Maryland and the Shock Trauma Center. Baltimore, MD, December 1994
- Participant - Thoracoscopic Approaches to the Spine Study Group Meeting. Cincinnati, OH, March 1995
- Speaker - “Indications for Low Back Spinal Surgery in the Work Injured Patient and Degenerative Cervical Myelopathy: Diagnosis and Management,” Neurosciences on the Border, 1995 Annual Symposium. El Paso, TX, March 1995
- Instructor - Practical Techniques in Spinal Instrumentation (Fessler Course). Orlando, FL, April 1995
- Moderator - Breakfast Seminar at American Association of Neurological Surgeons Annual Meeting. Techniques of Successful Spine Fusion. Orlando, FL, April 1995
- Speaker - Consultant's Corner at American Association of Neurological Surgeons Annual Meeting. Orlando, FL, April 1995
- Speaker – “Pitfalls and Common Techniques of Lumbar Fusion,” Special Course II, The Failed Back-The Role of Fusion. American Association of Neurological Surgeons Annual Meeting. Orlando, FL, April 1995

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Visiting Professor - University of Chicago. Chicago, IL, May 1995
- Visiting Professor - Harvard University and Brigham and Women's Hospital. Boston, MA, May 1995
- Instructor - American Association of Neurological Surgeons Professional Development Course on "Cervical Spine Surgery - Hands-On." Chicago, IL, June 1995.
- Invited Professor – "Biomechanics and Instability: Anatomy, Physiology" Diagnosis Congreso Mexicano De Cirugia Neurologica, Ixtapa, Zih, Mexico, July 23-28, 1995
- Invited Professor – "Cervical Instrumentation" Diagnosis Congreso Mexicano De Cirugia Neurologica, Ixtapa, Zih, Mexico, July 23-28, 1995
- Invited Professor – "Thoraco-Lumbar Instrumentation" Diagnosis Congreso Mexicano De Cirugia Neurologica, Ixtapa, Zih, Mexico, July 23-28, 1995
- Invited Professor – "What is New in the Treatment of Acute Spinal Cord Injury: Pharmacology and Surgery" Diagnosis Congreso Mexicano De Cirugia Neurologica, Ixtapa, Zih, Mexico, July 23-28, 1995
- Visiting Professor - Spine Surgery: The Decision-Making Process. Maine Neurosurgical Society Annual Meeting, Samoset Resort. Rockland, ME, July 28-30, 1995
- Visiting Professor - McGill University. "Hands-on" Spinal Fixation Course. Montreal, Canada, September 1995
- Visiting Professor - Oregon Neurosurgical Society and Oregon Neurosciences. Salishan, OR, September 1995
- Visiting Professor – Dartmouth, NH, October 1995
- Moderator - Congress of Neurological Surgeons Luncheon Seminar. Management of Thoracolumbar Trauma: A Clinical and Biomechanical Perspective. San Francisco, CA, October 1995
- Speaker - Congress of Neurological Surgeons Luncheon Seminar. Consultants Corner - Thoraco-Lumbar Spine. San Francisco, CA, October 1995
- Participant - New Horizons in Low Back Pain. A National Institute of Health Consensus Conference. San Diego, CA, November 1995
- Instructor - Comprehensive Spine Review (The National Center for Advanced Medical Education). Topics: Occipital C1-2 and Cervical, and Thoracic and Lumbosacral Biomechanics. Chicago, IL, November 1995
- Visiting Professor - University of Nebraska. Omaha, NE, November 1995
- Visiting Professor - Istanbul Neurosurgery Spine Society. Istanbul, Turkey, April 1996
- Co-Moderator - American Association of Neurological Surgeons/Congress of Neurological Surgeons Joint Section on Disorders of the Spine and Peripheral Nerves Scientific Session. 1996 American Association of Neurological Surgeons Annual Meeting. Minneapolis, MN, April 1996
- Moderator - Breakfast Seminar. Odontoid Fractures: Management and Techniques. 1996 American Association of Neurological Surgeons Annual Meeting. Minneapolis, MN, April 1996
- Moderator - Breakfast Seminar. Techniques of Successful Spine Fusion. 1996 American Association of Neurological Surgeons Annual Meeting. Minneapolis, MN, April 1996
- Invited Lecturer - "Biomechanics of Cervical Spine Fusion." European Cervical Spine Research Society. Nice, June 1996
- Visiting Professor - Stanford University. CA, June 1996
- Instructor - Cervical Spine Surgery – Hands-On. Memphis, TN, June 1996
- Cully Cobb Lecturer - 1996 Meacham Society Meeting. Nashville, TN, June 1996
- Guest Speaker - The American Academy of Neurological and Orthopaedic Surgeons, 1996 Annual Scientific Meeting. Las Vegas, NV, July 1996
- Invited Presenter - American Paraplegia Society, 42nd Annual Meeting. Focus Session (Surgical and Non-Surgical Management of Spinal Instability and the Use of Orthotic Devices). Las Vegas, NV, September 1996
- Visiting Professor - Henry Ford Hospital. Detroit, MI, September 1996
- Visiting Professor - Korean Spine Neurosurgery Research Society. Seoul, Korea, September 1996
- Moderator - Luncheon Seminar. Practical Clinical Spinal Biomechanics: Made Ridiculously Simple (101/102). Congress of Neurological Surgeons Annual Meeting. Montreal, Canada, September 1996

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Moderator - Special Course I - Thoracic and Lumbar Spine Sagittal Alignment: Diagnosis and Management Considerations (International Spine Symposium). Congress of Neurological Surgeons Annual Meeting. Montreal, Canada, September 1996
- Moderator - Symposium: Current Approaches to Spinal Injury. Congress of Neurological Surgeons Annual Meeting. Montreal, Canada, September 1996
- Visiting Professor - Aichi Medical University. Nagoya, Japan, October 1996
- Invited Guest - Japanese Neurosurgical Society 55th Annual Meeting. Toyama, Japan, October 1996
- Visiting Professor - Emory University. Atlanta, GA, November 1996
- Honored Guest - Georgia Neurosurgical Society. Atlanta, GA, November 1996
- Presenter - Fifth Instructional Course of the Cervical Spine Research Society (Biomechanics of the Neck). Following the CSRS Annual Meeting. Palm Beach, FL, December 1996
- Visiting Professor - Allegheny General Hospital. Pittsburgh, PA, February 1997
- Presidential Address - Joint Section on Disorders of the Spine and Peripheral Nerves Annual Meeting. Newport Beach, February 1997
- Invited Presentation - Survival in the New Health Care Environment. Joint Section on Disorders of the Spine and Peripheral Nerves Annual Meeting. Newport Beach, February 1997
- Panelist - Luncheon Seminar (216). Evaluation and Management of Adult Spinal Deformity and Scoliosis. American Association of Neurological Surgeons Annual Meeting. Denver, CO, April 1997
- Moderator - Luncheon Seminar (316). Biomechanics of Spinal Instrumentation. American Association of Neurological Surgeons Annual Meeting. Denver, CO, April 1997
- Co-Moderator – Symposium: Image-Guided Spine Surgery. American Association of Neurological Surgeons Annual Meeting. Denver, CO, April 1997
- Co-Moderator - Scientific Session. Joint Section on Disorders of the Spine and Peripheral Nerves. American Association of Neurological Surgeons Annual Meeting. Denver, CO, April 1997
- Moderator - Special Course I. Current Trends and Techniques in Nontraumatic Cervical Spine. American Association of Neurological Surgeons Annual Meeting. Denver, CO, April 1997
- Invited Presentations - "Biomechanics of the Spinal Column and Cervical Spinal Stenosis." Primer Congreso Columna Vertebral. San Juan, Puerto Rico, June 1997
- Panelist - Scientific Symposium: Entrapment Neuropathies - Topic: Endoscopic Approaches. World Federation of Neurological Surgeons Meeting. Amsterdam, July 1997
- Moderator - Scientific Symposium: Spinal Instability. World Federation of Neurological Surgeons Meeting. Amsterdam, July 1997
- Moderator - Luncheon Seminar. Thoracolumbar Trauma. World Federation of Neurological Surgeons Meeting. Amsterdam, July 1997
- Invited Guest - Association of Neurological Surgeons of Thailand Annual Meeting. Bangkok, Thailand, July 1997
- Invited Guest - Royal College of Surgeons of Thailand Annual Meeting. Pattaya, Thailand, July 1997
- Invited Speaker - "Spinal Instrumentation." 4th International Neurotrauma Symposium Satellite Symposium II. Seoul, Korea, August 1997
- Moderator and Speaker - Symposium: Acute Spinal Cord Injury Care and Spinal Stability - Topic: The Use of Orthotic Devices in Acute Spinal Cord Injury Care. 1997 American Paraplegia Society Annual Meeting. Las Vegas, NV, September 1997
- Visiting Professor - University of Kentucky. Lexington, KY, September 1997
- Invited Speaker - "Patient Advocacy: Politics, Patient Advocacy and Back Pain." Kentucky Medical Society Annual Meeting. Louisville, KY, September 1997
- Invited Speaker - "Biomechanics - The Foundation of Spinal Surgery & Back Pain and the Neurosurgeon." Kentucky Neurosurgical Society Annual Meeting. Louisville, KY, September 1997

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Invited Speaker - "Non-operative management of back pain." Fall Primary Care Update, 1997. New Mexico Academy of Physician Assistants. Albuquerque, NM, September 1997
- Course Director and Speaker - Spinal Biomechanics. Pre-American Association of Neurological Surgeons Meeting Course (006). New Orleans, LA, September 1997
- Speaker - Luncheon Seminar. How I DO It: Thoracolumbar Disease/Fracture (139/140). American Association of Neurological Surgeons Annual Meeting. New Orleans, LA, September 1997
- Moderator and Speaker - Luncheon Seminar. Biomechanics Made Ridiculously Simple (337/338). American Association of Neurological Surgeons Annual Meeting. New Orleans, LA, October 1997
- Visiting Professor - Louisiana State University. Shreveport, LA, October 1997
- Visiting Professor - University of Wisconsin. Madison, WI, November 1997
- Visiting Professor - Ohio State Neurosurgical Society. Granville, OH, November 1997
- Moderator - Biomechanics Session (session 7). Cervical Spine Research Society Annual Meeting. Palm Springs, CA, December 1997
- Speaker - "Cervical Spine Stabilization: Current Methods for Stabilization, Transport and Clearance." Trauma Update 1997. Albuquerque, NM, December 1997
- Instructor - Whistler Spine Course. Whistler, British Columbia, January 1998
- Speaker - (1) "Spinal Biomechanics," and (2) "Management of Back Pain." Pan Pacific Surgical Meeting. Honolulu, HI, January 1998
- Faculty - Joint Section on Disorders of the Spine and Peripheral Nerves Annual Meeting. Special course II: Management of Thoraco-Lumbar Trauma. Rancho Mirage, CA, February 1998
- Co-Moderator - Joint Section on Disorders of the Spine and Peripheral Nerves Annual Meeting. Symposium II: Spondylosis. Rancho Mirage, CA, February 1998
- Coordinator and Moderator - Joint Section on Disorders of the Spine and Peripheral Nerves Annual Meeting. Special Course V: Spinal Biomechanics. Rancho Mirage, CA, February 1998
- Speaker - Joint Section on Disorders of the Spine and Peripheral Nerves Annual Meeting. Symposium IV: Innovations in Spinal Surgery: Dynamic Cervical Stabilization. Rancho Mirage, February 1998
- Invited Speaker - "Dynamic Spinal Stabilization." Orthopedic Grand Rounds. Hong Kong University. Duchess of Kent Children's Hospital. Hong Kong, China, March 1998
- Invited Speaker - "Biomechanics: Nuts and Bolts; Old and New." Long Island Spine Club. Long Island, NY, March 1998
- Invited Speaker - "Dynamic Spinal Stabilization." Orthopedic Grand Rounds. Long Island Jewish Hospital. Long Island, NY, March 1998
- Invited Speaker and Section Moderator (Cervical Spine) – Depuy Acromed 11th International Workshop. Cleveland, OH, March 1998
- Faculty - Case Western Reserve University Hospitals: Residents and Fellows Conference. Stone Mountain, GA, April 1998
- Speaker - "Head Injury: The First 48 Hours." Emergency Medicine Symposium. Albuquerque, NM, April 1998
- Instructor - American Association of Neurological Surgeons Annual Meeting Practical Clinic. Surgical Exposure, Decompression and Stabilization of the Cervical Spine (021). Philadelphia, PA, April 1998
- Moderator - American Association of Neurological Surgeons Annual Meeting Breakfast Seminar. Spinal Stabilization: State of the Art Principles of Selection, Application, and Construction Design (114). Philadelphia, PA, April 1998
- Panelist - American Association of Neurological Surgeons Annual Meeting Consultants Corner: Spine (Breakfast Seminar 221). Philadelphia, PA, April 1998
- Moderator - 5th International Meeting on Advanced Spine Techniques (IMAST) Breakout Session. Dynamic Ventral Cervical Stabilization with the DOC System (Breakout Session 5). Sorrento, Italy, May 1998
- Faculty - 10th Annual International Spine Workshop. Bethesda, MD, June 1998

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Visiting Professor - University of Connecticut. Hartford, CT, June 1998
- Faculty - EBI Symposium on Spinal Science. Newark, NJ, August 1998
- Visiting Professor - University of Pittsburgh. Pittsburgh, PA, September 1998
- Faculty - Luncheon Seminar (107/108). Management of Thoracolumbar Fractures. Congress of Neurological Surgeons Annual Meeting. Seattle, WA, October 1998
- Moderator - Luncheon Seminar (205/206). Principles of Spinal Biomechanics and Instrumentation. Congress of Neurological Surgeons Annual Meeting. Seattle, WA, October 1998
- Visiting Professor - Congreso Medico XXII Aniversario (Lectures on Spinal Biomechanics). Maracaibo, Venezuela, October 1998
- Moderator - General Scientific Session. North American Spine Society Annual Meeting (Lumbar Fusion). San Francisco, CA, October 1998
- Moderator - General Scientific Session. North American Spine Society Annual Meeting (Spinal Cord Injury). San Francisco, CA, October 1998
- Faculty - Premeeting Course. Interbody Spinal Fusion of the Lumbar and Cervical Spine. Topic – Biomechanics of Lumbar Fixation Techniques. Joint Section on Spinal Disorders Annual Meeting. Lake Buena Vista, FL, February 1999
- Faculty - Theater in the Round: Cervical Spine Instrumentation Techniques. Joint Section on Spinal Disorders Annual Meeting. Lake Buena Vista, FL, February 1999
- Moderator - Symposium III: Lumbar Interbody Fusion: Indications, Techniques, Complications. Joint Section on Spinal Disorders Annual Meeting. Lake Buena Vista, FL, February 1999
- Faculty - Big Time Spine: Spinal Surgery; Current Concepts and Techniques. Snowbird, UT, March 1999
- Visiting Professor - University of Illinois. Peoria, IL, May 1999
- Visiting Professor - Curso de Educacao Continuada em Neurocirurgia: VII Congresso da Academia Brasileira de Neurocirurgia. Gramado, Brazil, September 1999
- Faculty - Advanced Management of the Cervical Spine. Chicago, IL, September 1999
- Visiting Professor - The Western Neurosurgical Society. Coeur d' Alene, ID, September 1999
- Faculty - Ventral Approaches to the Thoracic and Lumbar Spine. American Association of Neurological Surgeons Hands-On Course. San Antonio, TX, September 1999
- Faculty - Neurotrauma Symposium. Carolinas Medical Center. Charlotte, NC, September 1999
- Visiting Professor - Turkish Spine Society. Ankara, Turkey, October 1999
- Faculty – “Fundamental Concepts.” Biomechanics Symposium. Istanbul Technical University. Istanbul, Turkey, October 1999
- Faculty – “Stability and Instability.” Biomechanics Symposium. Istanbul Technical University. Istanbul, Turkey, October 1999
- Faculty – “Biomechanics of Spinal Column Failure.” Biomechanics Symposium. Istanbul Technical University. Istanbul, Turkey, October 1999
- Faculty – “Biomechanics of Spinal Fixation.” Biomechanics Symposium. Istanbul Technical University. Istanbul, Turkey, October 1999
- Faculty – “Implant Properties.” Biomechanics Symposium. Istanbul Technical University. Istanbul, Turkey, October 1999
- Faculty – “The Decision – Making Process and Construct Design.” Biomechanics Symposium. Istanbul Technical University. Istanbul, Turkey, October 1999
- Faculty – “Special Concerns.” Biomechanics Symposium. Istanbul Technical University. Istanbul, Turkey, October 1999
- Faculty - Lumbar Interbody Fusions (Lecture – The Shortcomings of Lumbar Fusions with Cages and Interbody Bone Dowels). Congress of Neurological Surgeons Annual Meeting. Boston, MA, November 1999
- Visiting Professor – Stanford University. Palo Alto, CA, November 1999

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Faculty - Bigtime Spine. Key Largo, FL, November 1999
- Faculty - Current Controversies and Challenges in Spine Surgery. Miami, FL, November 1999
- Visiting Professor - University of Mississippi. Jackson, MS, December 1999
- Visiting Lecturer - ProNeuron and Weizmann Institute. Tel Aviv, Israel, December 1999
- Visiting Lecturer - Sheba Medical Center. Tel Hashomer, Israel, December 1999
- Visiting Professor - Buenos Aires Society of Neurosurgery Congress. Pinamar, December 1999
- Moderator - Session I: Cervical Spine Research Society Annual Meeting. Seattle, WA, December 1999
- Faculty - Whistler Spine Conference. Whistler, British Columbia, January 2000
- Invited Speaker – “Spondylosis: Nuts and Bolts; Old and New.” Huron Hospital Medical Grand Rounds. Cleveland, OH, January 24, 2000
- Visiting Professor – (1) “Spondylosis: Nuts and Bolts; Old and New,” (2) “Back Pain: A Comprehensive Approach.” Albany Medical College. Albany, NY, February 2000
- Invited Speaker – Journal Club, Department of Neurosurgery, University of Nebraska. Omaha, NE, February 2000
- Faculty – “Biomechanics of Spinal Instrumentation.” Challenges to Spine Surgery Symposium. Hilton La Jolla Torrey Pines. La Jolla, CA, February 2000
- Faculty – Pre-Meeting Course. Special Course I: Lumbar Instability and Fusion: Diagnosis, Patient Selection, Treatment Options and Outcomes. Topic: Mechanics of ALIF, PLIF, Cages and Screws. Joint Section on Spinal Disorders Annual Meeting. Indian Wells, CA, March 2000
- Faculty – General Scientific Session I: “The Art of Patient Selection in Fusion of the Lumbar Spine.” Joint Section on Spinal Disorders Annual Meeting. Indian Wells, CA, March 2000
- Faculty – General Scientific Session IV: “Discography: A Painful Waste of Time.” Joint Section on Spinal Disorders Annual Meeting. Indian Wells, CA, March 2000
- Guest Speaker – “Cervical Spondylosis and Dynamic Spine Stabilization.” Sponsored by Alamo Spine, LLC. San Antonio, TX, March 2000
- Honored Guest – The Maine Neurosurgical Society Winter Meeting. Sugarloaf, ME, March 2000
- Speaker, via Acrolynk, – “DOC Presentation”. for DePuy Acromed to a group of physicians in Texas, March 29, 2000
- Guest Speaker – “Recognition and Management of Cervical Myelopathy.” Cleveland Clinic Foundation, Spine Care 2000. Fort Lauderdale, FL, March 30 – April 1, 2000
- Guest Speaker – “Lumbar Disc Herniation Anatomy and Etiopathogenesis.” Cleveland Clinic Foundation, Spine Care 2000. Fort Lauderdale, FL, March 30 – April 1, 2000
- Guest Speaker – “Lumbar Stenosis Operative Management.” Cleveland Clinic Foundation, Spine Care 2000. Fort Lauderdale, FL, March 30 – April 1, 2000
- Faculty – “Cervical Spine Instability: Instrumentation and Other Methods of Management” (Course 035). American Association of Neurological Surgeons Annual Meeting. San Francisco, CA, April 9, 2000
- Faculty – “Cervical Spine Instability: Instrumentation and Other Methods of Management” (Course 019). American Association of Neurological Surgeons Annual Meeting. San Francisco, CA, April 9, 2000
- Moderator – Breakfast Seminar 105: “Spinal Stabilization: State of the Art.” American Association of Neurological Surgeons Annual Meeting. San Francisco, CA April 10, 2000
- Panelist – Breakfast Seminar 312: “Lumbar Spine Fusion: Indications, Patient Selection, & Current Techniques.” American Association of Neurological Surgeons Annual Meeting. San Francisco, CA, April 12, 2000
- Invited Speaker – “Basic Science Research & Pathophysiology of SCI” American Spinal Injury Association Annual Meeting. Chicago, IL, April 14, 2000
- Invited Speaker – “Handling Traumatized Neural Tissue” American Spinal Injury Association Annual Meeting. Chicago, IL, April 14, 2000
- Invited Guest – “Oh, My Aching Back!” AANS On-Line Chat Initiative with Healthon/WebMD.com: 30 minute LIVE chat. April 14, 2000

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Faculty – Rotating Lab Session. American Spinal Injury Association Annual Meeting. Chicago, IL, April 15, 2000
- Faculty - "Biomechanics of Spinal Instrumentation." Challenges to Spine Surgery Symposium. St. Thomas, Virgin Islands, May 5, 2000
- Speaker – "Practical Biomechanics for Revision Spine Surgery," Symposium On Spine Surgery That Has Failed: A Multidisciplinary Approach. Cleveland, OH, May 6, 2000
- Breakout Session – "Surgical Overview for Non-Surgeons," Symposium On Spine Surgery That Has Failed: A Multidisciplinary Approach. Cleveland, OH, May 6, 2000
- Speaker – "The Importance of Data Collection and Management in Spine Care Facilities," Symposium On Spine Surgery That Has Failed: A Multidisciplinary Approach. Cleveland, OH, May 7, 2000
- Course Instructor – "Lumbar Instrumentation: From First Steps to Clinical Practice," The 20th Annual Meeting of the Japanese Congress of Neurological Surgeons. Yokohama, Japan, May 18, 2000
- Plenary Session – "Changing Attitude on Instrumentation Surgery," The 20th Annual Meeting of the Japanese Congress of Neurological Surgeons. Yokohama, Japan, May 19, 2000
- Instructor – "Instrumentation for Lumbar Spine Disease I," The 20th Annual Meeting of the Japanese Congress of Neurological Surgeons. Yokohama, Japan, May 18, 2000
- Participant – The Society of Neurological Surgeons Annual Meeting. Los Angeles, CA, May 21-23, 2000
- Faculty - 12th Annual International Spine & Peripheral Nerve Workshop – Cervical Course. Bethesda, MD, June 8-11, 2000
- Invited Speaker – "Biomechanics of Fusion." 12th Annual International Spine & Peripheral Nerve Workshop – Cervical Course. Bethesda, MD, June 11, 2000
- Invited Speaker – "Biomechanics of Spinal Instrumentation." Grand Rounds – New York Medical College. Valhalla, NY, June 30, 2000
- Speaker, via Acrolynk, – "DOC Presentation". For DePuy Acromed to a group of physicians in California, July 20, 2000
- Course Moderator – Chiari Syringomyelia Conference. Cleveland, OH, July 26-29, 2000
- Speaker – "Introduction to Syringomyelia." Chiari Syringomyelia Conference. Cleveland, OH, July 27, 2000
- Moderator – Panel Discussions. Chiari Syringomyelia Conference. Cleveland, OH, July 27 - 29, 2000
- Course Director – "Cervical Spondylosis". Spine Review – Hands On 2000. Cleveland, OH, August 2000
- Course Director – "Orthoses". Spine Review – Hands On 2000. Cleveland, OH, August 2000
- Course Director – "Spine Biomechanics IV (Biomechanics of spine degeneration)". Spine Review – Hands On 2000. Cleveland, OH, August 2000
- Interviewee – "Causes and Symptoms of Spinal Instability". Spine Press Talks. World Spine I. Berlin, Germany, August 29, 2000
- Key-Note Speaker – "Spinal Stability". Plenary Session. World Spine I. Berlin, Germany, August 29, 2000
- Faculty – Symposium: Neuro-Orthopedic Management of Acute SCI. "Surgical Handling of Traumatized Neural Tissues: Neurosurgical Decision-Making for Spinal Stabilization". American Paraplegia Society Annual Conference. Las Vegas, Nevada, September 5, 2000
- Course Director – "Spinal Biomechanics and Clinical Management Decision Making". Congress of Neurological Surgeons Annual Meeting. San Antonio, TX, September 23, 2000
- Moderator – "Management of Lesions at the Cervicothoracic Junction". Congress of Neurological Surgeons Annual Meeting. San Antonio, TX, September 26, 2000
- Speaker – "What Clinical Problems Can Be Solved by 2010 (Spine)?" Special Course III: General Neurosurgical Practice after 2000. Congress of Neurological Surgeons Annual Meeting. San Antonio, TX, September 27, 2000
- Speaker – "Clinical Approach #1: Anterior Alone". 6th Spine Surgeons International Symposium. Napa Valley, CA, September 22, 2000
- Guest Lecturer – "Cervical Spondylosis". Washington Hospital Center - George Washington University, Washington, DC, October 5, 2000

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Guest Speaker – “Spondylosis: Nuts & Bolts; Old & New”. Washington Academy of Neurosurgeons, Washington, DC, October 5, 2000
- Invited Speaker – “Surgical Treatment – Principals of Cervical Fusion”. Innovative Spine Care: Essential Skills for the Nursing Team. Cleveland Clinic Foundation, Cleveland, OH, October 7, 2000
- Invited Speaker – “Surgical Options for Back Pain”. Back Pain: Finding a Solution That Works for You. Free Public Health Talks Seminar offered by Cleveland Clinic Foundation, Cleveland, OH, October 11, 2000
- Guest Lecturer – “Spine Surgery: Nuts & Bolts, Old & New”. Milard Filmore Hospital, Buffalo, NY, November 2, 2000
- Teaching Sessions – (1) Cervical-Cranial Junction; (2) Cervical Spine; (3) Thoraco-Lumbar Spine; (4) Lumbosacral Spine. Milard Filmore Hospital, Buffalo, NY, November 2, 2000
- Visiting Professor – “Dynamic Spine Stabilization.” University of Cincinnati Medical Center, Cincinnati, OH, November 8, 2000
- Invited Faculty – “Dynamic Spine Stabilization.” First Annual Spinal Horizons Symposium, Chamberlain, SD, November 10, 2000
- Invited Faculty – “Ventral Approaches to Cervical Spondylitic Myelopathy.” First Annual Spinal Horizons Symposium, Chamberlain, SD, November 10, 2000
- Faculty – “Cervical Spondylosis & Lower Back Pain – Nuts & Bolts; Old & New.” Third Annual Neuroscience Nursing Conference, Cleveland Clinic Foundation, Cleveland, OH, November 17, 2000
- Invited Faculty – “Interbody Fusion Requires Posterior Fixation”. Current Controversies and Challenges in Spinal Surgery, Naples, FL, December 8, 2000
- Invited Faculty – “Finding and Building an Academic Practice”. Current Controversies and Challenges in Spinal Surgery, Naples, FL, December 8, 2000
- Faculty – “A Biomechanical Comparison of Transfacet Screw Fixation and Pedicle Screw Fixation for Spinal Stability”. NuVasive’s Master and Protégé Incubator Meeting. New York, NY, December 14-17, 2000.
- Faculty – 13th Annual Contemporary Update on Disorders of the Spine. Whistler, British Columbia, Canada, January 14-19, 2001
- Speaker – “Spine Biomechanics”. 13th Annual Contemporary Update on Disorders of the Spine. Whistler, British Columbia, Canada, January 14, 2001
- Visiting Professor – “Biomechanics”. Grand Rounds, Department of Neurosurgery, University of Miami School of Medicine, Miami, FL, February 1, 2001
- Visiting Professor – “Spondylosis: Nuts & Bolts, Old & New”. Saturday Morning Conference, Department of Neurosurgery, University of Miami School of Medicine, Miami, FL, February 3, 2001
- Visiting Professor – “Spondylosis: Nuts & Bolts, Old & New”. University of Pennsylvania Medical Center, Philadelphia, PA, February 8, 2001
- Moderator – “Scientific Session III – Perils and Pitfalls of Instrumented Spinal Surgeries”. 17th Annual Meeting AANS/CNS Section on Disorders of the Spine and Peripheral Nerves, Phoenix, AZ, February 16, 2001
- Faculty – “Scientific Session IV – Controversies in Spinal Surgery” – “Late Surgery is Superior”. 17th Annual Meeting AANS/CNS Section on Disorders of the Spine and Peripheral Nerves, Phoenix, AZ, February 17, 2001
- Faculty – “The Decision Making Process: Problem-Based Decision-Making”. Cleveland Clinic Foundation Neuro-Oncology Symposium, Naples, FL, February 18, 2001
- Faculty – “When is Enough, Enough?” Cleveland Clinic Foundation Neuro-Oncology Symposium, Naples, FL, February 18, 2001
- Faculty – “Biomechanics of Cervical Spine”. The Mayfield Clinic – Cleveland Clinic – Mayo Clinic Winter Neurosciences Symposium, Snowmass Village, CO, February 27, 2001
- Faculty – Hands-on Workshop on Cervical Spine Instrumentation. The Mayfield Clinic – Cleveland Clinic – Mayo Clinic Winter Neurosciences Symposium, Snowmass Village, CO, February 27, 2001

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Moderator – Consultant’s Corner “Issues Regarding Cervical Spine Instrumentation”. The Mayfield Clinic – Cleveland Clinic – Mayo Clinic Winter Neurosciences Symposium, Snowmass Village, CO, February 27, 2001
- Guest Speaker – “Spine Surgery: What I’ve Learned from my Mistakes”. Medical College of Virginia, Department of Neurosurgery, Grand Rounds. Richmond, VA, March 17, 2001
- Course Faculty – “The Principles of Spine Surgery and Problem-Based Decision-Making”. Advanced Spinal Techniques: Cadaver Workshop. Dallas, TX, March 29, 2001
- Course Faculty – “Biomechanics of Spinal Column Failure and Spinal Instrumentation”. Advanced Spinal Techniques: Cadaver Workshop. Dallas, TX, March 30, 2001
- Course Moderator – “Thoracic and Lumbar Spine – Indications/Discussion”. Advanced Spinal Techniques: Cadaver Workshop. Dallas, TX, March 31, 2001
- Co-Host – Surgeon Visitation Tutorial (Sponsored by DePuy AcroMed), Department of Neurosurgery, Cleveland Clinic Foundation, Cleveland, OH, April 1-3, 2001
- Invited Guest – “Dynamic Spine Stabilization”. First Annual Surgeon Champion Summit (DePuy AcroMed). Scottsdale, AZ, April 6-7, 2001
- Guest Speaker – “A Focus on Cervical Spondylosis”. Louisiana State University, Department of Neurosurgery. New Orleans, LA, April 19, 2001
- Practical Clinic Course, Panelist – “Lumbar Spine Fusion: Indications, Patient Selection & Current Techniques”. American Association of Neurological Surgeons Annual Meeting. Toronto, Canada, April 24, 2001
- Guest Speaker – “Complex Cervical Deformities”. VIII Congress of Brazilian Spine Society Meeting. Belo Horizonte, Minas Gerais, Brazil, April 29, 2001
- Round Table Discussion – “Degenerative Pathology”. VIII Congress of Brazilian Spine Society Meeting. Belo Horizonte, Minas Gerais, Brazil, April 29, 2001
- Guest Speaker – “Degenerative Disease”. VIII Congress of Brazilian Spine Society Meeting. Belo Horizonte, Minas Gerais, Brazil, April 30, 2001
- Visiting Professor – “Spine Surgery – Nuts and Bolts: Old and New”. Neurosurgery Grand Rounds. Johns Hopkins University, Baltimore, Maryland, May 10, 2001
- Course Director – “Cervical Spondylosis”. Spine Review – Hands On 2001. Cleveland, OH, May 12, 2001
- Course Director – “Orthoses”. Spine Review – Hands On 2001. Cleveland, OH, May 13, 2001
- Course Director – “Spine Biomechanics IV (Biomechanics of spine degeneration)”. Spine Review – Hands On 2001. Cleveland, OH, May 14, 2001
- Guest Speaker – “Spine Biomechanics: The Fundamentals”. XI Congreso Venezolano de Neurocirugia (Venezuelan Society of Neurosurgery). Margarita Island, Venezuela, May 24, 2001
- Guest Speaker – “The Failure of Spinal Implants: Etiology and Prevention”. XI Congreso Venezolano de Neurocirugia (Venezuelan Society of Neurosurgery). Margarita Island, Venezuela, May 25, 2001
- Guest Speaker – “Cages: Biomechanics and Clinical Applications”. XI Congreso Venezolano de Neurocirugia (Venezuelan Society of Neurosurgery). Margarita Island, Venezuela, May 25, 2001
- Guest Speaker – “The Spine Surgery Decision-Making Process”. XI Congreso Venezolano de Neurocirugia (Venezuelan Society of Neurosurgery). Margarita Island, Venezuela, May 25, 2001
- Visiting Professor – “Spine Surgery: The Bridge Between the Laboratory and The Operating Room” State University of New York, Upstate Medical University, Syracuse, NY, May 30, 2001
- Visiting Professor – “Chiari Malformation, Syringomyelia, and Fibromyalgia: Myth Politics, and Science”. Grand Rounds. Thomas Jefferson University Hospital. Philadelphia, PA, June 10-11, 2001
- Visiting Professor – “Spondylosis – A Tale of Regions”. University of California, San Diego – Department of Neurosurgery. San Diego, CA, June 13-15, 2001
- Workshop Coordinator – “New Concepts for Anterior Cervical Fixation”. Cervical Spine Research Society meeting – European Section. Turin, Italy, July 6, 2001

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Faculty – “Screw Augmentation in the Osteoporotic Spine”. International Meeting on Advanced Spine Techniques (IMAST). Paradise Island, Bahamas, July 12, 2001
- Faculty – Instructional Course “New Concepts and Techniques in Cervical Reconstruction including Occipital-Cervical Fixation”. International Meeting on Advanced Spine Techniques (IMAST). Paradise Island, Bahamas, July 12, 2001
- Faculty – “Chiari Malformation and Syringomyelia: A Physiological Relationship”. American Syringomyelia Alliance Project (ASAP) Annual Conference. Los Angeles, CA, July 28, 2001
- Visiting Professor – “Cervical Spondylosis: Nuts & Bolts, Old & New”. San Diego Center for Spinal Disorders. San Diego, CA, August 15, 2001
- Visiting Professor – “Chiari Malformation vs. Spondylosis: Nuts & Bolts, Old & New”. Neurological Surgery Medical Associates. Mission Viejo, CA, August 16, 2001
- Faculty – “Surgical Treatment – The Principles of Cervical Fusion”. Innovative Spine Care: Essential Skills for the Nursing Team. Cleveland Clinic Foundation. Cleveland, OH, August 24, 2001
- Invited Speaker – “Spinal Fusion – Cage, Screw or Plate”. World Federation of Neurosurgical Societies 12th World Conference of Neurosurgeons. Sydney, Australia, September 16-21, 2001
- Invited Speaker – “Spondylolisthesis”. World Federation of Neurosurgical Societies 12th World Conference of Neurosurgeons. Sydney, Australia, September 16-21, 2001
- Invited Speaker – General Scientific Session II “Reinventing Neurosurgery: Technical & Scientific Advances for the 21st Century”. Congress of Neurological Surgeons Annual Meeting. San Diego, CA, October 2, 2001
- Moderator – “Management of Difficult Spine Lesions with Novel Spine Approaches”. Congress of Neurological Surgeons Annual Meeting. San Diego, CA, October 2, 2001
- Co-Moderator – Concurrent Session, “Cervical Spine”. North American Spine Society Annual Meeting. Seattle, WA, November 1, 2001
- Co-Moderator – Concurrent Session, “Diagnostic & Imaging”. North American Spine Society Annual Meeting. Seattle, WA, November 1, 2001
- Keynote Speaker – “Dynamic Cervical Spine Stability”. 12th Annual Colorado Spine Symposium. Golden, CO, November 9, 2001
- Keynote Speaker – “Cervical Spondylosis Nuts & Bolts, Old & New”. 12th Annual Colorado Spine Symposium. Golden, CO, November 9, 2001
- Speaker – Chiari Malformation: Myth, Politics, Science”. Neuroscience Grand Rounds, The Cleveland Clinic Foundation. Cleveland, OH, November 26, 2001
- Faculty – 14th Annual Contemporary Update on Disorders of the Spine. Whistler, British Columbia, Canada, January 19-26, 2002
- Case Presentations – “Lumbar Burst Fracture” & Osteoporosis”. 14th Annual Contemporary Update on Disorders of the Spine. Whistler, British Columbia, Canada, January 22, 2002
- Case Presentations – “OS Osteotomy”. 14th Annual Contemporary Update on Disorders of the Spine. Whistler, British Columbia, Canada, January 23, 2002
- Moderator – “Technology: Quality, Cost & Responsibility”. 14th Annual Contemporary Update on Disorders of the Spine. Whistler, British Columbia, Canada, January 24, 2002
- Speaker – “Management of Back Pain”. Spine Center Grand Rounds, The Cleveland Clinic Foundation, Cleveland, Ohio, January 31, 2002
- Speaker – “Cervical Spondylosis”. Spine Center Grand Rounds, The Cleveland Clinic Foundation, Cleveland, Ohio, February 7, 2002
- Speaker – “Bone Substitutes”. Scientific Program – Cutting Edge Spine Technologies: Present and Future. American Association of Neurological Surgeons and Congress of Neurological Surgeons Annual Meetings, Lake Buena Vista, Florida, February 27, 2002.

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Moderator – “Houston...We Have a Problem”: Complication Management. American Association of Neurological Surgeons and Congress of Neurological Surgeons Annual Meetings, Lake Buena Vista, Florida, February 28, 2002.
- Speaker – “World Spine II Presentation”. American Association of Neurological Surgeons and Congress of Neurological Surgeons Annual Meetings, Lake Buena Vista, Florida, March 1, 2002.
- Faculty – Practical Clinic, “Basics of Spinal Stabilization, Fusion, and Instrumentation.” American Association Annual Meeting, Chicago, Illinois, April 7, 2002.
- Moderator – Lumbar Spine Fusion: Indications, Patient Selection and Current Techniques”. American Association Annual Meeting, Chicago, Illinois, April 8, 2002.
- Discussant – “Biomechanics of Lateral Mass/Pedicle Screw Fixation at C1-C2”. American Association Annual Meeting, Chicago, Illinois, April 8, 2002.
- Speaker – “Conservative Treatment Options”. Special Symposium: The Management of Low Back Pain. American Association Annual Meeting, Chicago, Illinois, April 10, 2002.
- Speaker – “The Chiari-Malformation and Syringomyelia: Politics and Science”. Society of Neurosurgeons of South Africa – 17th Biennial Congress. Stellenbosch, South Africa, April 26-30, 2002
- Speaker – “Dynamic Spine Stabilization”. Society of Neurosurgeons of South Africa – 17th Biennial Congress. Stellenbosch, South Africa, April 26-30, 2002
- Speaker – “Technology: Controlling Cost; Maximising Value”. Society of Neurosurgeons of South Africa – 17th Biennial Congress. Stellenbosch, South Africa, April 26-30, 2002
- Course Director – “Cervical Spondylosis”. Spine Review – Hands On 2002. Cleveland, OH, May 5, 2002
- Course Director – “Orthoses”. Spine Review – Hands On 2002. Cleveland, OH, May 6, 2002
- Course Director – “Spine Biomechanics IV (Biomechanics of spine degeneration)”. Spine Review – Hands On 2002. Cleveland, OH, May 9, 2002
- Invited Panelist – 9th International Meeting on Advanced Spine Technologies. Montreux, Switzerland, May 23-25, 2002
- Invited Speaker – “Biomechanical and Clinical Considerations Regarding the Management of Low Back Pain.” 53rd Annual Meeting of the German Society of Neurosurgery. Halle/Saale, Germany, June 2-5, 2002
- Honored Guest – “Spine Surgery and Biomechanics: Nuts & Bolts, Old & New.” Rocky Mountain Neurological Society 37th Annual Meeting. Santa Ana Pueblo, New Mexico, June 17, 2002
- Honored Guest – “Technology Development and Transfer to the Clinical Arena: Present and Future.” Rocky Mountain Neurological Society 37th Annual Meeting. Santa Ana Pueblo, New Mexico, June 19, 2002
- Invited Speaker – “Ethics of Healthcare as it affects the Neurosurgeon”. Michigan Association of Neurological Surgeons. Petosky, Michigan, June 28-30, 2002
- Invited Speaker – “Spinal Surgery: Quality, Cost, and Responsibility”. Michigan Association of Neurological Surgeons. Petosky, Michigan, June 28-30, 2002
- Invited Speaker – “Scoliosis, Syringomyelia, and Bony Abnormalities”. American Syringomyelia Alliance Project (ASAP) Annual Conference. St. Louis, MO, July 26, 2002
- Moderator – Morning Session. American Syringomyelia Alliance Project (ASAP) Annual Conference. St. Louis, MO, July 27, 2002
- Invited Speaker – “Rheumatological Manifestations of CM”. American Syringomyelia Alliance Project (ASAP) Annual Conference. St. Louis, MO, July 27, 2002
- Invited Speaker – “Spine Biomechanics: Nuts and Bolts, Old and New”. Spinal Biomechanics Lecture Series. University of Florida, Department of Neurosurgery. Gainesville, Florida, August 5, 2002
- Speaker - “Spinal Cord Injury” Neurology Resident Lecture, The Cleveland Clinic Foundation, Cleveland Ohio, August 12, 2002
- Invited Presidential Guest Speaker – “Biomechanics of the Spine”. International Intradiscal Therapy Society. Seoul, Korea. August 22, 2002

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Invited Speaker – “The Evolution of the Spine and the Degenerative Process”. The Aging Spine: The Cause and Treatment of Degenerative Back and Neck Pain. The Cleveland Clinic Foundation – Free Public Seminar. Cleveland Clinic Foundation – Solon. September 5, 2002
- Invited Speaker – “Surgical Treatment for Degenerative Spinal Treatment”. The Aging Spine: The Cause and Treatment of Degenerative Back and Neck Pain. The Cleveland Clinic Foundation – Free Public Seminar. Cleveland Clinic Foundation – Solon. September 5, 2002
- Speaker – “Essentials of Biomechanics for the General Neurosurgeon”. General Scientific Session II. 2002 Congress of Neurological Surgeons Annual Meeting, Philadelphia, PA, September 24, 2002
- Invited Speaker – “Alternatives of Autologous Grafts”. Turkish Neurosurgical Society Spine Section Meeting. Eskisehir, Turkey, October 4, 2002
- Invited Speaker – “Biomechanical Tests for the Evaluation of Fusion”. Turkish Neurosurgical Society Spine Section Meeting. Eskisehir, Turkey, October 4, 2002
- Invited Speaker – “Fusion and Ortheses”. Turkish Neurosurgical Society Spine Section Meeting. Eskisehir, Turkey, October 5, 2002
- Moderator – “Technology: Ethical Considerations and Cost Containment”. North American Spine Society 17th Annual Meeting. Montreal, Quebec, Canada, October 31, 2002
- Research Grant Application Reviewer - Cervical Spine Research Society Annual Meeting. Grant reviewed in July 2002. Miami Beach, Florida, December 5-7, 2002
- Moderator – “Session X, Neuroforamina”. Cervical Spine Research Society Annual Meeting. Miami Beach, Florida, December 6, 2002
- Faculty – 15th Annual Contemporary Update on Disorders of the Spine. Whistler, British Columbia, Canada, January 18-24, 2003
- Moderator – “Healthcare Reform and Government Issues”. 15th Annual Contemporary Update on Disorders of the Spine. Whistler, British Columbia, Canada, January 20, 2003
- Guest Speaker – “Biomechanics: The Fundamentals”. Naval Medical Center, Portsmouth, Virginia, January 30, 2003
- Guest Speaker – “Subsidence and the Surgical Treatment of Cervical Spondylosis”. Multidisciplinary Spine Conference - Naval Medical Center, Portsmouth, Virginia, January 31, 2003
- Guest Speaker – “Revision and Reconstruction Cervical Spine Surgery”. Multidisciplinary Spine Conference - Naval Medical Center, Portsmouth, Virginia, January 31, 2003
- William S. Keith Professorship in Neurosurgery – Mini-Symposium: Education Symposium - “Resident / Fellow Education”. Division of Neurosurgery, University of Toronto, February 10, 2003
- William S. Keith Professorship in Neurosurgery – Mini-Symposium: New Innovations in Complex Spinal Surgery - “Spine Surgery: Nuts & Bolts; Old & New”. Division of Neurosurgery, University of Toronto, February 11, 2003
- William S. Keith Professorship in Neurosurgery – Mini-Symposium: New Innovations in Complex Spinal Surgery II - “Technology: Quality, Cost, & Responsibility”. Division of Neurosurgery, University of Toronto, February 11, 2003
- Chairman – Debate “DOS”. Non Fusion Techniques in Spinal Surgery International Symposium, Bordeaux, France, February 14, 2003
- Chairman – Debate “Is Disc Arthroplasty Better than Arthrodesis?” Non Fusion Techniques in Spinal Surgery International Symposium, Bordeaux, France, February 15, 2003
- Guest Speaker – “Chiari Malformation and Fibromyalgia.” Winter Neuroscience Symposium, Snowmass, Colorado, February 24, 2003
- Guest Speaker – “Spine Surgery – Cost containment and Fiscal Responsibility.” Winter Neuroscience Symposium, Snowmass, Colorado, February 24, 2003
- Guest Speaker – “Biomechanics-Nuts and Bolts, Old and New.” Winter Neuroscience Symposium, Snowmass, Colorado, February 24, 2003

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Guest Speaker – “Cervical Spine Instrumentation: Hands-on Session.” Winter Neuroscience Symposium, Snowmass, Colorado, February 24, 2003
- Guest Speaker – “Spine Surgery: Nuts & Bolts, Old & New.” 2003 Edwin B. Boldrey Lecture, San Francisco, California, March 13, 2003
- Keynote Speaker – “Technology: Quality, Cost, Responsibility.” Annual Meeting, San Francisco Neurological Society, Claremont Resort & Spa, Berkeley, California, March 15, 2003.
- Faculty – “Basics of Spinal Stabilization, Fusion and Instrumentation” 2003 Annual Meeting, American Association of Neurological Surgeons, San Diego, California, April 26, 2003
- Speaker – “Timing of Surgery for Spinal Cord Injuries.” 2003 Annual Meeting, American Association of Neurological Surgeons, San Diego, California, April 30, 2003
- Invited Speaker – “Fundamentals of Spine Biomechanics.” Society of Neurological Surgeons of Chile, Vina del Mar, Chile, May 29, 2003
- Invited Speaker – “Biomechanics of Spinal Degeneration.” Society of Neurological Surgeons of Chile, Vina del Mar, Chile, May 29, 2003
- Invited Speaker – “History of Thoracolumbar Surgery.” Society of Neurological Surgeons of Chile, Vina del Mar, Chile, May 29, 2003
- Invited Speaker – “Surgery Approaches to Lumbar and Thoracic Surgery.” Society of Neurological Surgeons of Chile, Vina del Mar, Chile, May 29, 2003
- Invited Speaker – “Advances in Spinal Surgery.” Clinica Alemana, Santiago, Chile, June 1, 2003
- Faculty – “Lumbar Degenerative.” 10th IMAST Meeting, Rome, Italy, July 11, 2003
- Moderator – “Aging Spine.” 10th IMAST Meeting, Rome, Italy, July 11, 2003
- Moderator – “Occipitoatlantal Dislocation.” Spine Across the Sea, Maui, Hawaii, July 30, 2003
- Course Director – “Introduction to Problem Based Decision Making.” Spine Review Hands-On 2003, Wyndham Hotel, Cleveland, Ohio, August 14, 2003
- Course Director – “Orthoses.” Spine Review Hands-On 2003, Wyndham Hotel, Cleveland, Ohio, August 15, 2003
- Course Director – “Spine Biomechanics III (Biomechanics of Spinal Column Failure – the subaxial Spine).” Spine Review Hands-On 2003, Wyndham Hotel, Cleveland, Ohio, August 16, 2003
- Speaker – “Lumbar Spinal Fusion – Selection of Patients and Techniques.” 12th European Congress of Neurosurgery, Lisboa, Portugal, September 9, 2003
- Speaker – “Spinal Cord Injury: Pharmacology and Structural Management.” 12th European Congress of Neurosurgery, Lisboa, Portugal, September 10, 2003
- Speaker – “Surgical Approaches: A Critical View.” 12th European Congress of Neurosurgery, Lisboa, Portugal, September 12, 2003
- Co-Director – “Biomechanics of Spinal Column Failure.” Aegean Spine Review, Izmir, Turkey, November 16, 2003
- Co-Director – “Biomechanics of Implant Failure.” Aegean Spine Review, Izmir, Turkey, November 16, 2003
- Co-Director – “Ventral Cervical Fixation Techniques – Successes and Failures.” Aegean Spine Review, Izmir, Turkey, November 17, 2003
- Co-Director – “Nonoperative Management.” Aegean Spine Review, Izmir, Turkey, November 17, 2003
- Co-Director – “Fundamentals and Screw Mechanics.” Aegean Spine Review, Izmir, Turkey, November 18, 2003
- Co-Director – “Metallurgy Bone and New Technologies.” Aegean Spine Review, Izmir, Turkey, November 18, 2003
- Co-Director – “Ventral and Dorsal Lumbar Fixation Techniques.” Aegean Spine Review, Izmir, Turkey, November 19, 2003
- Co-Director – “Cervical Cases.” Aegean Spine Review, Izmir, Turkey, November 19, 2003
- Co-Director – “AL1F, PL1F, TL1F.” Aegean Spine Review, Izmir, Turkey, November 19, 2003
- Co-Director – “Course Synopsis and Discussion – Orthotics.” Izmir, Turkey, November 20, 2003
- Speaker – “Biomechanics Based Approaches to the Degenerative Spine.” Dutch Spine Society, Nijmegen, Netherlands, November 21, 2003

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Visiting Professor – “Neurosurgery Education.” Louisiana State University. New Orleans, Louisiana, Sometime in 2003-4
- Moderator – Mini Symposium: “The New Order: A Curse or a Blessing?” 16th Annual Contemporary Update on Disorders of the Spine, Whistler, British Columbia, Canada, January 18, 2004
- Case Presentation – Mini-Symposium “Cervical Degenerative Disease – Rational for Non-Rigid Anterior Plating.” 16th Annual Contemporary Update on Disorders of the Spine, Whistler, British Columbia, Canada January 19, 2004
- Guest Speaker – “Biomechanics” and “Chiari Malformations.” Louisiana Neurosurgical Society, Lake Charles, Louisiana, January 24, 2004
- Moderator – “Spine Surgery Education: Its Evolution & Future.” The Winter Clinics for Cranial & Spinal Surgery, Snowmass, Colorado, February 25, 2004
- Moderator – “Cervical Spine Pathology: From Ordinary to the Extraordinary.” The Winter Clinics for Cranial & Spinal Surgery, Snowmass, Colorado, February 25, 2004
- Faculty – “Advanced Biomechanics for Spine Surgeons.” The Winter Clinics for Cranial & Spinal Surgery, Snowmass, Colorado, February 26, 2004
- Faculty – “Cervical Fixation: Dynamic vs. Fixed, Anterior vs. Posterior: How, When and Why?” 20th Annual Meeting of the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves, San Diego, CA, March 17, 2004
- Moderator – Scientific Session II – “Scoliosis Research Society (SRS) Style Thoracolumbar Deformity Session.” 20th Annual Meeting of the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves, San Diego, CA March 18, 2004
- Faculty – “Basic Spinal Biomechanics.” 20th Annual Meeting of the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves, San Diego, CA, March 20, 2004
- Guest Speaker – “Neurosurgery Education: At The Crossroads.” 5th John N. Meagher, MD Memorial Lectureship, Ohio State University, Columbus, Ohio, April 8, 2004
- Moderator – “Discussion: Spine Basic Science Research – the Ethics of Data Acquisition, Interpretation-and Reporting.” NASS Spring Break 2004 – Innovations in Spine Care, Boca Raton, FL April 23, 2004
- Speaker – Course #034 – “Basics of Spinal Stabilization, Fusion and Instrumentation” - Discussion “Spinal Biomechanics.” 2004 Annual Meeting, American Association of Neurological Surgeons, Orlando, Florida, May 2, 2004
- Speaker – “Innovations in spine Surgery: Perception vs. Reality.” 2004 Annual Meeting, American Association of Neurological Surgeons, Orlando, Florida, May 3, 2004
- Speaker – “Spinal Deformity: Overview and Basic Principles” – Special Symposium – “Cervico-Thoracic.” 2004 Annual Meeting, American Association of Neurological Surgeons, Orlando, Florida, May 3, 2004
- Panelist – “Cervico-Thoracic Spine Case Presentations.” 2004 Annual Meeting, American Association of Neurological Surgeons, Orlando, Florida, May 6, 2004
- Guest Speaker – “Neurosurgery Resident Competency Assessment.” Society of Neurological Surgeons Annual Meeting, New Orleans, Louisiana, May 2004
- Speaker – “Biomechanical Considerations in Nucleus Replacement.” NASS Symposium at SAS Meeting, Hofburg Centre, Vienna, Austria, May 8, 2004
- Course Director – “Introduction to Problem Based Decision Making.” Spine Review Hands-On 2004, InterContinental Hotel, Cleveland, Ohio, May 19, 2004
- Course Director – “Orthoses.” Spine Review Hands-On 2004, InterContinental Hotel, Cleveland, Ohio, May 20, 2004
- Course Director – “Biomechanics of Spinal Column Failure – the Subaxial Spine.” Spine Review Hands-On 2004, InterContinental Hotel, Cleveland, Ohio, May 21, 2004
- Course Director – “Biomechanics of Spinal Degeneration and Implant Failure.” Spine Review Hands-On 2004, InterContinental Hotel, Cleveland, Ohio, May 21, 2004
- Course Director – “Nonoperative Management.” Spine Review Hands-On 2004, InterContinental Hotel, Cleveland, Ohio, May 21, 2004

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Keynote Speaker – “Optimizing Neurological Recovery After SCI: A Neurosurgeon’s Persepective.” Spinal Cord Conference 2004, Long Beach, California June 3, 2004
- Speaker – “Chiari Malformation and Syringomyelia: An Algorithm for Care.” American Syringomyelia Alliance Project (ASAP) 2004 Conference, Sonesta Beach Resort, Key Biscayne, Florida. July 22, 2004
- Moderator – “Physicians/Health Care Professionals Series.” American Syringomyelia Alliance Project (ASAP) 2004 Conference, Sonesta Beach Resort, Key Biscayne, Florida July 24, 2004
- Invited Speaker – “Lumbar Fusion: To Instrument or Not To Instrument.” Third Annual ARGOS-North America Meeting, Nemaocolin Woodlands Resort, Farmington, Pennsylvania, August 7, 2004
- Invited Speaker – “Difficult Cases.” Argentine Congress of Neurosurgery, Abasto Plaza Hotel, Buenos Aires, Argentina, August 13, 2004
- Invited Speaker – “Surgical Approaches: A Critical View.” Argentine Congress of Neurosurgery, Abasto Plaza Hotel, Buenos Aires, Argentina, August 13, 2004
- Invited Speaker – “Lumbar Spine Fusion: Selection of Patients and Techniques.” Argentine Congress of Neurosurgery, Abasto Plaza Hotel, Buenos Aires, Argentina, August 14, 2004
- Invited Speaker – “Exposure of the Thoracic and Lumbar Spine.” Argentine Congress of Neurosurgery, Abasto Plaza Hotel, Buenos Aires, Argentina, August 14, 2004
- Invited Speaker – “On Becoming An Academic Neurosurgeon.” Grand Rounds, Yale University, New Haven, Connecticut, September 22, 2004
- Invited Speaker – “New and Emerging Technologies: A Heightened Risk of Litiigation Exposure.” 5th Annual Conference on Medical Negligence and Risk Management in Medicine, Surgery, Emergency Medicine, Neurosurgery, and Radiology, Los Cabos, Mexico, January 5-8, 2005
- Invited Speaker – “Spine Surgery: High-Risk Complications with Litigation Exposure.” 5th Annual Conference on Medical Negligence and Risk Management in Medicine, Surgery, Emergency Medicine, Neurosurgery, and Radiology, Los Cabos, Mexico, January 5-8, 2005
- Invited Speaker – “The Assessment of Competency in Neurosurgery: Expectations in Training and Practice.” 5th Annual Conference on Medical Negligence and Risk Management in Medicine, Surgery, Emergency Medicine, Neurosurgery, and Radiology, Los Cabos, Mexico, January 5-8, 2005
- Invited Speaker – “Indications for Fusion and Instrumentation Without Undue Economic Influences.” 17th Annual Contemporary Update on Disorders of the Spine, Whistler, British Columbia, Canada, January 18, 2005
- Moderator – “Plasma Ablation of Vertebral Body Tumors with Cavity Spine Wand (hands-on lab). 17th Annual Contemporary Update on Disorders of the Spine, Whistler, British Columbia, Canada, January 17-21, 2005
- Key Note Speaker – “Biomaterials and Micromachines.” 4th Annual Symposium on Current Concepts in Spinal Disorders 2005. Henderson, Nevada, February 12, 2005
- Faculty – 7th Annual Pain Management Symposium. Cleveland Clinic Foundation. Orlando, Florida, February 12-16, 2005
- Speaker – “Failed Back Surgery Syndrome.” 7th Annual Pain Management Symposium. Cleveland Clinic Foundation. Orlando, Florida, February 14, 2005
- Speaker – “Spinal Canal Stenosis – Surgical Options.” 7th Annual Pain Management Symposium. Cleveland Clinic Foundation. Orlando, Florida, February 14, 2005
- Visiting Professor – “Spine Biomechanics.” Department of Neurosurgery, University of Illinois at Chicago, Chicago, Illinois, February 26, 2005
- Faculty – The Winter Clinics for Cranial and Spinal Surgery, Snowmass, Colorado, February 27-March 4, 2005
- Speaker – “Biomechanics: Motion Segment Preservation.” The Winter Clinics for Cranial and Spinal Surgery, Snowmass, Colorado, March 3, 2005
- Speaker – “Correction of Cervical Deformity.” The Winter Clinics for Cranial and Spinal Surgery, Snowmass, Colorado, March 4, 2005

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Faculty – Scientific Session III – “Deformity.” 21st Annual Meeting of the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves, Phoenix, Arizona, March 11, 2005
- Speaker – “When Can Decompression Alone or Limited Fusion be Performed for Adult Scoliosis?” 21st Annual Meeting of the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves, Phoenix, Arizona, March 11, 2005
- Guest Speaker – “Spine Biomechanics.” 30th Annual Conference of the Egyptian Society of Neurological Surgeons (ESNS). Cairo, Egypt, March 23, 2005
- Guest Speaker – “Management of Complex Cervical and Lumbar Spondylosis.” 30th Annual Conference of the Egyptian Society of Neurological Surgeons (ESNS). Cairo, Egypt, March 24, 2005
- Honored Guest – “Cervical Spine: Applied Biomechanics.” Texas Association of Neurological Surgeons, 2005 Annual Meeting. Grapevine, Texas, May 13, 2005
- Honored Guest – “Spine Surgery: Is the Technology Affordable?” .” Texas Association of Neurological Surgeons, 2005 Annual Meeting. Grapevine, Texas, May 14, 2005
- Invited Speaker – “Outcomes Assessment and Resident Education: Case Study.” Society of Neurological Surgeons Annual Meeting, Stanford, California, May 24, 2005
- Host – “An Experimental Surgical Procedure for Spinal Cord Injury.” World Federation of Neurosurgical Societies, 13th World Congress of Neurological Surgery, Marrakesh, Morocco, June 21, 2005
- Session Chairman – “Cervical Laminectomy: Biomechanical Alterations.” World Federation of Neurosurgical Societies, 13th World Congress of Neurological Surgery, Marrakesh, Morocco, June 22, 2005
- Course Director – “Introduction to Problem Based Decision Making.” Spine Review Hands-On 2005, InterContinental Hotel, Cleveland, Ohio, July 13-19, 2005
- Course Director – “Orthoses.” Spine Review Hands-On 2005, InterContinental Hotel, Cleveland, Ohio, July 13-19, 2005
- Course Director – “Biomechanics of Spinal Column Failure – the Subaxial Spine.” Spine Review Hands-On 2005, InterContinental Hotel, Cleveland, Ohio, July 13-19, 2005
- Course Director – “Biomechanics of Spinal Degeneration and Implant Failure.” Spine Review Hands-On 2005, InterContinental Hotel, Cleveland, Ohio, July 13-19, 2005
- Course Director – “Nonoperative Management.” Spine Review Hands-On 2005, InterContinental Hotel, Cleveland, Ohio, July 13-19, 2005
- Speaker – “Frequently Asked Questions from Desperate Folks.” American Syringomyelia Alliance Project (ASAP) 2005 Conference, Cedar Rapids, Iowa. July 21, 2005
- Invited Speaker – “World Spine Society Overview.” World Spine III, Rio de Janeiro, Brazil, August 1, 2005
- Invited Speaker – “Rebuttal” for Debate on The Role of Total Disc Arthroplasty. World Spine III, Rio de Janeiro, Brazil, August 3, 2005
- Faculty – Advances in Brain and Spine Surgery: Technology and Care. Saint Petersburg, Russia, August 15-17, 2005
- Invited Speaker – “Biomechanics of the Subaxial Spine.” Advances in Brain and Spine Surgery: Technology and Care. Saint Petersburg, Russia, August 15, 2005
- Invited Speaker – “Biomechanical Considerations of the Craniovertebral Junction.” Advances in Brain and Spine Surgery: Technology and Care. Saint Petersburg, Russia, August 17, 2005
- Moderator – “Common Discussion on the Symposium Topics.” Advances in Brain and Spine Surgery: Technology and Care. Saint Petersburg, Russia, August 17, 2005
- Visiting Professor – “Applied Biomechanics.” University of Rochester, Rochester, New York, September 9, 2005
- Moderator – “Motion Preservation.” North American Spine Society 20th Annual Meeting. Philadelphia, Pennsylvania, September 30, 2006
- Panelist – “Symposium: Medication Safety.” North American Spine Society 20th Annual Meeting. Philadelphia, Pennsylvania, October 1, 2006

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Faculty – “Spinal Motion Preservation Technology.” Congress of Neurological Surgeons 55th Annual Meeting. Boston, Massachusetts, October 11, 2005
- Faculty – “Tumors of the Spinal Canal.” Digital Masters Video Symposium. Congress of Neurological Surgeons 55th Annual Meeting. Boston, Massachusetts, October 11, 2005
- Faculty – “Spinal Fusion: Biochemical and Biomechanical Approaches.” Congress of Neurological Surgeons 55th Annual Meeting. Boston, Massachusetts, October 12, 2005
- Moderator – “Live Spine Surgeries – Innovation in Practice: New Minimally Invasive Spine Surgeries.” Cleveland Clinic Foundation, 2005 Medical Innovation Summit. October 25, 2005
- Faculty – “New Spine Technologies.” Cleveland Clinic Foundation, 2005 Medical Innovation Summit. October 25, 2005
- Faculty – “Biomechanics of Spinal Column Failure of the Subaxial Spine.” Aegean Spine Review 2005. Izmir, Turkey, November 7, 2005
- Faculty – “Biomechanics of Spinal Implant Failure.” Aegean Spine Review 2005. Izmir, Turkey, November 7, 2005
- Faculty – “Orthoses.” “Aegean Spine Review 2005.” Aegean Spine Review 2005. Izmir, Turkey, November 7, 2005
- Faculty – “Problem-Based Decision-Making.” Aegean Spine Review 2005. Izmir, Turkey, November 8, 2005
- Faculty – “Nonoperative Management.” Aegean Spine Review 2005. Izmir, Turkey, November 9, 2005
- Invited Speaker – “Odontoid screw.” Spine Surgery: International Meeting 2005. Bangkok, Thailand, November 30, 2005
- Invited Speaker – “Lateral mass screw fixation and occipitocervical fusion.” Spine Surgery: International Meeting 2005. Bangkok, Thailand, November 30, 2005
- Invited Speaker – “Transarticular screw fixation.” Spine Surgery: International Meeting 2005. Bangkok, Thailand, November 30, 2005
- Invited Speaker – “Neurosurgery resident education.” Spine Surgery: International Meeting 2005. Bangkok, Thailand, November 30, 2005
- Invited Speaker – “Biomechanics: The fundamentals.” Spine Surgery: International Meeting 2005. Bangkok, Thailand, November 30, 2005
- Invited Speaker – “Spinal orthosis.” Spine Surgery: International Meeting 2005. Bangkok, Thailand, November 30, 2005
- Invited Speaker – “Correction of cervical spine deformities.” Spine Surgery: International Meeting 2005. Bangkok, Thailand, November 30, 2005
- Invited Speaker – “Failed back surgery and spinal stenosis.” Spine Surgery: International Meeting 2005. Bangkok, Thailand, November 30, 2005
- Invited Speaker – “Biomechanics and economic of motion preservation.” Spine Surgery: International Meeting 2005. Bangkok, Thailand, November 30, 2005
- Invited Speaker – “Posterolateral approach to the thoracic spine.” Spine Surgery: International Meeting 2005. Bangkok, Thailand, December 1, 2005
- Moderator – “Biomechanics.” 2005 Cervical Spine Research Society Annual Meeting. San Diego, California, December 1, 2005
- Invited Speaker – “The challenge of neurosurgery in developing countries: technology, quality, cost, responsibility.” Asociacion Colombiana de Neurocirugia. Cartagena, Columbia, December 4, 2005
- Invited Speaker – “Biomechanics of spinal column failure and reconstruction: the anatomic and biomechanical basis of spinal instability.” Asociacion Colombiana de Neurocirugia. Cartagena, Columbia, December 4, 2005
- Invited Speaker – “Surgery for cervical spondylosis: from stenosis to instability.” Asociacion Colombiana de Neurocirugia. Cartagena, Columbia, December 4, 2005

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Invited Speaker – “Surgery for lumbar spondylosis: and its contrast with cervical pathology.” Asociacion Colombiana de Neurocirugia. Cartagena, Columbia, December 4, 2005
- Visiting Professor – “Back pain: comprehensive approach.” National Institute of Health & George Washington University, Bethesda, Maryland, January 31, 2006
- Visiting Professor – “Biomechanics: the basics and the complex.” National Institute of Health & George Washington University, Bethesda, Maryland, January 31, 2006
- Invited Speaker – “Biomechanics of the spine.” Chicago Review Course in Neurological Surgery, Chicago, Illinois, February 2, 2006
- Visiting Professor – “Clinical implications of spine biomechanics.” Allegheny General Hospital, Neurosurgery Grand Rounds, Pittsburgh, Pennsylvania, February 8, 2006
- Visiting Professor – “Becoming an academic neurosurgeon.” Allegheny General Hospital, Neurosurgery Grand Rounds, Pittsburgh, Pennsylvania, February 8, 2006
- Visiting Professor – “Clinical implications of spinal biomechanics.” Stanford University, Neuroscience/Neurosurgery Grand Rounds. Stanford, California, February 17, 2006
- Visiting Professor – “Management of degenerative spine disorders.” Indian Spine Imaging Center. New Delhi, India, March 3, 2006
- Invited Speaker – “Controversies in management of odontoid fractures.” 2006 International Spine and Spinal Injuries Conference (ISSICON), New Delhi, India, March 3, 2006
- Invited Speaker – “Presentation in favour of surgical management.” 2006 International Spine and Spinal Injuries Conference (ISSICON), New Delhi, India, March 3, 2006
- Moderator – “Conservative versus surgical management of spinal cord injuries.” 2006 International Spine and Spinal Injuries Conference (ISSICON), New Delhi, India, March 3, 2006
- Chairperson – “Spine Trauma.” 2006 International Spine and Spinal Injuries Conference (ISSICON), New Delhi, India, March 4, 2006
- Invited Speaker – “World Spine Society.” 2006 International Spine and Spinal Injuries Conference (ISSICON), New Delhi, India, March 4, 2006
- Visiting Professor – “Becoming an academic surgeon.” All Indian Institute of Medical Sciences, New Delhi, India, March 5, 2006
- Faculty – “When Enough is Enough.” A Special Symposium for Nurses, Nurse Practitioners, and Physician Assistants – Meeting the Challenges of Caring of the Patient with a Spinal Tumor. 21st Annual Meeting of the American Association of Neurological Surgeons and Congress of Neurological Surgeons on Disorders of the Spine and Peripheral Nerves, Lake Buena Vista, Florida, March 17, 2006
- Faculty – “Arthroplasty Will Not Decrease Adjacent Level Disease.” David Cahill Memorial Controversies Session. 21st Annual Meeting of the American Association of Neurological Surgeons and Congress of Neurological Surgeons on Disorders of the Spine and Peripheral Nerves, Lake Buena Vista, Florida, March 18, 2006
- Visiting Professor – “Becoming an Academic Neurosurgeon.” University of Southern California, Department of Neurological Surgery, April 14, 2006
- Faculty – “Basics of Spinal Stabilization, Fusion, and Instrumentation.” 74th Annual Meeting of the American Association of Neurological Surgeons, San Francisco, California, April 23, 2006
- Moderator – “Masters of Spinal Surgery: My Most Challenging Cases.” 74th Annual Meeting of the American Association of Neurological Surgeons, San Francisco, California, April 24, 2006
- Discussant – “Scientific Session II – Spine and Peripheral Nerves.” 74th Annual Meeting of the American Association of Neurological Surgeons, San Francisco, California, April 24, 2006
- Panelist – “Transfacet Technology: An Alternative to Pedicle Screw Fixation with Interbody Techniques.” 74th Annual Meeting of the American Association of Neurological Surgeons, San Francisco, California, April 25, 2006
- Panelist – “Current Treatments for Lumbar Stenosis.” 74th Annual Meeting of the American Association of Neurological Surgeons, San Francisco, California, April 26, 2006

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Panelist – “Cervico-Thoracic Spine Neurosurgery: Meet the Experts.” 74th Annual Meeting of the American Association of Neurological Surgeons, San Francisco, California, April 27, 2006
- Invited Speaker – “Spine Frontiers: Microtechnologies and Biomaterials.” XXXI Jornada Científica, Co-sponsored by the Centro Medico Paitilla and Cleveland Clinic, Panama City, Panama, July 14, 2006
- Invited Speaker – “Dementia, Spine Pain, and Parkinson’s Disease.” XXXI Jornada Científica, Co-sponsored by the Centro Medico Paitilla and Cleveland Clinic, Panama City, Panama, July 14, 2006
- Invited Speaker – “Indications and Contraindications for Instrumentation in the Spine.” XXXI Jornada Científica, Co-sponsored by the Centro Medico Paitilla and Cleveland Clinic, Panama City, Panama, July 14, 2006
- Invited Speaker – “Cervical Spine Problems.” XXXI Jornada Científica, Co-sponsored by the Centro Medico Paitilla and Cleveland Clinic, Panama City, Panama, July 14, 2006
- Course Director – “Introduction to Problem Based Decision Making.” Spine Review Hands-On 2006, InterContinental Hotel, Cleveland, Ohio, July 19, 2006
- Course Director – “Orthoses.” Spine Review Hands-On 2006, InterContinental Hotel, Cleveland, Ohio, July 20, 2006
- Course Director – “Biomechanics of Spinal Degeneration and Implant Failure.” Spine Review Hands-On 2006, InterContinental Hotel, Cleveland, Ohio, July 21, 2006
- Course Director – “Biomechanics of Spinal Column Failure – the Subaxial Spine.” Spine Review Hands-On 2006, InterContinental Hotel, Cleveland, Ohio, July 21, 2006
- Course Director – “Nonoperative Management.” Spine Review Hands-On 2006, InterContinental Hotel, Cleveland, Ohio, July 21, 2006
- Faculty – “Surgical Treatment – The Principles of Cervical Fusion.” Innovative Spine Care: Essential Skills for the Nursing Team, InterContinental Hotel, Cleveland, Ohio, September 9, 2006
- Panelist – “Panel of Experts Discuss Research Being Done on Nanotechnology at Cleveland Clinic.” National Public Radio (NPR) - FM 90.3, October 2, 2006
- Faculty – “Plenary Session I – Orthopedics.” Materials, Medicine, and Nanotechnology Summit, InterContinental Hotel, Cleveland, Ohio, October 3, 2006
- Panelist – “Commercialization.” Materials, Medicine, and Nanotechnology Summit, InterContinental Hotel, Cleveland, Ohio, October 5, 2006
- Faculty – “Motion-Preserving Spinal Surgery: Indications and Outcomes.” Congress of Neurological Surgeons Annual Meeting, Chicago, Illinois, October 10, 2006
- Panelist – “Biosensors in Surgery.” Clinical Congress Annual Meeting – American College of Surgeons, Chicago, Illinois, October 10, 2006
- Faculty – “Posterior Approaches to Motion Preservation: When Is Rigid Fixation not Desirable?” Congress of Neurological Surgeons Annual Meeting, Chicago, Illinois, October 11, 2006
- Faculty – “On Becoming an Academic Surgeon: From the Clinic to the Lab & to the Podium.” Research Update on Neuroscience for Neurosurgeons (RUNN) Course, Marine Biological Laboratory, Woods Hole, Massachusetts, October 27, 2006
- Faculty – “Cervical Fixation.” XXXII Congreso Latinoamericano de Neurocirugía. Buenos Aires, Argentina, October 22, 2006
- Faculty – “Occipito Cervical Fusion.” XXXII Congreso Latinoamericano de Neurocirugía. Buenos Aires, Argentina, October 23, 2006
- Faculty – “Spinal Fusion: Biomechanics.” XXXII Congreso Latinoamericano de Neurocirugía. Buenos Aires, Argentina, October 25, 2006
- Speaker – “Neurosurgery Education at the Crossroads.” 3rd International Symposium on Microneurosurgical Anatomy. Turkey, November 5, 2006
- Speaker – “Neurosurgery Resident Competency Assessment and Modification.” 3rd International Symposium on Microneurosurgical Anatomy. Turkey, November 5, 2006

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Speaker – “Micromachines and Telemetric Monitoring of Intradiscal and Intraosseous Pressure.” 3rd International Symposium on Microneurosurgical Anatomy. Turkey, November 7, 2006
- Speaker – “Spine Biomechanics.” 3rd International Symposium on Microneurosurgical Anatomy. Turkey, November 7, 2006
- Speaker – “Indications for Spine Fusion and Motion Segment Preservation.” 3rd International Symposium on Microneurosurgical Anatomy. Turkey, November 7, 2006
- Speaker – “Spine Surgery: Quality, Cost and Responsibility.” 3rd International Symposium on Microneurosurgical Anatomy. Turkey, November 7, 2006
- Speaker – “Controversies in Surgical Management Debates – Embolize?” Cervical Spine Research Society 11th Annual Instructional Course. Palm Beach, FL, November 29, 2006
- Speaker – “Spine Biomechanics.” Chicago Review Course in Neurological Surgery. February 2, 2007
- Faculty – “Spine Biomechanics: Fundamentals and Future.” 15th Annual Meeting of the Rachidian Society. Kona, HI, February 5, 2007
- Faculty – “Cervical Spine Deformity: The Fundamentals.” 15th Annual Meeting of the Rachidian Society. Kona, HI, February 5, 2007
- Speaker – “Surgery for Lumbar Spondylosis: Who, What, When, and How.” American Academy of Pain Medicine. New Orleans, LA, February 8, 2007
- Moderator – “Spine and Peripheral nerve SRS Session.” First International Symposium on Stereotactic Body Radiation Therapy and Stereotactic Radiosurgery. Cleveland Clinic Center for Continuing Education, Orlando, FL, February 25, 2007
- Expert Panel – “Lumbar TDR Clinical Data.” Cedars Sinai Medical Center – Sixth Annual Symposium on Current Concepts in Spinal Disorders 2007. Las Vegas, NV, March 2, 2007
- Expert Panel – “Controversies in Motion Preservation.” Cedars Sinai Medical Center – Sixth Annual Symposium on Current Concepts in Spinal Disorders 2007. Las Vegas, NV, March 2, 2007
- Expert Panel – “Deformity.” Cedars Sinai Medical Center – Sixth Annual Symposium on Current Concepts in Spinal Disorders 2007. Las Vegas, NV, March 2, 2007
- Expert Panel – “Cervical TDR Clinical Data.” Cedars Sinai Medical Center – Sixth Annual Symposium on Current Concepts in Spinal Disorders 2007. Las Vegas, NV, March 3, 2007
- Expert Panel – “Posterior NonFusion Technologies.” Cedars Sinai Medical Center – Sixth Annual Symposium on Current Concepts in Spinal Disorders 2007. Las Vegas, NV, March 3, 2007
- Expert Panel – “Innovative Technologies.” Cedars Sinai Medical Center – Sixth Annual Symposium on Current Concepts in Spinal Disorders 2007. Las Vegas, NV, March 3, 2007
- Guest Lecturer – “Postgraduate Education in Neurosurgery. Spine Care Perspective: Present and Future. Annual Meeting of the Turkish Neurological Society. Turkey, April 21, 2007
- Faculty – “Resident Portfolios and Competency Tracking.” Society of Neurological Surgeons 98th Annual Meeting. San Francisco, CA, May 8, 2007
- Honorary Lecturer – “Beks Lecture – Cervical Spondylosis: Biomechanics and Clinical Nuances.” Dutch Neurosurgical Society. The Netherlands, May 11, 2007
- Course Director – “Introduction to Problem Based Decision Making.” Spine Review Hands-On 2007, InterContinental Hotel, Cleveland, Ohio, July 18, 2007
- Course Director – “Orthoses.” Spine Review Hands-On 2007, InterContinental Hotel, Cleveland, Ohio, July 19, 2007
- Course Director – “Biomechanics of Spinal Degeneration and Implant Failure.” Spine Review Hands-On 2007, InterContinental Hotel, Cleveland, Ohio, July 20, 2007
- Course Director – “Biomechanics of Spinal Column Failure – the Subaxial Spine.” Spine Review Hands-On 2007, InterContinental Hotel, Cleveland, Ohio, July 20, 2007
- Course Director – “Nonoperative Management.” Spine Review Hands-On 2007, InterContinental Hotel, Cleveland, Ohio, July 20, 2007

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Presidential Address - World Spine IV Congress: The Fourth Interdisciplinary Congress on Spine Care, Istanbul, Turkey, July 30, 2007
- Moderator – “Spine Biomechanics 101: What all Spine Care Providers Should Know.” World Spine IV Congress: The Fourth Interdisciplinary Congress on Spine Care, Istanbul, Turkey, July 30, 2007
- Faculty – “Symposium: Degenerative Disc Disease.” World Spine IV Congress: The Fourth Interdisciplinary Congress on Spine Care, Istanbul, Turkey, July 31, 2007
- Faculty – “Preliminary Study of Strain Changes at the Pedicle Cortex during and after Screw Insertion.” World Spine IV Congress: The Fourth Interdisciplinary Congress on Spine Care, Istanbul, Turkey, August 1, 2007
- Faculty – “Non-Operative Treatment Overview.” Egyptian Spine Review Hands-On 2007, Ain Shams University, Cairo, Egypt, August 3, 2007
- Faculty – “Biomechanics of Spinal Column Failure and Disc Degeneration.” Egyptian Spine Review Hands-On 2007, Ain Shams University, Cairo, Egypt, August 4, 2007
- Faculty – “Orthoses.” Egyptian Spine Review Hands-On 2007, Ain Shams University, Cairo, Egypt, August 4, 2007
- Faculty – “Clinical Strategies and Cases.” Egyptian Spine Review Hands-On 2007, Ain Shams University, Cairo, Egypt, August 7, 2007
- Faculty – “Surgical Treatment – The Principles of Cervical Fusion.” Innovative Spine Care: Essential Skills for the Nursing Team, InterContinental Hotel, Cleveland, Ohio, August 25, 2007
- Speaker – “Current Bracing Techniques Following Spine Injury.” Annual Conference of the American Paraplegia Society 2007. Orlando, FL, August 27, 2007
- Neurosurgery Grand Rounds – “Cervical Spine Deformity.” Department of Neurosurgery, Seoul National University College of Medicine. Seoul, Korea, August 30, 2007
- Special Lecture – “Spine Biomechanics: Fundamentals and Future.” The 50th Anniversary Celebration Symposium. Department of Neurosurgery, Seoul National University College of Medicine. Seoul, Korea, September 1, 2007
- Course Director – “Applied Spinal Biomechanics.” Congress of Neurological Surgeons Annual Meeting. San Diego, California, September 15, 2007
- Faculty – “Neurosurgical Practice Development, Negotiation, and Liability.” Congress of Neurological Surgeons Annual Meeting. San Diego, California, September 16, 2007
- Faculty – “Pain of Spinal Origin: A Comprehensive Approach.” Congress of Neurological Surgeons Annual Meeting. San Diego, California, September 16, 2007
- Faculty – “Dynamic Stabilization: Fad or Future?” Congress of Neurological Surgeons Annual Meeting. San Diego, California, September 16, 2007
- General Scientific Session II – “The Spine Toolbox – Enhancing Spins Fusion.” Congress of Neurological Surgeons Annual Meeting. San Diego, California, September 18, 2007
- Course Director, Special Course VI – “The Process of Innovation: From Ideas to Product Development and Commercialization.” Congress of Neurological Surgeons Annual Meeting. San Diego, California, September 19, 2007
- Faculty, Special Course VI – “Conflicts of Interest and Conflict Management.” Congress of Neurological Surgeons Annual Meeting. San Diego, California, September 19, 2007
- Faculty – “Graduate Education in Spinal Surgery: Ripples in a Pond.” DePuy Spine, Inc. Hilton Austin Convention Center, Austin, Texas. October 24, 2007
- Speaker – “Science, Clinical Practice, and the Quest of Academic Excellence.” Research Update in Neuroscience for Neurosurgeons (RUNN). Boston, Massachusetts, October 26, 2007
- Course Instructor – “Bridging the Gap in Spine Care.” Management of Spine Disorders 2007, The Bertram Inn Conference Center, Aurora, Ohio, November 3, 2007
- Faculty – “Complex Spine Care.” XII Congress of the Brazilian Academy of Neurosurgery, Sao Paulo Guarulhos, Brazil, November 15, 2007

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Faculty – “Assessment of Results by the Profession or by Politicians?” XII Congress of the Brazilian Academy of Neurosurgery, Sao Paulo Guarulhos, Brazil, November 15, 2007
- Faculty – “Spine Surgery: Quality, Cost, Responsibility.” XII Congress of the Brazilian Academy of Neurosurgery, Sao Paulo Guarulhos, Brazil, November 15, 2007
- Faculty – “Spine Care Center. How Does it Work?” XII Congress of the Brazilian Academy of Neurosurgery, Sao Paulo Guarulhos, Brazil, November 15, 2007
- Faculty – “Biomechanics: Past and Present.” XII Congress of the Brazilian Academy of Neurosurgery, Sao Paulo Guarulhos, Brazil, November 16, 2007
- Faculty – “Biomechanics: Future.” XII Congress of the Brazilian Academy of Neurosurgery, Sao Paulo Guarulhos, Brazil, November 16, 2007
- Faculty – “Cervical Spine Deformity and Deformity Correction Principles.” XII Congress of the Brazilian Academy of Neurosurgery, Sao Paulo Guarulhos, Brazil, November 16, 2007
- Faculty – “Equipoise, Clinical Trials, and Spinal Stenosis.” XII Congress of the Brazilian Academy of Neurosurgery, Sao Paulo Guarulhos, Brazil, November 16, 2007
- Faculty – “A Critical Look at Total Disc Replacement.” XII Congress of the Brazilian Academy of Neurosurgery, Sao Paulo Guarulhos, Brazil, November 16, 2007
- Faculty – “What’s New in Neurosurgery Education?” XII Congress of the Brazilian Academy of Neurosurgery, Sao Paulo Guarulhos, Brazil, November 16, 2007
- Faculty – “Where Do Non-Fusion Technologies Stand? Fad or Future?” XII Congress of the Brazilian Academy of Neurosurgery, Sao Paulo Guarulhos, Brazil, November 16, 2007
- Faculty – “Swedish Spine Study: Fusion for IBP.” XII Congress of the Brazilian Academy of Neurosurgery, Sao Paulo Guarulhos, Brazil, November 16, 2007
- Faculty - Cervical Spine Research Society 2007 Instruction Course: Controversies, Complicated Cases and Complications. San Francisco, California, November 28, 2007
- Visiting Professor – Spine Surgery: Clinical Practice, Research, Education, and Economics. 37th Annual Edgar A. Kahn Lectureship in Neurosurgery, University of Michigan, Ann Arbor, Michigan, January 10, 2008
- Moderator – The Spectrum of Conflicts of Interest 2008. 20th Annual Disorders of the Spine, The Westin Resort and Spa, Whistler, Canada, January 21, 2008
- Faculty – “Managing Conflict.” The Spectrum of Conflicts of Interest 2008. 20th Annual Disorders of the Spine, The Westin Resort and Spa, Whistler, Canada, January 21, 2008
- Faculty – “Ethics, Malpractice (pay for performance, etc). 20th Annual Disorders of the Spine, The Westin Resort and Spa, Whistler, Canada, January 21, 2008
- Speaker – “Spine Biomechanics.” Chicago Review Course in Neurological Surgery. February 1, 2008
- Faculty – “Cervical Deformity: Management and Biomechanics.” First Annual Dubai U.S. Spine Masters Course, Jumeirah Emirates Towers, Dubai, United Arab Emirates, February 19, 2008
- Faculty – “Cervical Spine Biomechanics and Clinical Applications.” First Annual Dubai U.S. Spine Masters Course, Jumeirah Emirates Towers, Dubai, United Arab Emirates, February 19, 2008
- Faculty – “Complex Thoracic and Lumbar Bioemchanics and Emerging Technologies and Considerations.” First Annual Dubai U.S. Spine Masters Course, Jumeirah Emirates Towers, Dubai, United Arab Emirates, February 20, 2008
- Co-Director – Second Annual International Symposium on Stereotactic Body Radiation Therapy and Stereotactic Radiosurgery, Disney’s Grand Floridian Resort & Spa, February 22-24, 2008
- Co-Director – “Spine Tumor Care in the 21st Century: A Programatic Approach.” Second Annual International Symposium on Stereotactic Body Radiation Therapy and Stereotactic Radiosurgery, Disney’s Grand Floridian Resort & Spa, February 22, 2008

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Moderator – “Neurosurgery & Spine, Back to the Future: Case Presentations.” 24th Annual Meeting of the American Association of Neurological Surgeons and Congress of Neurological Surgeons on Disorders of the Spine and Peripheral Nerves, Lake Buena Vista, Florida, February 28, 2008
- Faculty – “Spinal Cord Injury: Emergent or Urgent Surgery.” 24th Annual Meeting of the American Association of Neurological Surgeons and Congress of Neurological Surgeons on Disorders of the Spine and Peripheral Nerves, Lake Buena Vista, Florida, March 1, 2008
- Visiting Professor – “Biomechanics – Then, Now, & Beyond.” Neurosurgery Grand Rounds, Washington University, St. Louis, Missouri, March 14, 2008
- Guest Speaker – “Spine Biomechanics: Fundamentals and Future” AND “Principles of Deformity Correction.” VII Congress of Spine Surgery, Sao Paulo City, Brazil, April 4, 2008
- Guest Speaker – “Management of Lumbar Spondylosis: Decompression vs. Fusion vs. Total Disc Arthroplasty.” VII Congress of Spine Surgery, Sao Paulo City, Brazil, April 4, 2008
- Guest Speaker – “Management of Cervical Spondylosis: Ventral Approach, Dorsal Approach, Equipoise, Arthroplasty...” VII Congress of Spine Surgery, Sao Paulo City, Brazil, April 4, 2008
- Guest Speaker – “Problem-Based Decision Making: A Logical Strategy for the Present and for the Future.” VII Congress of Spine Surgery, Sao Paulo City, Brazil, April 5, 2008
- Guest Speaker – “The Management of Spine Trauma.” VII Congress of Spine Surgery, Sao Paulo City, Brazil, April 5, 2008
- Invited Speaker – “Management & Avoidance of Complications.” Northeast Ohio Neurosurgical Conference, MetroHealth Medical Center, Cleveland, Ohio, April 12, 2008
- Visiting Professor – “On Becoming an Academic Surgeon.” University of Pittsburgh School of Medicine, Department of Neurological Surgery, Pittsburgh, Pennsylvania, April 18, 2008
- Visiting Professor – “Spine Biomechanics: From the Basics to the Clinical Practice.” University of Pittsburgh School of Medicine, Department of Neurological Surgery, Pittsburgh, Pennsylvania, April 18, 2008
- Faculty – “Non-Instrumented facet fusion in degenerative spondylolisthesis: a radiographic analysis.” Lumbar Spine Research Society 1st Annual Meeting, Chicago, Illinois, April 25, 2008
- Faculty – “Basics of Spinal Stabilization, Fusion, and Instrumentation.” 76th Annual Meeting of the American Association of Neurological Surgeons (AANS), Chicago, Illinois, April 26, 2008
- Faculty – “Decision Making and the Spine Patient for Nurses, APRN’s, and PA’s.” 76th Annual Meeting of the American Association of Neurological Surgeons (AANS), Chicago, Illinois, April 27, 2008
- Faculty – “Transfacet Technology: An Alternative to Pedicle Screw Fixation with Interbody Techniques.” 76th Annual Meeting of the American Association of Neurological Surgeons (AANS), Chicago, Illinois, April 27, 2008
- Panelist – “Lumbar Stenosis.” 76th Annual Meeting of the American Association of Neurological Surgeons (AANS), Chicago, Illinois, April 29, 2008
- Moderator – “Spinal Surgical Challenges.” 76th Annual Meeting of the American Association of Neurological Surgeons (AANS), Chicago, Illinois, April 30, 2008
- Attendee – Society of Neurological Surgeons Annual Meeting, Madison, Wisconsin, May 18-20, 2008
- Guest Faculty – “Spine Biomechanics: Fundamentals and Future. Introduction to Problem Based Decision Making.” XIII Annual meeting of the National Spanish Congress of Neurological Surgeons, Valencia, Spain, May 28, 2008
- Guest Faculty – “Biomechanics of Spinal Column Failure and Spine Degeneration.” XIII Annual meeting of the National Spanish Congress of Neurological Surgeons, Valencia, Spain, May 28, 2008
- Guest Faculty – “Biomechanics of Spine Instrumentation.” XIII Annual meeting of the National Spanish Congress of Neurological Surgeons, Valencia, Spain, May 28, 2008
- Guest Faculty – “Cervical and Lumbar Spine Stabilization.” XIII Annual meeting of the National Spanish Congress of Neurological Surgeons, Valencia, Spain, May 28, 2008
- Guest Faculty – “Biomechanics of Spine Deformity and Correction: The Changing Role of Neurosurgeons.” XIII Annual meeting of the National Spanish Congress of Neurological Surgeons, Valencia, Spain, May 28, 2008

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Guest Faculty – “Motion Segment Preservation: The Fundamentals, The Data, and The Future.” XIII Annual meeting of the National Spanish Congress of Neurological Surgeons, Valencia, Spain, May 28, 2008
- Guest Faculty – Plenary Session – “Education in Neurosurgery.” XIII Annual meeting of the National Spanish Congress of Neurological Surgeons, Valencia, Spain, May 29, 2008
- Faculty – Key Note Conference – “Spine Tumor Care in the 21st Century.” Cleveland Clinic and Centro Medico Paitilla Scientific Meeting: Central Nervous System – Benign and Malignant Tumors – Multiiplinary Approach and Treatment Options. Panama City, Panama, July 11, 2008
- Faculty – “Current Surgical Management of Spine Metastases.” Cleveland Clinic and Centro Medico Paitilla Scientific Meeting: Central Nervous System – Benign and Malignant Tumors – Multiiplinary Approach and Treatment Options. Panama City, Panama, July 11, 2008
- Faculty – “Surgery for Benign Spine Tumors.” Cleveland Clinic and Centro Medico Paitilla Scientific Meeting: Central Nervous System – Benign and Malignant Tumors – Multiiplinary Approach and Treatment Options. Panama City, Panama, July 11, 2008
- Faculty – “Case Conference on Spine Tumors” (with audience response system). Cleveland Clinic and Centro Medico Paitilla Scientific Meeting: Central Nervous System – Benign and Malignant Tumors – Multiiplinary Approach and Treatment Options. Panama City, Panama, July 11, 2008
- Course Director, Spine Review Hands-On 2008, InterContinental Hotel, Cleveland, Ohio, July 17-22, 2008
- Speaker – “Orthoses.” Spine Review Hands-On 2008, InterContinental Hotel, Cleveland, Ohio, July 17, 2008
- Speaker – “Biomechanics of Spinal Implants and Implant Failure.” Spine Review Hands-On 2008, InterContinental Hotel, Cleveland, Ohio, July 18, 2008
- Speaker – “Nonoperative Management.” Spine Review Hands-On 2007, InterContinental Hotel, Cleveland, Ohio, July 18, 2008
- Faculty – “Spine Tumor Management in the 21st Century: A Multidisciplinary Approach.” Managing Spine Tumors, Cleveland Clinic, Independence, Ohio, July 22, 2008
- Faculty – “Welcome, Introduction, and Agenda.” European Spine Review and Cadaver Hands-On Course, Crete, Greece, July 25, 2008
- Faculty – “Non-operative Treatment Overview.” European Spine Review and Cadaver Hands-On Course, Crete, Greece, July 25, 2008
- Course Co-Director – “Biomechanics of Spinal Column Failure and Disc Degeneration.” European Spine Review and Cadaver Hands-On Course, Crete, Greece, July 26, 2008
- Course Co-Director – “Orthoses.” European Spine Review and Cadaver Hands-On Course, Crete, Greece, July 26, 2008
- Course Co-Director – “Clinical Strategies and Cases.” European Spine Review and Cadaver Hands-On Course, Crete, Greece, July 29, 2008
- Course Co-Director – “Course Wrap-up.” European Spine Review and Cadaver Hands-On Course, Crete, Greece, July 31, 2008
- Faculty – “Biomechanics of Motion Preservation: Fundamentals and Future.” Opportunities for Next-Generation Implants – Materials and Processes for Medical Devices Conference. InterContinental Hotel, Cleveland, Ohio, August 5, 2008
- Visiting Professor – “Biomechanics, Deformity, and Motion Preservation.” Department of Neurosurgery, Louisiana State University Health Sciences Center, Shreveport, Louisiana, August 13, 2008
- Guest Faculty – 40th Congreso Argentina de Neurocirugia. Mendoza, Argentina, August 27-30, 2008
- Guest Faculty – “Biomecanica de la Columna Cervical.” 40th Congreso Argentina de Neurocirugia. Mendoza, Argentina, August 28, 2008
- Guest Faculty – “Artroplastia Lumbar vs. Fusion: Consideraciones Biomecanicas.” 40th Congreso Argentina de Neurocirugia. Mendoza, Argentina, August 29, 2008

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Guest Faculty – “Deformidad de la Columna Cervical.” 40th Congreso Argentina de Neurocirugia. Mendoza, Argentina, August 29, 2008
- Visiting Professor – “Fusion, Motion Preservation and Biomechanics: The Fundamentals.” Department of Neurosurgery, Wayne State University, Troy, Michigan, September 9, 2008
- Visiting Professor – “Cervical Spondylosis, Cervical Deformity, and Clinical Decision Making.” Department of Neurosurgery – Grand Rounds, Wayne State University, Troy, Michigan, September 10, 2008
- Course Director, Practice Course - “Applied Spinal Biomechanics.” Congress of Neurological Surgeons 2008 Annual Meeting, Orlando, Florida, September 20, 2008
- Faculty, Practical Course - “Neurosurgical Practice Development, Negotiation, and Liability.” Congress of Neurological Surgeons 2008 Annual Meeting, Orlando, Florida, September 21, 2008
- Faculty, Practical Course – “Dynamic Stabilization: Fad or Future?” Congress of Neurological Surgeons 2008 Annual Meeting, Orlando, Florida, September 21, 2008
- Faculty, Consensus Session 3, Continuity in the Community of Neurosurgery: Changes to Residency Training – “Creation of a Shortened Core Neurosurgical Residency.” Congress of Neurological Surgeons 2008 Annual Meeting, Orlando, Florida, September 23, 2008
- Faculty, General Scientific Session III, The Community of Neurosurgery: Collective Wisdom as a Source of Knowledge – “Toolkit: Defining Collective Experience, When Does Wisdom Take Precedence?” Congress of Neurological Surgeons 2008 Annual Meeting, Orlando, Florida, September 24, 2008
- Visiting Professor – “Cervical Deformity, Motion Preservation, and Applied Biomechanics: Present and Future.” Stamford Hospital, Division of Neurological Surgery, Stamford, Connecticut, October 2, 2008
- Faculty – “Science, Clinical Practice, and the Quest of Academic Excellence.” Research Update in Neuroscience for Neurosurgeons (RUNN) Course, Marine Biological Laboratory, Woods Hole, Massachusetts, October 24, 2008
- Director, Spine Surgery Invitational Symposium, Cleveland Clinic, Cleveland, Ohio, October 20-22, 2008
- Director – “Biomechanics, Deformity and Motion Preservation.” Spine Surgery Invitational Symposium, Cleveland Clinic, Cleveland, Ohio, October 20-22, 2008
- Director – “Case Studies.” Spine Surgery Invitational Symposium, Cleveland Clinic, Cleveland, Ohio, October 20-22, 2008
- Director – “Short Subjects.” Spine Surgery Invitational Symposium, Cleveland Clinic, Cleveland, Ohio, October 20-22, 2008
- Director – “OR Cases.” Spine Surgery Invitational Symposium, Cleveland Clinic, Cleveland, Ohio, October 20-22, 2008
- Faculty – “Cirugia corta para el segmento movil.” 33rd Congreso Latinoamericano de Neurocirugia (CLAN). Bogota, Columbia, October 27, 2008
- Faculty – “Espondilosis cervical y correccion de deformidad cervical.” 33rd Congreso Latinoamericano de Neurocirugia (CLAN). Bogota, Columbia, October 27, 2008
- Faculty – “Biomecanica de la columna vertebral; aplicaciones clinicas.” 33rd Congreso Latinoamericano de Neurocirugia (CLAN). Bogota, Columbia, October 27, 2008
- Faculty – “Instrumentacion columna cervical.” 33rd Congreso Latinoamericano de Neurocirugia (CLAN). Bogota, Columbia, October 28, 2008
- Faculty – “Alineamiento sagital lumbar.” 33rd Congreso Latinoamericano de Neurocirugia (CLAN). Bogota, Columbia, October 28, 2008
- Faculty – “Fisiopatologia discal: pasado, presente y future.” 33rd Congreso Latinoamericano de Neurocirugia (CLAN). Bogota, Columbia, October 29, 2008
- Faculty – Biomechanics: The Fundamentals.” 3rd International Congress “Selected Topics of Neurosurgery.” CCF Neuro-Oncology / Mexican Society of Surgical Neurology, Los Cabos, Baja CA City, Mexico, November 7, 2008

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Faculty – “Biomechanics: The Future of Spine Surgery.” 3rd International Congress “Selected Topics of Neurosurgery.” CCF Neuro-Oncology / Mexican Society of Surgical Neurology, Los Cabos, Baja CA City, Mexico, November 7, 2008
- Faculty – “Cervical and Lumbar Spondylosis: The Fundamentals and Complex Decision-Making.” 3rd International Congress “Selected Topics of Neurosurgery.” CCF Neuro-Oncology / Mexican Society of Surgical Neurology, Los Cabos, Baja CA City, Mexico, November 8, 2008
- Speaker – “What’s New in Neurosurgery Education.” 2nd International Levantine Forum, Antalya, Turkey, November 13, 2008
- Chairman – “Session 4 – Spinal Cord and Intramedullary Tumors Surgery: Microsurgical Approaches and Risk Avoidance.” 2nd International Levantine Forum, Antalya, Turkey, November 13, 2008
- Speaker – “Cervical Spine Deformity and Deformity Correction Principles.” 2nd International Levantine Forum, Antalya, Turkey, November 14, 2008
- Speaker – “Biomechanics of Spinal Column and Spinal Instrumentation Failure.” 2nd International Levantine Forum, Antalya, Turkey, November 14, 2008
- Speaker – “Surgical Decision-Making: The Future.” 2nd International Levantine Forum, Antalya, Turkey, November 14, 2008
- Chairman – “Session 18 – Outcomes, Difficulties, and Complications of Endoneurosurgery.” 2nd International Levantine Forum, Antalya, Turkey, November 15, 2008
- Faculty – “Spine Biomechanics.” The 2nd American-Kuwaiti Neurosurgical Meeting, State of Kuwait, November 19, 2008
- Faculty – “Motion Preservation & Intradiscal Pressure: The Past, Present & Future.” The 2nd American-Kuwaiti Neurosurgical Meeting, State of Kuwait, November 19, 2008
- Chairperson/Moderator – “Session II – Spine.” The 2nd American-Kuwaiti Neurosurgical Meeting, State of Kuwait, November 19, 2008
- Chairperson/Moderator – “Session III – Spine.” The 2nd American-Kuwaiti Neurosurgical Meeting, State of Kuwait, November 19, 2008
- Speaker – “Surgery for Benign and Intradural Spine Tumors.” International Course on Spinal Tumors, Las Palmas de Gran Canaria, Spain, November 21-22, 2008
- Speaker – “A Team Approach to Spine Tumor Care.” International Course on Spinal Tumors, Las Palmas de Gran Canaria, Spain, November 21-22, 2008
- Faculty – Association of Spine Surgeons of India XXII Annual Conference. Chennai, India, January 23-25, 2009
- Faculty – “The dilemma of the unreduced facetral cervical dislocation without neuron deficit – I will operate.” Association of Spine Surgeons of India XXII Annual Conference. Chennai, India, January 23, 2009
- Guest Lecture – “Cervical Spondylosis and deformity.” Association of Spine Surgeons of India XXII Annual Conference. Chennai, India, January 23, 2009
- Key Note Address – “The Biomechanics of Motion Preservation.” Association of Spine Surgeons of India XXII Annual Conference. Chennai, India, January 23, 2009
- Faculty – “Intradiscal Pressure – The Future.” Association of Spine Surgeons of India XXII Annual Conference. Chennai, India, January 24, 2009
- Symposia Moderator – “Symposium on Neurological Complications, part 1.” Association of Spine Surgeons of India XXII Annual Conference. Chennai, India, January 25, 2009
- Symposia Moderator – “Symposium on Neurological Complications, part 2.” Association of Spine Surgeons of India XXII Annual Conference. Chennai, India, January 25, 2009
- Faculty – “Spine Tumor Care in the 21st Century: A Programmatic Approach.” Third Annual International Symposium on Stereotactic Body Radiation Therapy and Stereotactic Radiosurgery, Lake Buena Vista, Florida, February 21, 2009

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Director – “Special Course III – Biomechanics: Its Use in Surgical Decision Making.” 25th Annual Meeting of the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves. Phoenix, Arizona, March 11, 2009
- Program Chairman – 2nd Annual Lumbar Spine Research Society Meeting, Chicago, Illinois, April 2-3, 2009
- Director, Practical Clinic – “International Spine Masters.” 77th Annual Meeting of the American Association of Neurological Surgeons, San Diego, California, May 2, 2009
- Faculty, Practical Clinic – “Basics of Spinal Stabilization, Fusion, and Instrumentation.” 77th Annual Meeting of the American Association of Neurological Surgeons, San Diego, California, May 3, 2009
- Faculty, Practical Clinic – “Decision Making and the Spine Patient for Nurses, APRNs and PAs.” 77th Annual Meeting of the American Association of Neurological Surgeons, San Diego, California, May 3, 2009
- Faculty, Practical Clinic – “Transfacet Technology: An Alternative to Pedicle Screw Fixation with Interbody Techniques.” 77th Annual Meeting of the American Association of Neurological Surgeons, San Diego, California, May 3, 2009
- Director, Practical Clinic – “Artificial Lumbar Disc Arthroplasty: Biomechanics and Clinical Application.” 77th Annual Meeting of the American Association of Neurological Surgeons, San Diego, California, May 3, 2009
- Moderator, Breakfast Seminar – “Spinal Surgical Challenges.” 77th Annual Meeting of the American Association of Neurological Surgeons, San Diego, California, May 4, 2009
- Moderator, Breakfast Seminar – “Total Lumbar Disc Arthroplasty.” 77th Annual Meeting of the American Association of Neurological Surgeons, San Diego, California, May 5, 2009
- Panelist, Breakfast Seminar – “Lumbar Stenosis.” 77th Annual Meeting of the American Association of Neurological Surgeons, San Diego, California, May 6, 2009
- Speaker, Symposium: Spine Surgery in the Challenging Patient (AANS/CNS Section on Spine) – “Advanced Age and Osteoporosis.” 77th Annual Meeting of the American Association of Neurological Surgeons, San Diego, California, May 6, 2009
- Mayfield Lecturer – “Back Pain: From the Basics – to Rocket Science – and Back.” 2009 Mayfield Neuroscience Symposium, Cincinnati, Ohio, May 29, 2009
- Mayfield Lecturer – “Cervical Spondylosis and Cervical Deformity: Diagnosis and Management.” 2009 Mayfield Neuroscience Symposium, Cincinnati, Ohio, May 29, 2009
- SNS Member. XIII Congress of the Brazilian Academy of Neurosurgery, Curitiba, Brazil, June 16-19, 2009
- Coordinator – “Biomechanics of the Spinal Column.” XIII Congress of the Brazilian Academy of Neurosurgery, Curitiba, Brazil, June 10, 2009
- Faculty – “Biomechanics Fundamentals.” XIII Congress of the Brazilian Academy of Neurosurgery, Curitiba, Brazil, June 10, 2009
- Faculty – “Biomechanics – Spine Instrumentation.” XIII Congress of the Brazilian Academy of Neurosurgery, Curitiba, Brazil, June 10, 2009
- Faculty – “Biomechanics – Implant Failure.” XIII Congress of the Brazilian Academy of Neurosurgery, Curitiba, Brazil, June 10, 2009
- Faculty – “Cervical Spondylosis Surgery.” XIII Congress of the Brazilian Academy of Neurosurgery, Curitiba, Brazil, June 10, 2009
- Faculty – “Lumbar Spondylosis Surgery.” XIII Congress of the Brazilian Academy of Neurosurgery, Curitiba, Brazil, June 10, 2009
- Faculty – “Cervical Spondylotic Myelopathy – Anterior & Posterior Approach V.” XIII Congress of the Brazilian Academy of Neurosurgery, Curitiba, Brazil, June 11, 2009
- Faculty – “Cervicomedullary Junction Pathology. When and How to Stabilize?” XIII Congress of the Brazilian Academy of Neurosurgery, Curitiba, Brazil, June 12, 2009
- Faculty – “Education in Neurologic Surgery of the Spine.” XIII Congress of the Brazilian Academy of Neurosurgery, Curitiba, Brazil, June 12, 2009

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Faculty – “Arthrodesis to arthroplasty in the future direction.” XIII Congress of the Brazilian Academy of Neurosurgery, Curitiba, Brazil, June 12, 2009
- Faculty – “Causes of Failure in Cervical Disc Herniation Surgery.” XIII Congress of the Brazilian Academy of Neurosurgery, Curitiba, Brazil, June 13, 2009
- Director, Spine Review Hands-On 2009, Lutheran Hospital, Cleveland, Ohio, July 22-28, 2009
- Speaker – “Introduction to Problem Based Decision Making.” Spine Review Hands-On 2009, Lutheran Hospital, Cleveland, Ohio, July 22, 2009
- Speaker – “Cervical Deformity Evaluation and Treatment.” Spine Review Hands-On 2009, Lutheran Hospital, Cleveland, Ohio, July 23, 2009
- Speaker – “Orthotics.” Spine Review Hands-On 2009, Lutheran Hospital, Cleveland, Ohio, July 23, 2009
- Speaker – “Biomechanics of Motion Preservation.” Spine Review Hands-On 2009, Lutheran Hospital, Cleveland, Ohio, July 24, 2009
- Speaker – “Biomechanics of Spinal Implants and Implant Failure.” Spine Review Hands-On 2009, Lutheran Hospital, Cleveland, Ohio, July 24, 2009
- Director, Practical Course PC08 – “Applied Spinal Biomechanics.” Congress of Neurological Surgeons 2009 Annual Meeting. New Orleans, Louisiana, October 24, 2009
- Faculty – “Spine 3-D: Technique and Operative Anatomy.” Congress of Neurological Surgeons 2009 Annual Meeting. New Orleans, Louisiana, October 25, 2009
- Faculty, General Scientific Session – “Pursuing Excellence in Neurosurgical Training.” Congress of Neurological Surgeons 2009 Annual Meeting. New Orleans, Louisiana, October 27, 2009
- Moderator, Luncheon Seminar T24 – “Intraoperative Salvage Techniques: Getting Out of Trouble in Spinal Surgery.” Congress of Neurological Surgeons 2009 Annual Meeting. New Orleans, Louisiana, October 27, 2009
- Moderator, Consensus Session I – “The Role of Mid-Level Health Care Providers in Modern Neurosurgery Practice.” Congress of Neurological Surgeons 2009 Annual Meeting. New Orleans, Louisiana, October 27, 2009
- Co-Director – “4th Annual David W. Cahill Spine Symposium.” Tampa, Florida, November 7-8, 2009
- Speaker – “The Chairman’s Lecture: The Future of Spinal Biomechanics.” 4th Annual David W. Cahill Spine Symposium. Tampa, Florida, November 7, 2009
- Moderator – “Debate Session 1.” 4th Annual David W. Cahill Spine Symposium. Tampa, Florida, November 7, 2009
- Moderator – “Debate Session 2.” 4th Annual David W. Cahill Spine Symposium. Tampa, Florida, November 7, 2009
- Moderator – “Debate Session 3.” 4th Annual David W. Cahill Spine Symposium. Tampa, Florida, November 8, 2009
- Moderator – “Debate Session 4.” 4th Annual David W. Cahill Spine Symposium. Tampa, Florida, November 8, 2009
- Honored Guest Speaker – “Cervical Spondylosis and Cervical Deformity.” Georgia Neurosurgical Society Annual Fall Meeting. Georgia Aquarium in Atlanta, Georgia, November 21, 2009
- Honored Guest Speaker – “Back Pain: From the Basics to Rocket Science and Back.” Georgia Neurosurgical Society Annual Fall Meeting. Georgia Aquarium in Atlanta, Georgia, November 21, 2009
- Faculty – “Cervical Spine Deformity: Fundamentals and Clinical Practice.” Hands-On Operative Spine Course. The 15th Annual Meeting of the Spine Society of Ho Chi Min City, Viet Nam, December 4, 2009
- Faculty – “Biomechanics of the Spine.” Hands-On Operative Spine Course. The 15th Annual Meeting of the Spine Society of Ho Chi Min City, Viet Nam, December 4, 2009
- Faculty – “Back Pain: From the Basics, to Rocket Science and Back.” Hands-On Operative Spine Course. The 15th Annual Meeting of the Spine Society of Ho Chi Min City, Viet Nam, December 4, 2009
- Speaker – “Biomechanics of the Spine and Spinal Tumor Surgery.” The Chicago Review Course in Neurological Surgery, Chicago, Illinois, January 30, 2010
- Faculty – “Managing Relationships with Industry.” Scientific Session III: Government and Societal Influences on Spinal Surgery. 26th Annual Meeting of the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves. Orlando, Florida, February 19, 2010

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Faculty – “Degenerative” Luncheon Symposium IV – The Geriatric Spine. 26th Annual Meeting of the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves. Orlando, Florida, February 19, 2010
- Faculty – “Degenerative Spondylolisthesis: Interbody vs. Instrumental Posterolateral Fusion.” David Cahill Memorial Controversies Session – Spine and Peripheral Nerves. 26th Annual Meeting of the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves. Orlando, Florida, February 20, 2010
- Moderator – Scientific Session IV: Training in Neurosurgery. 26th Annual Meeting of the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves. Orlando, Florida, February 20, 2010
- Honored Guest Speaker – “Cervical Spondylosis.” Texas Association of Neurological Surgeons. San Antonio, Texas, March 5, 2010
- Honored Guest Speaker – “Operative Indications for Back Pain.” Texas Association of Neurological Surgeons. San Antonio, Texas, March 5, 2010
- Faculty – “Back Pain: From the Basics to Rocket Science and Back.” Baptist Hospital of Miami Neuroscience Center presents Spine Surgery Symposium. Biltmore Hotel, Coral Gables, Florida, March 20, 2010
- Faculty – “Cervical Spondylosis, Biomechanics and Deformity Correction.” Baptist Hospital of Miami Neuroscience Center presents Spine Surgery Symposium. Biltmore Hotel, Coral Gables, Florida, March 20, 2010
- Moderator – “Trauma.” Session #15. Lumbar Spine Research Society, Sofitel ChicagoWater Tower, Chicago, Illinois, April 9, 2010.
- Faculty – “Transfacet Technology: An Alternative to Pedicle Screw Fixation with Interbody Techniques.” 78th Annual Meeting of the American Association of Neurological Surgeons, Philadelphia, Pennsylvania, May 2, 2010
- Moderator – “Spinal Surgical Challenges.” 78th Annual Meeting of the American Association of Neurological Surgeons, Philadelphia, Pennsylvania, May 4, 2010
- Moderator, General Session II - Craniocervical Junction Pathologies. World Spine V. Santorini, Greece, May 7, 2010.
- Faculty, “Overview - Craniocervical Junction Pathologies.” World Spine V. Santorini, Greece, May 7, 2010.
- Moderator, General Session IV – Intradural Spinal Tumors. World Spine V. Santorini, Greece, May 7, 2010.
- Faculty, “Overview – Intradural Spinal Tumors.” World Spine V. Santorini, Greece, May 7, 2010.
- Moderator, General Session IX – Syringomyelia. World Spine V. Santorini, Greece, May 8, 2010.
- Faculty, “Overview – Syringomyelia.” World Spine V. Santorini, Greece, May 8, 2010.
- Moderator, General Session XII – Sacral Tumors. World Spine V. Santorini, Greece, May 8, 2010.
- Faculty, “Overview – Sacral Tumors.” World Spine V. Santorini, Greece, May 8, 2010.
- Faculty, Plenary Session III, “Back Pain – From the Basics, to Rocket Science, and Back!” World Spine V. Santorini, Greece, May 9, 2010.
- Faculty, Didactic Session IX, “A Sceptics View of New Technologies.” World Spine V. Santorini, Greece, May 9-10, 2010.
- Faculty, Hands On Spine Surgery Course. World Spine 2010 Hands On Course. Arta University, Larissa Greece, May 11-14, 2010
- Faculty – “Current Treatment Paradigms for Spine Tumors.” International Symposium on Long-Term Control of Secondary Central Nervous System Malignancies. Ritz Carlton Hotel, Cleveland, Ohio, June 11, 2010
- Invited Lecturer – “Spine Surgery: To Rocket Science and Back.” New England Neurosurgical Society Annual Meeting. Chatham, Massachusetts, June 17, 2010.
- Executive Council – The Society of Neurological Surgeons. New Haven, Connecticut, June 19-22, 2010.
- Speaker – “US Healthcare Reform.” Greater Toronto Area (GTA) Spine Rounds. The Old Mill Inn, Toronto, Canada, June 24, 2010
- Visiting Professor – “Back Pain: Basics to Rocket Science and Back.” The Tator-Hall Visiting Professor Lecture, University of Toronto SpineFEST™ Visiting Professorship. The Old Mill Inn, Toronto, Canada, June 25, 2010

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Panel Discussion – “Managing Back Pain for the Masses.” University of Toronto SpineFEST™ Visiting Professorship. The Old Mill Inn, Toronto, Canada, June 25, 2010
- Director – Spine Review Hands-On 2010, Lutheran Hospital, Cleveland, Ohio, July 7-13, 2010
- Speaker – “Orthotics.” Spine Review Hands-On 2010, Lutheran Hospital, Cleveland, Ohio, July 8, 2010
- Speaker – “Assessment and Treatment of Cervical Deformity.” Spine Review Hands-On 2010, Lutheran Hospital, Cleveland, Ohio, July 8, 2010
- Speaker – “Biomechanics of Implant Failure.” Spine Review Hands-On 2010, Lutheran Hospital, Cleveland, Ohio, July 9, 2010
- Speaker – “Biomechanics of Motion Preservation.” Spine Review Hands-On 2010, Lutheran Hospital, Cleveland, Ohio, July 10, 2010
- Senior Invited Faculty – “Module 2: Ventral and Dorsal Complex Cervical Spine Surgery.” The 5th Annual CNS 3-D Surgical Anatomy Course for Chief Residents, St. Louis University Surgical Anatomy Lab, St. Louis, Missouri, August 12, 2010
- Keynote Speaker – “Managing Relationships with Industry.” Minimally Invasive Neurosurgical Society, Mackinac Island, Michigan, August 14, 2010
- Speaker – “Biomechanics of Disc Arthroplasty.” Minimally Invasive Neurosurgical Society, Mackinac Island, Michigan, August 15, 2010
- Course Director – “Spine Biomechanics for Clinical Practice.” 2010 Congress of Neurological Surgeons Annual Meeting, San Francisco, California, October 16, 2010
- Moderator – “Neurosurgical Forum – Section on Disorders of the Spine and Peripheral Nerves.” 2010 Congress of Neurological Surgeons Annual Meeting, San Francisco, California, October 18, 2010
- Moderator – “Intraoperative Salvage Technique: Getting Out of Trouble in Spinal Surgery.” 2010 Congress of Neurological Surgeons Annual Meeting, San Francisco, California, October 19, 2010
- Moderator – “Operative Techniques with the Masters.” 2010 Congress of Neurological Surgeons Annual Meeting, San Francisco, California, October 19, 2010
- Course Director – “Consensus Session III – Is Bone Morphogenetic Protein Usage in Spinal Surgery Safe, Effective, and Worth the Cost?” 2010 Congress of Neurological Surgeons Annual Meeting, San Francisco, California, October 19, 2010
- Faculty – “Science, Clinical Practice, and the Quest of Academic Excellence.” Research Update in Neuroscience for Neurosurgeons (RUNN) Course, Marine Biological Laboratory, Woods Hole, Massachusetts, October 25, 2010
- Speaker – “The Utilization of Telemetric Pressure Monitoring for the Assessment of Back Pain.” 5th International Symposium on Microneurosurgical Anatomy, Istanbul, Turkey, November 5, 2010.
- Speaker – “The Management of Cervical Spine Deformities.” 5th International Symposium on Microneurosurgical Anatomy, Istanbul, Turkey, November 5, 2010.
- Speaker – “Total Disc Arthroplasty: Theory and Practice.” 5th International Symposium on Microneurosurgical Anatomy, Istanbul, Turkey, November 5, 2010.
- Chairman/Moderator – “Microsurgical and Endoscopic Anatomy of the Skull Base.” 5th International Symposium on Microneurosurgical Anatomy, Istanbul, Turkey, November 5, 2010.
- Speaker – “Spine Tumors.” 5th International Symposium on Microneurosurgical Anatomy, Istanbul, Turkey, November 6, 2010.
- Chairman/Moderator – “Microsurgical Approaches to the Brainstem.” 5th International Symposium on Microneurosurgical Anatomy, Istanbul, Turkey, November 6, 2010.
- Speaker – “Robotic Assisted Spinal Surgery – From Concept to Clinical Practice.” 4th Congress Mexican Society of Neurological Surgeons, Mazatlan, Mexico, November 18, 2010.
- Speaker – “Craniovertebral Junction: Biomechanical Considerations.” 4th Congress Mexican Society of Neurological Surgeons, Mazatlan, Mexico, November 19, 2010.

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Speaker – “Cervical Disc Arthroplasty Compared with Allograft Fusion.” 4th Congress Mexican Society of Neurological Surgeons, Mazatlan, Mexico, November 19, 2010.
- Speaker – “Spine Biomechanics: Fundamentals and Future.” 4th Congress Mexican Society of Neurological Surgeons, Mazatlan, Mexico, November 20, 2010.
- Faculty – “Biomechanics of Cervical Deformity: Principles, How to Determine Levels of Fusion.” Cervical Spine Research Society 15th Instructional Course and Annual Meeting, Charlotte, North Carolina, December 1, 2010.
- Visiting Professor – “Biomechanics and Surgical Decision Making: Present and Future.” University of Wisconsin, Department of Neurosurgery, Madison, Wisconsin, January 14, 2011
- Visiting Professor – “Why Academics: The Education of Self, The Education of Others.” University of Wisconsin, Department of Neurosurgery, Madison, Wisconsin, January 14, 2011
- Speaker – “Spine Biomechanics.” The Chicago Review Course in Neurosurgery, February 4, 2011
- Visiting Professor – “Cervical Spondylosis and Deformity.” Loma Linda University School of Medicine, Loma Linda, California, February 16, 2011
- Visiting Professor – “Back Pain: From Fundamentals to Rocket Science and Back.” Loma Linda University School of Medicine, Loma Linda, California, February 16, 2011
- Course Co-Director – Fourth Annual International Symposium on Stereotactic Body Radiation Therapy and Stereotactic Radiosurgery, Lake Buena Vista, Florida, February 25-27, 2011
- Faculty – “Plenary Session II – Debates: Open vs. Radiosurgery for Spine.” Fourth Annual International Symposium on Stereotactic Body Radiation Therapy and Stereotactic Radiosurgery, Lake Buena Vista, Florida, February 25-27, 2011
- Visiting Professor – “Cervical Spondylosis and Deformity.” Brigham and Women’s Hospital, Boston, Massachusetts, March 17, 2011
- Faculty – “Biomechanics of Back Pain: From the Basics to Rocket Science and Back.” 2011 National Spanish Neurosurgery Congress. Albacete, Spain, March 10, 2011
- Faculty – “Cervical Spondylosis and Cervical Deformity.” 2011 National Spanish Neurosurgery Congress. Albacete, Spain, March 11, 2011
- Faculty – “Transfacet Technology: An Alternative to Pedicle Screw Fixation with Interbody Techniques.” 79th Annual Meeting of the American Association of Neurological Surgeons, Denver, Colorado, April 10, 2011
- Panelist – “Osteoporosis and Spinal Fusion Surgery.” 79th Annual Meeting of the American Association of Neurological Surgeons, Denver, Colorado, April 10, 2011
- Moderator – “Spinal Surgical Challenges.” 79th Annual Meeting of the American Association of Neurological Surgeons, Denver, Colorado, April 13, 2011
- Visiting Professor – “Back Pain: From the Basics to Rocket Science and Back.” Department of Neurosurgery, University of Manitoba, Winnipeg, Canada, May 20, 2011
- Visiting Professor – “Cervical Spondylosis and Deformity.” Department of Neurosurgery, University of Manitoba, Winnipeg, Canada, May 20, 2011
- Attendee – Society of Neurological Surgeons Annual Meeting, Portland, Oregon, May 21-24, 2011
- Visiting Professor – “Surgery for Tumors of the Spine.” Cleveland Clinic Abu Dhabi, Sheikh Khalifa Medical City, Wooridul Spine Center (Dubai), June 8, 2011
- Visiting Professor – “Spine Biomechanics & Cervical Spine Deformity.” Department of Neurological Surgery, Northwestern University, Chicago, Illinois, June 24, 2011
- Faculty – “Cervical Junction Tumors.” 1^o Skull Base Surgery Joint Meeting (Italia-USA), Napoli, Italy, June 28, 2011
- Moderator – “Seminar dedicated to the Pathology of Traumatic Cervical Spine.” 1^o Skull Base Surgery Joint Meeting (Italia-USA), Napoli, Italy, June 28, 2011
- Director – International Symposium on Spine Tumor Innovations, Cleveland Clinic, Cleveland, Ohio, July 11-12, 2011
- Case Studies – International Symposium on Spine Tumor Innovations, Cleveland Clinic, Cleveland, Ohio, July 11-12, 2011

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Director – “Spine Tumor Management in the 21st Century: A Multidisciplinary Approach.” International Symposium on Spine Tumor Innovations, Cleveland Clinic, Cleveland, Ohio, July 12, 2011
- Director – Spine Review Hands-On 2011, Lutheran Hospital, Cleveland, Ohio, July 13-19, 2011
- Speaker – “Orthotics.” Spine Review Hands-On 2011, Lutheran Hospital, Cleveland, Ohio, July 14, 2011
- Speaker – “Assessment and Treatment of Cervical Deformity.” Spine Review Hands-On 2011, Lutheran Hospital, Cleveland, Ohio, July 14, 2011
- Speaker – “Biomechanics of Implant Failure.” Spine Review Hands-On 2011, Lutheran Hospital, Cleveland, Ohio, July 15, 2011
- Key Note Speaker – “Managing Relationships with Industry.” Minimally Invasive Neurosurgical Society, MINS 2011 Conference, Mackinac Island, Michigan, July 21-24, 2011
- Keynote Speaker – “Iatrogenic Cervical Spine Deformity.” Pittsburgh Spine Summit, Allegheny General Hospital, Pittsburgh, Pennsylvania, September 10, 2011
- Visiting Professor – “Cervical Spondylosis and Cervical Deformity.” Cedars-Sinai Medical Center, Los Angeles, California, September 13, 2011
- Visiting Professor – “Back Pain: From the Basics to Rocket Science and Back.” Cedars-Sinai Medical Center, Los Angeles, California, September 14, 2011
- Course Director – “Spine Biomechanics: A Focus on Junctional Pathology.” 2011 Congress of Neurological Surgeons Annual Meeting, Washington, DC, October 1, 2011
- Faculty – “Ethics in Neurosurgical Practice: Designing a High Quality, Meaningful, and Personally Satisfying Clinical Practice.” 2011 Congress of Neurological Surgeons Annual Meeting, Washington, DC, October 2, 2011
- Neurosurgical Forum – “Simulated Diagnostic Cerebral Angiography in Neurosurgical Training: A Pilot Program.” 2011 Congress of Neurological Surgeons Annual Meeting, Washington, DC, October 3, 2011
- Neurosurgical Forum – “Cost-effectiveness of Ventral Fusion, Dorsal Fusion, and Dorsal Non-fusion Surgery for Cervical Spondylotic Myelopathy: 1-year Clinical and Economic Outcomes.” 2011 Congress of Neurological Surgeons Annual Meeting, Washington, DC, October 3, 2011
- Neurosurgical Forum – “Perioperative and Long-term Outcomes Following Surgery for Cervical Spine Deformity.” 2011 Congress of Neurological Surgeons Annual Meeting, Washington, DC, October 3, 2011
- Moderator – “Managing Difficult Surgical Scenarios in Spinal Surgery.” 2011 Congress of Neurological Surgeons Annual Meeting, Washington, DC, October 4, 2011
- Faculty, General Scientific Session IV – “Lack of Need for Arthroplasty.” 2011 Congress of Neurological Surgeons Annual Meeting, Washington, DC, October 5, 2011
- Special Guest Speaker – “Spine Biomechanics and Surgical Decision Making.” 2011 Quebec Neurosurgery Association, Quebec, Canada, November 11, 2011
- Special Guest Speaker – “Why Academics?.” 2011 Quebec Neurosurgery Association, Quebec, Canada, November 12, 2011
- Faculty – “Spine Biomechanics, Clinical Practices, and the Quest of Academic Excellence.” Research Update in Neuroscience for Neurosurgeons, 2011 RUNN Course, Woods Hole, Massachusetts, November 1, 2011
- Visiting Professor – “Iatrogenic Cervical Deformity.” Lahey Clinic Medical Center, Burlington, Massachusetts, November 2, 2011
- Faculty – “Biomechanics of MIS.” 5th Minimally Invasive Spinal Surgery and Navigation – Hands-on Symposium, Cornell University, New York, New York, December 1, 2011
- Instructional Course Faculty – “Tumor.” Cervical Spine Research Society 16th Instructional Course and Annual Meeting, Scottsdale, Arizona, December 7, 2011.
- Moderator – “Metabolic Issues.” Cervical Spine Research Society 16th Instructional Course and Annual Meeting, Scottsdale, Arizona, December 9, 2011.
- Faculty – “Spine Biomechanics.” Chicago Review Course in Neurological Surgery, Chicago, Illinois, February 3, 2012

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Course Co-Director – Fifth Annual International Symposium on Stereotactic Body Radiation Therapy and Stereotactic Radiosurgery, Lake Buena Vista, Florida, February 24-26, 2012
- Faculty – “Plenary Session II – Debates: Open Surgery vs. Radiosurgery for Spine.” Fifth Annual International Symposium on Stereotactic Body Radiation Therapy and Stereotactic Radiosurgery, Lake Buena Vista, Florida, February 25, 2012
- Faculty – “Overview of Ankylosing Spondylitis: Module 1a Presentation.” Axial Spondyloarthritis Early Diagnosis to Management. Presented by Cleveland Clinic; In Association with Dubai Bone & Joint Center; Supported by Abbott Laboratories, Grand Hyatt Dubai, Dubai, United Arab Emirates, March 30, 2012
- Faculty – “Overview of Ankylosing Spondylitis: Module 1b Presentation.” Axial Spondyloarthritis Early Diagnosis to Management. Presented by Cleveland Clinic; In Association with Dubai Bone & Joint Center; Supported by Abbott Laboratories, Grand Hyatt Dubai, Dubai, United Arab Emirates, March 30, 2012
- Expert Opinion - Axial Spondyloarthritis Early Diagnosis to Management. Presented by Cleveland Clinic; In Association with Dubai Bone & Joint Center; Supported by Abbott Laboratories, Grand Hyatt Dubai, Dubai, United Arab Emirates, March 30, 2012
- Faculty – “Overview of Ankylosing Spondylitis: Module 1a Presentation.” Axial Spondyloarthritis Early Diagnosis to Management. Presented by Cleveland Clinic; In Association with Dubai Bone & Joint Center; Supported by Abbott Laboratories, Phoenicia Beirut, Beirut, Lebanon, March 30, 2012
- Faculty – “Overview of Ankylosing Spondylitis: Module 1b Presentation.” Axial Spondyloarthritis Early Diagnosis to Management. Presented by Cleveland Clinic; In Association with Dubai Bone & Joint Center; Supported by Abbott Laboratories, Phoenicia Beirut, Beirut, Lebanon, March 30, 2012
- Expert Opinion - Axial Spondyloarthritis Early Diagnosis to Management. Presented by Cleveland Clinic; In Association with Dubai Bone & Joint Center; Supported by Abbott Laboratories, Phoenicia Beirut, Beirut, Lebanon, March 30, 2012
- Course Director – “Cases and Complications with the Masters.” 28th Annual Meeting of the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves. Orlando, Florida, March 7, 2012
- Course Director, Cases and Complications with the Masters – “Perspective on MIS for Lumbar Fusion.” 28th Annual Meeting of the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves. Orlando, Florida, March 7, 2012
- Case Presentation, David Cahill Memorial Controversies II: Spine and Peripheral Nerve Rapid Fire – “Asymptomatic Cervical Stenosis with Cord Signal Changes.” 28th Annual Meeting of the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves. Orlando, Florida, March 10, 2012
- Faculty – “Cervical Deformity: Biomechanics and Treatment Principles.” Complication Avoidance in the Cervical Spine (CAMLS) Center for Advanced Medical Learning and Simulation. Tampa, Florida, April 13, 2012
- Faculty – “Transfacet Technology: An Alternative to Pedicle Screw Fixation with Interbody Techniques.” 80th Annual Meeting of the American Association of Neurological Surgeons, Miami, Florida, April 14, 2012
- Faculty – “Invention and Innovation in Neurosurgery.” 80th Annual Meeting of the American Association of Neurological Surgeons, Miami, Florida, April 15, 2012
- Moderator – “Challenging Spinal Cases: Pearls and Pitfalls.” 80th Annual Meeting of the American Association of Neurological Surgeons, Miami, Florida, April 16, 2012
- Panelist – “Spondylolisthesis: Controversies in Management.” 80th Annual Meeting of the American Association of Neurological Surgeons, Miami, Florida, April 17, 2012
- Panelist – “Osteoporosis and Spinal Fusion Surgery.” 80th Annual Meeting of the American Association of Neurological Surgeons, Miami, Florida, April 15, 2012
- Co-Author on presentation/paper: Lubelski D, Abdullah KG, Nowacki AS, Alvin MD, Steinmetz MP, Benzel EC, Mroz TE: Complications Following Use of RhBMP-2 In Anterior Lumbar Interbody Fusion. 5th Annual Meeting of the Lumbar Spine Research Society. Chicago, Illinois, April 26, 2012

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Co-Author on paper: Lubelski D, Abdullah KG, Steinmetz MP, Alvin MD, Nowacki AS, Benzel EC, Mroz TE: Adverse Events with the Use of RhBMP-2 in Thoracolumbar and Lumbar Spine Fusions: A Nine Year Institutional Analysis. 5th Annual Meeting of the Lumbar Spine Research Society. Chicago, Illinois, April 26, 2012
- Co-Author on paper: Lubelski D, Bishop FS, Abdullah KG, Steinmetz MP, Benzel EC, Mroz TE: Radiation Exposure to the Spine Surgeon in Lumbar and Thoracolumbar Fusions with the use of an Intraoperative Computed Tomography 3-dimensional Imaging System. 5th Annual Meeting of the Lumbar Spine Research Society. Chicago, Illinois, April 26, 2012
- Moderator – “Epidemiology.” 5th Annual Meeting of the Lumbar Spine Research Society. Chicago, Illinois, April 26, 2012
- Invited Speaker’s Panel – “How to Improve Physician Communication with Patients” Cleveland Clinic 3rd Annual Patient Experience Summit, Cleveland, Ohio, May 22, 2012
- Visiting Professor – “Innovation: From Back Pain to Concussion.” Department of Neurosurgery, University of Florida, May 24, 2012
- Visiting Professor – “Cervical Spondylosis and Deformity.” Department of Neurosurgery, University of Florida, May 25, 2012
- Course Co-Director, International Symposium on Spine Tumor Innovations. Cleveland, Ohio, July 9-10, 2012
- Speaker – “Management of Intradural Tumors.” International Symposium on Spine Tumor Innovations. Cleveland, Ohio, July 10, 2012
- Speaker – “Spine Tumor Management I the 21st Century: A Multidisciplinary Approach.” International Symposium on Spine Tumor Innovations. Cleveland, Ohio, July 10, 2012
- Speaker, Case Studies – International Symposium on Spine Tumor Innovations, Cleveland Clinic, Cleveland, Ohio, July 9-10, 2012
- Co-Director, Spine Review Hands-On 2012, Lutheran Hospital, Cleveland, Ohio, July 11-17, 2012
- Speaker – “Biomechanics 101.” Spine Review Hands-On 2012, Lutheran Hospital, Cleveland, Ohio, July 12, 2012
- Speaker – “Cervical Deformity Evaluation and Treatment.” Spine Review Hands-On 2012, Lutheran Hospital, Cleveland, Ohio, July 13, 2012
- Keynote Speaker – “The Biomechanics of Minimally Invasive Spine Surgery.” Minimally Invasive Neurosurgical Society, MINS 2012 Conference, Mackinac Island, Michigan, August 3, 2012
- Visiting Professor – “The Concussion Crisis.” Connecticut Neurosurgery Society, Hartford, Connecticut, September 28, 2012
- Course Director – “Practical Spine Biomechanics for Clinical Practice.” 2012 Congress of Neurological Surgeons Annual Meeting, Chicago, Illinois, October 7, 2012
- Moderator – “Managing Difficult Surgical Scenarios in Spinal Surgery.” 2012 Congress of Neurological Surgeons Annual Meeting, Chicago, Illinois, October 9, 2012
- Moderator – “Sagittal Balance in Spine Surgery.” 2012 Congress of Neurological Surgeons Annual Meeting, Chicago, Illinois, October 10, 2012
- Faculty – “Spine, Biomechanics, Clinical Practice, and the Quest of Academic Excellence.” Research Update on Neuroscience for Neurosurgeons (RUNN) Course, Marine Biological Laboratory, Woods Hole, Massachusetts, October 29, 2012
- Visiting Professor – “Yesterday, Today, and Tomorrow in the Management of Spinal Tumors.” Ataturk Training and Research Hospital, Izmir, Turkey, November 15, 2012
- Moderator – “Spinal Trauma and Spinal Cord Injury: Current Controversies.” 3rd International Levantine Forum ‘Advances in Neurological Surgery.’ Izmir, Turkey, November 17, 2012
- Moderator – “Minimally Invasive Spine Surgery: Future Trend or Temporary Fad?” 3rd International Levantine Forum ‘Advances in Neurological Surgery.’ Izmir, Turkey, November 17, 2012
- Moderator – “Surgical Treatments of Spinal Deformity: New Emerging Concepts.” 3rd International Levantine Forum ‘Advances in Neurological Surgery.’ Izmir, Turkey, November 17, 2012

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Moderator – “Surgery for Lumbar Degenerative Diseases: Fusion or Mobility Preservation?” 3rd International Levantine Forum ‘Advances in Neurological Surgery.’ Izmir, Turkey, November 17, 2012
- Speaker – “Spine Biomechanics from the Basics to Rocket Science and Back.” 3rd International Levantine Forum ‘Advances in Neurological Surgery.’ Izmir, Turkey, November 17, 2012
- Speaker – “The Concussion Crisis and Advances in Diagnosis and Management.” 3rd International Levantine Forum ‘Advances in Neurological Surgery.’ Izmir, Turkey, November 17, 2012
- Speaker – “Cervical Spondylosis and Cervical Deformity: Diagnosis and Management.” 3rd International Levantine Forum ‘Advances in Neurological Surgery.’ Izmir, Turkey, November 17, 2012
- Moderator – “Spinal Cord Tumors.” 3rd International Levantine Forum ‘Advances in Neurological Surgery.’ Izmir, Turkey, November 17, 2012
- Moderator – “Cerebrovascular” The 9th Pan Arab Neurosurgical Congress, Salmeya, State of Kuwait, December 11, 2012.
- Guest Faculty – “Back Pain from Basics to Rocket Science.” The 9th Pan Arab Neurosurgical Congress, Salmeya, State of Kuwait, December 12, 2012.
- Guest Faculty – “Management of Degenerative Lumbar Stenosis and Spondylolisthesis.” The 9th Pan Arab Neurosurgical Congress, Salmeya, State of Kuwait, December 12, 2012.
- Guest Faculty – “Cervical Spondylotic Myelopathy and Cervical Deformity.” The 9th Pan Arab Neurosurgical Congress, Salmeya, State of Kuwait, December 12, 2012.
- Guest Faculty – “Biomechanics of Spinal Stabilization.” The 9th Pan Arab Neurosurgical Congress, Salmeya, State of Kuwait, December 12, 2012.
- Guest Faculty – “Concussion Crisis.” The 9th Pan Arab Neurosurgical Congress, Salmeya, State of Kuwait, December 12, 2012.
- Guest Faculty – “Back Pain: From Basics to Rocket Science.” 26th Annual Conference of Association of Spine Surgeons of India, Kochi, Kerala, India, January 17, 2013
- Guest Faculty – “Revision Strategies in Iatrogenic Instability in Spine.” 26th Annual Conference of Association of Spine Surgeons of India, Kochi, Kerala, India, January 18, 2013
- Faculty – “Biomechanics of the Spine.” Chicago Review Course in Neurological Surgery, Chicago, Illinois, January 31, 2013
- Faculty – “Spine Tumor Surgery.” Chicago Review Course in Neurological Surgery, Chicago, Illinois, January 31, 2013
- Panelist, Q&A Session – “Truth or Consequences – What Did the Independent Yale Analysis on BMP-2 Reveal?” 12th Annual Symposium on Current Concepts in Spinal Disorders, Las Vegas, Nevada, February 1, 2013
- Panelist, Q&A Session – “Protein Therapies for Joint Restoration in Spine Disease: Is It Only for the Elite Athlete?” 12th Annual Symposium on Current Concepts in Spinal Disorders, Las Vegas, Nevada, February 1, 2013
- Panelist, Q&A Session – “Deformities” 12th Annual Symposium on Current Concepts in Spinal Disorders, Las Vegas, Nevada, February 1, 2013
- Panelist, Q&A Session – “My Worst Complications & What I Learned.” 12th Annual Symposium on Current Concepts in Spinal Disorders, Las Vegas, Nevada, February 1, 2013
- Keynote Speaker – “Motion Preservation: Too Little or Too Much?” 12th Annual Symposium on Current Concepts in Spinal Disorders, Las Vegas, Nevada, February 2, 2013
- Invited Speaker – “Cervical Deformities Management.” 2nd Annual International Brain Tumor and Spine Surgery Symposium, Cleveland Clinic Florida, Weston, Florida, February 9, 2013
- Invited Speaker – “Cervical Osteotomy in Ankylosis Spondylitis.” 2nd Annual International Brain Tumor and Spine Surgery Symposium, Cleveland Clinic Florida, Weston, Florida, February 9, 2013
- Guest Speaker – “Kyphosis Treatment (conservative or surgical).” Spine International Symposium, Cleveland Clinic & Universidad Simon Bolivar, Santa Marta, Columbia, February 14, 2013
- Guest Speaker – “Cervical Spondylosis and Deformity.” Spine International Symposium, Cleveland Clinic & Universidad Simon Bolivar, Santa Marta, Columbia, February 14, 2013

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Guest Speaker – “Subaxial Cervical Fractures.” Spine International Symposium, Cleveland Clinic & Universidad Simon Bolivar, Santa Marta, Columbia, February 14, 2013
- Guest Speaker – “Dorsal Approach: When and How.” Spine International Symposium, Cleveland Clinic & Universidad Simon Bolivar, Santa Marta, Columbia, February 14, 2013
- Guest Speaker – “Cervical and Lumbar Biomechanics – Clinical Applications.” Spine International Symposium, Cleveland Clinic & Universidad Simon Bolivar, Santa Marta, Columbia, February 15, 2013
- Guest Speaker – “Dorsal Approach: When and How.” Spine International Symposium, Cleveland Clinic & Universidad Simon Bolivar, Santa Marta, Columbia, February 15, 2013
- Guest Speaker – “Lumbar Spondylolisthesis: Overview.” Spine International Symposium, Cleveland Clinic & Universidad Simon Bolivar, Santa Marta, Columbia, February 15, 2013
- Guest Speaker – “Spinal Orthosis.” Spine International Symposium, Cleveland Clinic & Universidad Simon Bolivar, Santa Marta, Columbia, February 15, 2013
- Visiting Professor – “Concussion Crisis.” 2nd Annual Frank E. Nulsen Visiting Professor, University Hospitals Case Medical Center, Neurological Institute, Cleveland, Ohio, February 27, 2013
- Visiting Professor – “On Becoming an Academician.” 2nd Annual Frank E. Nulsen Visiting Professor, University Hospitals Case Medical Center, Neurological Institute, Cleveland, Ohio, February 27, 2013
- Invited Speaker – “Cervical Spondylotic Myelopathy and Cervical Spine Deformity: Surgical Decision Making.” 13th Congress of Spinal Surgery. Sao Paulo, Brazil, March 1, 2013
- Invited Speaker – “Arthroplasty Versus Fusion in Single-Level Cervical Degenerative Disc Disease.” 13th Congress of Spinal Surgery. Sao Paulo, Brazil, March 1, 2013
- Speaker – “The Evolution of an Integrated Approach to Patient Care: The Cleveland Clinic Approach.” 29th Annual Meeting of the AANS/CNS on Disorders of the Spine and Peripheral Nerves, Phoenix, Arizona, March 6, 2013
- Discussant for Oral Platform Presentations. 29th Annual Meeting of the AANS/CNS on Disorders of the Spine and Peripheral Nerves, Phoenix, Arizona, March 7, 2013
- Speaker – “Short Segment Corrections.” 29th Annual Meeting of the AANS/CNS on Disorders of the Spine and Peripheral Nerves, Phoenix, Arizona, March 9, 2013
- Visiting Professor – “Integrated Neurosurgery Residency or Basic Training Followed by Subspecialty Residency – Where Should We Head in Future?” Department of Neurosciences, Division of Neurosurgery, Medical University of South Carolina, Charleston, South Carolina, March 21, 2013
- Visiting Professor – “Motion Preservation Surgery: Hope or Hype.” 33rd Annual J. Jay Keegan Memorial Lectureship, Division of Neurosurgery, University of Nebraska Medical Center, Omaha, Nebraska, April 5, 2013
- Moderator – “Biomechanics.” 6th Annual Meeting of the Lumbar Spine Research Society, Chicago, Illinois, April 12, 2013
- Invited Speaker – “Diagnosis and Management of Cervical Spondylosis.” Ohio State Neurosurgical Society Annual Meeting, Columbus, Ohio, April 13, 2013
- Visiting Professor – “Motion Preservation: Hope & Hype.” 1st Annual Spine Symposium, Southwest General Hospital, Middleburg Heights, Ohio, April 19, 2013
- Faculty – “Invention and Innovation in Neurosurgery.” 81st American Association of Neurological Surgeons Annual Scientific Meeting, New Orleans, Louisiana, April 28, 2013
- Co-Director – “Transfacet Technology: An Alternative to Pedicle Screw Fixation with Interbody Techniques.” 81st American Association of Neurological Surgeons Annual Scientific Meeting, New Orleans, Louisiana, April 28, 2013
- Moderator – “Challenging Spinal Cases: Pearls and Pitfalls.” 81st American Association of Neurological Surgeons Annual Scientific Meeting, New Orleans, Louisiana, April 30, 2013
- Co-Facilitator, Foundations of Healthcare Physician Communication Training Program, Sheik Khalifa Medical City, Abu Dhabi, United Arab Emirates, May 26-28, 2013
- The Society of Neurological Surgeons 104th Meeting in the 93rd Year, Boston, Massachusetts, June 8-11, 2013
- Co-Director, Spine Review Hands-On 2013, Lutheran Hospital, Cleveland, Ohio, July 10-16, 2013

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Speaker – “Fundamentals of Biomechanics.” Spine Review Hands-On 2013, Lutheran Hospital, Cleveland, Ohio, July 11, 2013
- Speaker – “Instrumentation and Construct Design.” Spine Review Hands-On 2013, Lutheran Hospital, Cleveland, Ohio, July 12, 2013
- Speaker – “Cervical Deformity Evaluation and Treatment.” Spine Review Hands-On 2013, Lutheran Hospital Cleveland, Ohio, July 12, 2013
- Speaker – “Biomechanics 301 Back Pain, Fusion and Motion Preservation.” Spine Review Hands-On 2013, Lutheran Hospital Cleveland, Ohio, July 12, 2013
- Invited Speaker – “Biomechanics of Minimally Invasive Spine Surgery.” Minimally Invasive Neurosurgical Society (MINS) Improving Outcomes with Knowledge, Detroit, Michigan, August 10, 2013
- Course Co-Director – “Practical Spine Biomechanics for Clinical Practice.” Congress of Neurological Surgeons 2013 Annual Meeting, San Francisco, California, October 20, 2013
- Moderator – “Managing Complications in Spinal Surgery.” Congress of Neurological Surgeons 2013 Annual Meeting, San Francisco, California, October 22, 2013
- Co-Moderator – “Out of Balance: How Can We Improve Outcomes from Spine Surgery?” Congress of Neurological Surgeons 2013 Annual Meeting, San Francisco, California, October 22, 2013
- Speaker – “Enhancing Patient Experience: Impact on Your Practice.” Congress of Neurological Surgeons 2013 Annual Meeting, San Francisco, California, October 22, 2013
- Speaker – “Cervical Spine Surgery: Where We Come From, Where We Are, Where We Are Going.” Congress of Neurological Surgeons 2013 Annual Meeting, San Francisco, California, October 23, 2013
- Faculty – “Spine, Biomechanics, Clinical Practice, and the Quest of Academic Excellence.” Research Update on Neuroscience for Neurosurgeons (RUNN) Course, Marine Biological Laboratory, Woods Hole, Massachusetts, October 27, 2013
- Visiting Professor, “Cervical Spondylosis and Cervical Spine Deformity with an Emphasis on Communication, Leadership, and Making the Right Decision.” Neuroscience/Neurosurgery Grand Rounds, Stanford University Medical Center, Stanford, California, November 1, 2013.
- Faculty – “Spine Tumor Surgery.” Chicago Review Course in Neurological Surgery, Chicago, Illinois, January 31, 2014
- Faculty – “The Use of Accelerometers to Detect Head Injury in Sports.” Neurosurgery Research Retreat, University of Pittsburgh Medical Center, Department of Neurological Surgery, Pittsburgh, Pennsylvania. Talk given by Vince Miele, MD but talk prepared by Miele V, Bartsch A, Benzel EC:
- Course Co-Director – Seventh Annual International Symposium on Stereotactic Body Radiation Therapy and Stereotactic Radiosurgery, The Naples Beach Hotel & Golf Club, Naples, February 21-23, 2014
- Moderator – “Plenary Session II - Debates.” Fifth Annual International Symposium on Stereotactic Body Radiation Therapy and Stereotactic Radiosurgery, The Naples Beach Hotel & Golf Club, Naples, February 22, 2014
- Debator – “Open Surgery (Dr. Edward Benzel) vs. Radiosurgery for Spine Metastases (Dr. Deborah Benzil).” Fifth Annual International Symposium on Stereotactic Body Radiation Therapy and Stereotactic Radiosurgery, The Naples Beach Hotel & Golf Club, Naples, February 22, 2014
- Faculty – “Transfacet Technology: An Alternative to Pedicle Screw Fixation with Interbody Techniques.” 82nd American Association of Neurological Surgeons Annual Scientific Meeting, San Francisco, California, April 5, 2014
- Faculty – “Invention and Innovation in Neurosurgery.” 82nd American Association of Neurological Surgeons Annual Scientific Meeting, San Francisco, California, April 6, 2014
- Moderator – “Challenging Spinal Cases: Pearls and Pitfalls.” 82nd American Association of Neurological Surgeons Annual Scientific Meeting, San Francisco, California, April 7, 2014
- Scientific Program – “Prediction of successful ETV outcome in childhood hydrocephalus: an Artificial Neural Networks analysis.” Azimi P, Mohammadi H, Benzel EC. 82nd American Association of Neurological Surgeons Annual Scientific Meeting, San Francisco, California, April 7, 2014

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Scientific Program – “Postoperative Cervical Sagittal Imbalance Affects Outcome and Outpatient Costs Following Surgery for Cervical Spondylotic Myelopathy.” Ghogawala Z, Whitmore R, Magge S, Curran J, Bisson E, Krishnaney A, Steinmetz M, Coumans JV, Butler W, Heary R, Benzel EC. 82nd American Association of Neurological Surgeons Annual Scientific Meeting, San Francisco, California, April 8, 2014.
- Scientific Program – “Laminectomy with Fusion is cost-effective versus laminectomy alone for Grade I Degenerative Lumbar Spondylolisthesis with Spinal Stenosis: Cost-Utility Analysis over a 5 year time horizon.” Whitmore RG, Din R, Benzel EC, Wasserberger E, Amin-Hanjani S, Barker F, Harrington JF, Magge S, Coumans JV, Butler W, Schwartz J, Ghogawala Z. 82nd American Association of Neurological Surgeons Annual Scientific Meeting, San Francisco, California, April 8, 2014.
- Scientific Program – “The Rise and Fall of Hyperosmolar Urea to Decrease Brain Edema.” Otvos B, Kshetry V, Benzel EC. 82nd American Association of Neurological Surgeons Annual Scientific Meeting, San Francisco, California, April 9, 2014.
- Keynote Speaker – The Spine Society Australia 25th Annual Scientific Meeting combined with the Scoliosis Research Society Worldwide Course, Brisbane Convention and Exhibition Centre, Brisbane, Australia, April 10-12, 2014
- Presenter – “Single Level Disc Pathology ACDF vs Cervical Arthroplasty,” Symposium Debate. The Spine Society Australia 25th Annual Scientific Meeting combined with the Scoliosis Research Society Worldwide Course, Brisbane Convention and Exhibition Centre, Brisbane, Australia, April 11, 2014
- Keynote Speaker – “CSM Management Dilemmas.” The Spine Society Australia 25th Annual Scientific Meeting combined with the Scoliosis Research Society Worldwide Course, Brisbane Convention and Exhibition Centre, Brisbane, Australia, April 12, 2014
- Keynote Speaker – “Cervical Deformity Management Dilemmas.” The Spine Society Australia 25th Annual Scientific Meeting combined with the Scoliosis Research Society Worldwide Course, Brisbane Convention and Exhibition Centre, Brisbane, Australia, April 12, 2014
- Invited Speaker – “Cleveland Clinic Neurosurgery GME Program Update.” Ohio State Neurosurgical Society Annual Meeting, Cleveland, Ohio, April 26, 2013
- Invited Speaker – “Degenerative Lumbar Spine.” World Spine 6. Hilton Rose Hall Resort, Montego Bay, Jamaica, May 4, 2014
- Moderator – “Biomechanics.” World Spine 6. Hilton Rose Hall Resort, Montego Bay, Jamaica, May 4, 2014
- Invited Speaker – “Biomechanics.” World Spine 6. Hilton Rose Hall Resort, Montego Bay, Jamaica, May 4, 2014
- Moderator – “Tumors.” World Spine 6. Hilton Rose Hall Resort, Montego Bay, Jamaica, May 5, 2014
- Moderator – “Special Pain Symposium.” Hilton Rose Hall Resort, Montego Bay, Jamaica, May 6, 2014
- Invited Speaker – “Pain.” Hilton Rose Hall Resort, Montego Bay, Jamaica, May 6, 2014
- Director, Cleveland Spine Review, Hilton Rose Hall Resort, Montego Bay, Jamaica, May 7-9, 2014
- The Society of Neurological Surgeons 105th Meeting in the 94th Year, Rochester, Minnesota, May 17-20, 2014
- Visiting Professor – “Volume, Value, and Turbochargers: Bridging the Chasm.” Henry Ford Neuroscience Institute, Department of Neurosurgery, Detroit, Michigan, June 12, 2014
- Visiting Professor – “Cervical Spondylotic Myelopathy.” Henry Ford Neuroscience Institute, Department of Neurosurgery, Detroit, Michigan, June 13, 2014
- Visiting Professor – “Cervical Spondylosis: Myelopathy, Deformity, Biomechanics.” University of Utah School of Medicine, Salt Lake City, Utah, June 21, 2014
- Co-Director, Spine Review Hands-On 2014, Lutheran Hospital, Cleveland, Ohio, July 9-15, 2014
- Speaker – “Fundamentals of Biomechanics.” Spine Review Hands-On 2014, Lutheran Hospital, Cleveland, Ohio, July 10, 2014
- Speaker – “Instrumentation and Construct Design.” Spine Review Hands-On 2014, Lutheran Hospital, Cleveland, Ohio, July 11, 2014
- Speaker – “Biomechanics 301 Back Pain, Fusion and Motion Preservation.” Spine Review Hands-On 2014, Lutheran Hospital Cleveland, Ohio, July 11, 2014

INVITED PRESENTATIONS -- NATIONAL AND INTERNATIONAL (continued):

- Faculty – “Volume, Value, & Turbochargers: Bridging the Chasm.” North Carolina Spine Society 2014 Annual Meeting, Grandover Resort, Greensboro, North Carolina, August 8, 2014
- Faculty – “Principles and Biomechanics of the Spine.” North Carolina Spine Society 2014 Annual Meeting, Grandover Resort, Greensboro, North Carolina, August 9, 2014
- Faculty – “Cervical Spondylotic Myelopathy: Myelopathy and Deformity.” North Carolina Spine Society 2014 Annual Meeting, Grandover Resort, Greensboro, North Carolina, August 9, 2014 **AC added Prior entries to APR system 08/2014**
- Visiting Professor – “Motion Preservation Technologies: Biomechanics and Clinical Implications.” University of Southern California, Department of Neurosurgery, Los Angeles, California, September 12, 2014
- Course Director – “Practical Spine Biomechanics for Clinical Practice. Congress of Neurological Surgeons 2014 Annual Meeting, Boston, Massachusetts, October 18, 2014
- Faculty – “The Advanced Practice Provider’s Guide to Integrating Innovation and Conventional Wisdom.” Congress of Neurological Surgeons 2014 Annual Meeting, Boston, Massachusetts, October 19, 2014
- Honored Guest Lecture – “Bridging the Chasm Between Volume and Value Based Care.” Congress of Neurological Surgeons 2014 Annual Meeting, Boston, Massachusetts, October 20, 2014
- Honored Guest Lecture – “Leadership: Knowledge, Wisdom, and Inspiration.” Congress of Neurological Surgeons 2014 Annual Meeting, Boston, Massachusetts, October 20, 2014
- Honored Guest Lecture – “A Question of Balance: Too Much or Too Little.” Congress of Neurological Surgeons 2014 Annual Meeting, Boston, Massachusetts, October 21, 2014
- Sans Challenge Championship Round (Sponsored by Zeiss): Are You Smarter than Edward C. Benzel?

SUBSTANTIAL WEBSITE CONTRIBUTIONS:

Benzel EC: A Review of Controversial Topics. Chiari & Syringomyelia Foundation. www.csfinfo.org. July 2009

NEWS ARTICLES ABOUT DR. BENZEL'S RESEARCH:

1. Clinic aims to head off concussions (written by Chuck Soder).
<http://www.crainscleveland.com/article/20111024/SUB1/310249997>
2. Gridiron Protection (written by Orthopaedic Research & Education Foundation). Impact Magazine, Fall 2012;17:4-7.
3. Developing an Orthopedic Spine & Neurosurgery Partnership That Works: Q&A With Dr. Edward Benzel and Adam Bartsch of Cleveland Clinic (written by Laura Miller). Becker's Spine Review, online October 17, 2013.
4. Residual problems of concussions have helped raise awareness of symptoms, treatment (written by Colleen Owens). Spine Surgery Today, March/April 2014;1(2):1,10-13.

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3. Fundamentals of Neuroimaging. ISBN 0-7216-5163-1. WB Saunders Co. Hart BL, Benzel EC, Ford CC, authors. 1997, pp. 200
4. Omurga Stabilizasyonunun Biyomekanigi: Prensipler ve Klinik Uygulama (Biomechanics of Spine Stabilization: Principles and Clinical Practice – Turkish translation). ISBN 975-94434-0-6. Marmara Universitesi Norolojik Bilimler Vakfi Yayinlari – Yayin No: 6. Benzel EC, author. Translators – Naderi S, Yucesoy K, Ozgen S. 1998, pp. 278
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6. Biomechanics of Spine Stabilization (2nd edition). ISBN 1-879284-82-0. Thieme, New York. Benzel EC, author. 2001, pp. 526
7. Alberstone CD, Benzel EC, Najm IM, Steinmetz MP (eds): In Anatomic Basis of Neurological Diagnosis. Thieme, New York, NY, 2009, pp 580 (23 chapters)
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2. Spinal Instrumentation (American Association of Neurological Surgeons Neurosurgical Topics Series). ISBN 1-879284-14-6. American Association of Neurological Surgeons. Benzel EC, ed. 1994, pp. 288
3. Contemporary Management of Spinal Cord Injury (American Association of Neurological Surgeons Neurosurgical Topics Series). ISBN 1-879284-30-8. American Association of Neurological Surgeons. Benzel EC, ed. 1995, pp. 307
4. Surgical Exposure of the Spine: An Extensile Approach (American Association of Neurological Surgeons Neurosurgical Special Topics Series). ISBN 1-879284-25-1. American Association of Neurological Surgeons. Benzel EC, ed. 1995, pp. 201
5. Principles of Spinal Surgery. McGraw-Hill. Menezes AH, Sonntag VKH, eds. Benzel EC, Cahill DW, McCormick P, Papadopoulos SM, section editors. 1996, pp. 1525
6. Syringomyelia and the Chiari Malformations (American Association of Neurological Surgeons Neurosurgical Topic Series). American Association of Neurological Surgeons. Anson JA, Benzel EC, Awad IA, eds. 1996
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9. The Thoracic Spine. ISBN 0-942219-75-9. Quality Medical Publishing. Benzel EC, Stillerman CB, eds. (654 pp)
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11. Contemporary Management of Spinal Cord Injury: From Impact to Rehabilitation. (American Association of Neurological Surgeons Neurosurgical Topics Series). ISBN 1-879284-72-3. American Association of Neurological Surgeons. Tator CH, Benzel EC. eds. 2000, pp. 367
12. Controversies in Spine Surgery: Surgical Techniques and Medical Management – Volume 2. ISBN 1-57626-143-3. Zdeblick TA, Benzel EC, Anderson PA, Stillerman CB, eds 2002, (324 pp)
13. Schlenk RP, Stewart T, Benzel EC: Topic Editors – Revision Spine Surgery. Neurosurgery Focus 15(3), 2003. (<http://www.neurosurgery.org/focus/sep03/15-3-nsf-toc.html>)
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56. Cervical Laminectomy and Dentate Ligament Section for Cervical Spondylotic Myelopathy. Presented at the 82nd Annual Scientific Assembly of the Southern Medical Association. New Orleans, LA, November 1988. Benzel EC, Kesterson L, Hadden TA
57. The Slit Ventricle Syndrome: Risk Factors and Management Options. Presented at the 82nd Annual Scientific Assembly of the Southern Medical Southern Medical Association. New Orleans, LA, November 1988. Benzel EC, Reeves J, Hadden TA, Kesterson L
58. The Treatment of Hydrocephalus in Preterm Infants with Intraventricular Hemorrhage. Presented at the 82nd Annual Scientific Assembly of the Southern Medical Association. New Orleans, LA, November 1988. Benzel EC, Reeves J, Hadden TA, Kesterson L
59. Conventional and Functional Shuntography for the Evaluation of Suspected Shunt Malfunction. Presented at the 82nd Annual Scientific Assembly of the Southern Medical Association. New Orleans, LA, November 1988. Benzel EC, Kesterson L, Hadden TA, Mirfakhraee M
60. Ventriculo-Pleural Shunting for Adult Hydrocephalus. Presented at the 82nd Annual Scientific Assembly of the Southern Medical Association. New Orleans, LA, November 1988. Megison DP, Benzel EC
61. Neurosurgical Manifestations of Child Abuse. Presented at the 82nd Annual Scientific Assembly of the Southern Medical Association. New Orleans, LA, November 1988. Benzel EC, Hadden TA
62. Histological Changes in the Naloxone Treated Gerbil Stroke Model. Presented as a Poster at the 6th Annual Neurotrauma Symposium. Abstract 28 (J Neurotrauma 6: 67, 1989). Toronto, Canada, November 1988. Wilcoxson E, Benzel, EC
63. The Effect of Dosage and Timing of Administration of Naloxone on Neurologic Outcome in the Rat Ventral Compression Model of Spinal Cord Injury. Presented as a Poster at the 18th Annual Meeting Society for Neuroscience. Toronto, Canada, November 1988. Benzel EC, Lancon J
64. A Comparison of Motion in the Halo and the Thermoplastic Minerva Body Jacket. Presented at the 16th Annual Meeting of the Cervical Spine Research Society. Abstract 16. Key Biscayne, FL, December 1988. Benzel EC
65. A Comparison of Motion in the Halo and Thermoplastic Minerva Body Jacket. Presented at the 5th Annual Meeting Joint Section on Disorders of the Spine and Peripheral Nerves. Cancun, Mexico, February 1988. Benzel EC, Hadden TA, Saulsberry K
66. Jefferson Fracture. Presented as a Poster at The 5th Annual Meeting Joint Section on Disorders of the Spine and Peripheral Nerves. Cancun, Mexico, February 1989. Kesterson L, Benzel EC
67. Posterior Cervical Interspinous Wand Fusion. Presented as a Poster at the 5th Annual Meeting Joint Section on Disorders of the Spine and Peripheral Nerves. Cancun, Mexico, February 1989. Benzel EC, Kesterson L

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69. Cervical Laminectomy and Dentate Ligament Section for Cervical Spondylotic Myelopathy. Presented at the 57th Annual Meeting of the American Association of Neurological Surgeons. Washington, DC, April 1989. Benzel EC, Lancon J, Kesterson L, Hadden TA
70. Posterior Cervical Interspinous Compression Wiring and Fusion. Presented at the 57th Annual Meeting of the American Association of Neurological Surgeons. Washington, DC, April 1989. Benzel EC, Kesterson L
71. A Comparison of Motion in the Halo and Thermoplastic Minerva Body Jacket. Presented at the 57th Annual Meeting of the American Association of Neurological Surgeons. Washington, DC, April 1989. Benzel EC, Hadden TA, Saulsberry K
72. Jefferson Fracture. Presented at the 57th Annual Meeting of the American Association of Neurological Surgeons. Washington, DC, April 1989. Kesterson L, Benzel EC
73. Thermoplastic Minerva Body Jacket. Presented at the 57th Annual Meeting of the American Association of Neurological Surgeons. Washington, DC, April 1989. Benzel EC, Larson SJ
74. Functional Shuntography. Presented at the 57th Annual Meeting of the American Association of Neurological Surgeons. Washington, DC, April 1989. Benzel EC, Mirfakharee M, Hadden TA
75. A Comparison of the Minerva and Halo Jackets for Stabilization of the Cervical Spine. Current Surgery. 1989. Benzel EC, Hadden TA, Saulsberry CM
76. The Apnea Test for the Determination of Brain Death. Current Surgery. 1989. Benzel EC, Gross CD, Hadden TA, Kesterson L, Landreneau MD
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78. Apnea Testing for Brain Death Determination in Neurosurgical Patients. Presented as a Poster (#80) at the 39th Annual Meeting of the Congress of Neurological Surgeons. Atlanta, GA, October 1989. Gross CD, Benzel EC, Hadden TA, Kesterson L, Landreneau MD
79. Apnea Testing for Brain Death Determination in Neurosurgical Patients. Presented at the 83rd Annual Meeting of the Southern Medical Association. Washington DC, November 1989. Benzel EC, Hadden TA, Kesterson L, Landreneau MD
80. Morbidity and Mortality Associated with Rapid Control of Systemic Hypertension in Patients with Intracranial Hemorrhages. Presented at the 83rd Annual Meeting of the Southern Medical Association. Washington DC, November 1989. Brown MF, Benzel EC
81. Single Burr Hole Drainage of Non-Acute Subdural Hematomas. Presented at the 83rd Annual Meeting of the Southern Medical Association. Washington DC, November 1989. Bridges M, Benzel EC

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82. Posterior Cervical Interspinous Compression Wiring and Fusion for Mid to Low Cervical Spinal Injuries. Presented at the 83rd Annual Meeting of the Southern Medical Association. Washington DC, November 1989. Benzel EC, Kesterson L
83. A Comparison of Motion in the Halo and the Thermoplastic Minerva Body Jacket. Presented at the 83rd Annual Meeting of the Southern Medical Association. Washington DC, November 1989. Benzel EC, Hadden TA, Saulsbery CM
84. The Three-Quarter Prone Position and the Lateral Extracavitary Surgical Approach to the Thoracic and Lumbar Spine. Presented at the 83rd Annual Meeting of the Meeting of the Southern Medical Association. Washington DC, November 1989. Benzel EC
85. Tracheotomy or Prolonged Intubation in the Neurosurgery Patient. Presented at the 83rd Annual Meeting of the Southern Medical Association. Washington DC, November 1989. Webb S, Benzel EC
86. The Lack of Efficacy of a 21 - Aminosteroid in the Rat Ventral SCI Model. Presented as a Poster (EE-4, session:56.10; title: trauma 1) at the Society for Neuroscience Annual Meeting. Phoenix, AZ, October 1989. Wilcoxson E, Benzel EC, Woods T, Fowler M, Lancon J, Kesterson L, Hadden TA
87. The Apnea Test for the Determination of Brain Death. Abstract in Stroke 20:1762, 1989. Benzel EC, Gross CD, Hadden TA, Kesterson L, Landreneau MD
88. The Surgical Treatment of Thoracic and Lumbar Spine Trauma. Presented at the 16th Annual Lende Conference. Snowbird UT, February 1990. Benzel EC
89. The Use of Spinal Angiography in the Preoperative Evaluation for the Lateral Extracavitary Approach to the Thoracic and Lumbar Spine. Presented as a Poster (#23) at the 6th Annual Meeting of the Joint Section on Disorders of the Spine and Peripheral Nerves. Captiva Island, February 1990. Kesterson L, Rael J, Benzel EC, Orrison W, Mirfakhraee M
90. Texas Scottish Rite Hospital Rod Instrumentation for the Treatment of Thoracic and Lumbar Spine Trauma. Presented as a Poster (#26) at the 6th Annual Meeting of the Joint Section on Disorders of the Spine and Peripheral Nerves. Captiva Island, February 1990. Benzel EC, Kesterson L
91. The Minerva Body Jacket: Fabrication Techniques and Clinical Applications. Presented as a Poster (#25) at the 6th Annual Meeting of the Joint Section on Disorders of the Spine and Peripheral Nerves. Captiva Island, February 1990. Benzel EC, Kerk J, Hadden TA, Kesterson L
92. Fascia Lata for Dura Mater Grafting. Presented as a Poster (P-63) at the American Association of Neurological Surgeons Annual Meeting. Nashville, TN, April 1990. Benzel EC, Thammavaram KV, Kesterson L, Willis BK
93. The Three-Quarter Prone Position and the Lateral Extracavitary Surgical Approach to the Thoracic and Lumbar Spine. Presented as a Poster (E-359) at the American Association of Neurological Surgeons annual meeting. Nashville, TN, April 1990. Benzel EC

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95. The Histological Comparison of Canine Fascia Lata, Gortex, Human Fascia Lata and Canine Vein for Vascular Patch Graft Material in the Canine Arteriotomy Model. Presented as a Poster (E-373) at the American Association of Neurological Surgeons Annual Meeting. Nashville, TN, April 1990. McMillan R, Benzel EC, Kesterson L, Landreneau M
96. MRI and Acute Spine Trauma. Presented as a Ooster (E-368) at the American Association of Neurological Surgeons Annual Meeting. Nashville, TN, April 1990. Benzel EC, Kesterson L, Marchand E, Willis BK, Orrison W
97. Cranial Emergency Room Ultra Low-Field MRI. Presented as a Poster (E-372) at the American Association of Neurological Surgeons Annual Meeting. Nashville, TN, April 1990. Kesterson L, Benzel EC, Marchand E, Willis BK, Orrison W
98. Obligatory Negative Nitrogen Balance Following Spinal Cord Injury. Presented as a Poster (E-360) at the American Association of Neurological Surgeons Annual Meeting. Nashville, TN, April 1990. Clevenger FW, Rodriguez DJ, Fry DE, Benzel EC, Kesterson L, Marchand E, Willis BK
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101. Magnetic Resonance Imaging in Acute Cranial and Cervical Spine Trauma. Presented at the Southern Neurosurgical Society Annual Meeting. (Neurosurgery 26:1073, 1990) Key West, FL, March 1990. Kesterson L, Benzel EC, Marchand E, Willis BK, Orrison WW
102. The Effect of the Dosage and Timing of Administration of Naloxone in the Ventral Rat Spinal Cord Injury Model. Presented at the Southern Neurosurgical Society Annual Meeting. (Neurosurgery 26:1078, 1990) Key West, FL, March 1990. Benzel EC, Lancon J, Fowler M, Kesterson L
103. Obligatory Negative Nitrogen Balance Following Spinal Cord Injury. Presented at the Southern Neurosurgical Society Annual Meeting. (Neurosurgery 26:1079, 1990) Key West, FL, March 1990. Clevenger FW, Rodriguez DJ, Fry DE, Benzel EC, Kesterson L, Marchand E, Willis BK
104. MRI and Acute Spine Trauma. Presented at the American Paraplegia Society Annual Meeting. Las Vegas, NV, September 1990. Kesterson L, Benzel EC, Marchand E, Willis BK, Orrison WW
105. Obligatory Negative Nitrogen Balance Following Spinal Cord Injury. Presented at the American Paraplegia Society Annual Meeting. Las Vegas, NV, September 1990. Clevenger F, Rodriguez DJ, Fry D, Benzel EC, Kesterson L, Marchand EP, Willis BK

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107. The Effect of the Dosage and the Timing of Administration of Naloxone on the Outcome in Rat Ventral Compression Model of Spinal Cord Injury. Presented as a Poster (# 6) at the American Paraplegia Society Annual Meeting. Las Vegas, NV, September 1990. Benzel EC, Lancon J, Fowler M, Kesterson L
108. Minerva Body Jacket: Fabrication Techniques and Clinical Applications. Presented as a Poster (#7) at the American Paraplegia Society Annual Meeting. Las Vegas, NV, September 1990. Benzel EC, Hadden T, Kesterson L
109. The Histologic Comparison of Canine Fascia Lata, Gortex, Human Fascia Lata, and Canine Vein for Vascular Patch Graft Material in the Canine. Presented as a Poster (#54) at the Congress of Neurological Surgeons Annual Meeting. Los Angeles, CA, October 1990. McMillan R, Benzel EC, Kesterson L, Landreneau M
110. Correlation of Magnetoencephalography with 3-D Acquisition and Display MRI. Presented at the Congress of Neurological Surgeons Annual Meeting. Los Angeles, CA, October 1990. Orrison WW, Benzel EC, Davis L, George J
111. Determination of DNA Ploidy and S-Phase Fraction Using Archival Paraffin Acoustic Neuroma: A Brief Report. Presented at the Western Section of the Triologic Society Annual Meeting. Santa Barbara, CA, January 1991. Kesterson L, Shelton C, Dressler L, Seamer L, Berliner K, Benzel EC
112. The Dose Dependent Effects of Naloxone and Methylprednisolone in the Ventral Compression Model of Spinal Cord Injury. Presented at the Cervical Spine Research Society Annual Meeting. San Antonio, TX, December 1990. Benzel EC, Hoffpauir G, Thomas MM, Beal J, Lancon JA, Kesterson L
113. Texas Scottish Rite Hospital Spine Instrumentation for the Treatment of Thoracic and Lumbar Spine Trauma. Presented at the Joint Section on Disorders of the Spine Annual Meeting. February 1991. Benzel EC, Kesterson L, Marchand E
114. The Dose Dependent Effects of Naloxone and Methylprednisolone in the Ventral Compression Model of Spinal Cord Injury. Presented as a Poster at the Joint Section on Disorders of the Spine Annual Meeting. February 1991. Benzel EC, Hoffpauir G, Thomas MM, Beal J, Lancon JA, Kesterson L
115. A New Rat Spinal Cord Injury Model: A Ventral Compression Technique. Presented as a Poster at the Joint Section on Disorders of the Spine Annual Meeting. February 1991. Benzel EC, Lancon JA, Thomas MM, Kesterson L
116. TSRH Rod Instrumentation for Thoracic and Lumbar Spine Trauma. Presented at the 17th Annual Richard Lende Neurosurgical Winter Conference. February 1991. Benzel EC, Kesterson L, Marchand E
117. Flow Cytometric DNA Ploidy and S-Phase Fraction Analysis of Archival Paraffin Block Acoustic Neuromas. Presented as a Poster at the North American Skull Base Society Second Annual Meeting. March 1991. Kesterson L, Shelton C, Dressler L, Seamer L, Berliner K, Benzel EC

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119. The Effects of Naloxone and Nalmefene in Rat Spinal Cord Injury Induced by the Ventral Compression Technique. Presented as a Poster at the American Association of Neurological Surgeons 59th Annual Meeting (poster # 1250). New Orleans, LA, April 1991. Benzel EC, Khare V, Fowler M
120. The Incidence of Vertebral Artery Injury Following Mid-Cervical Spine Subluxation and Foramen Transversarium Fractures. Presented as a Poster at the American Association of Neurological Surgeons 59th Annual Meeting (poster # 1276). New Orleans, LA, April 1991. Willis BK, Benzel EC, Kesterson L, Marchand EP
121. Vertebral Artery Injury Associated with Cervical Spine Fractures. Presented at the ASNR. June 1991. Greiner FG, Orrison WW, King JN, Willis BK, Kesterson L, Benzel EC
122. Transverse Ligament Rupture without Neurologic Manifestation: MR and CT Appearance. Presented at the ASNR. June 1991. Garcia EM, Hart BL, Benzel EC, Orrison WW
123. Atlanto-Occipital Dislocation: Case Report of a Long Term Survivor. Presented at the ASNR. June 1991. Greiner FG, Orrison WW, Benzel EC, Stewart M
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125. Preoperative Functional Brain Mapping. Radiology 181, 1991. Orrison WW, Hardy T, Sanders JA, Benzel EC, Marchand EP Brynildson L
126. Pre-Operative Functional Brain Mapping with MEG and MR Imaging. Presented at RSNA '91. Chicago, IL, December, 1991. Orrison WW, Hardy T, Sanders J, Benzel EC, Marchand E, Brynildson L
127. The Metabolic Response to Spinal Cord Injury. Presented as a Poster at the Neurotrauma Society Annual Meeting. New Orleans, LA, October, 1991. Benzel EC, Rodriguez DJ, Clevenger F
128. Canine Vein for Vascular Patch Graft. Presented as a Poster at the Congress of Neurological Surgeons Annual Meeting (poster 115). Orlando, FL, October 1991. Benzel EC, McMillan R, Fowler M, Kesterson L
129. The Thermoplastic Minerva Jacket. Presented as a Poster at the Congress of Neurological Surgeons Annual Meeting (poster 65). Orlando, FL, October 1991. Benzel EC
130. Correlation of Magnetoencephalography with 3-D Acquisition and Display MRI. Presented at the Congress of Neurological Surgeons Annual Meeting (paper 365). Orlando, FL, October 1991. Orrison WW, Benzel EC, Davis L, George J

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131. MRI, CT and Plain Film Comparison in Acute Cervical Spine Trauma. Presented at the Congress of Neurological Surgeons Annual Meeting (poster 26). Orlando, FL, October 1991. Benzel EC, Kesterson L, Willis BK, Orrison WW, Espinosa MC
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133. The Metabolic Response to Spinal Cord Injury. Presented at the Neurotrauma Society Annual Meeting (poster 3). New Orleans, LA, November 1991 (abstract also published in J Neurotrauma 9:56,1992), Benzel EC, Rodriguez DJ, Clevenger FW
134. The Metabolic Response to Spinal Cord Injury. Presented at the Cervical Spine Research Society Annual Meeting (paper 42). Philadelphia, PA, December 1991, Benzel EC, Rodriguez DJ, Clevenger F
135. Vertebral Artery Injury Following Mid-Cervical Spine Subluxation and Foramen Transversarium Fractures. Presented at the Cervical Spine Research Society Annual Meeting (paper 50). Philadelphia, PA, December 1991, Benzel EC, Willis BK, Orrison WW
136. Contoured Rod Multisegmental Distraction Fixation for the Treatment of Low Lumbar Burst Fractures. Presented at the Joint Section on Disorders of the Spine and Peripheral Nerves Annual Meeting (poster 2). Miami, FL, February, 1991. Ball PA, Benzel EC
137. The Metabolic Response to Spinal Cord Injury. Presented at the Joint Section on Disorders of the Spine and Peripheral Nerves Annual Meeting (poster 4). Miami, FL, February, 1991. Benzel EC, Rodriguez DJ, Clevenger FW
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141. The Single Burr Hole Technique for Evacuation of Nonacute Subdural Hematomas. Presented at the American Association of Neurological Surgeons Annual Meeting (poster 1284). San Francisco, CA, April 1992. Benzel EC, Bridges M, Hadden TA
142. The Role of Early Tracheotomy in the Management of the Neurosurgical Patient. Presented at the American Association of Neurological Surgeons Annual Meeting (poster 1274). San Francisco, CA, April 1992. Boyd SW, Benzel EC

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144. Lumboperitoneal Shunting for Syringomyelia. Presented at the Rocky Mountain Neurosurgical Society Annual Meeting. Sedona, AZ, June 1992. Ball PA, Benzel EC, Willis BK
145. The Effects of Nalmefene on Neurobehavioral and Anatomical Outcome after Sensorimotor Cortex Contusion in the Rat. Presented at the Society for Neuroscience Annual Meeting. New Orleans, LA, October 1992. Sutton RL, Benzel EC, Feeney DM
146. Stereotactic Pre-Operative Functional Brain Mapping by Magnetic Source Imaging. Presented at the Congress of Neurological Surgeons Annual Meeting (poster B48). Washington DC, November 1992. Orrison WW, Hardy TL, Sanders JA, Benzel EC, Marchand EP, Bryndilson L
147. The Definition of Soft Tissue Injury Associated with Acute Cervical Spine Trauma by MRI. Presented at the Cervical Spine Research Society Annual Meeting (Paper 6). Palm Springs, CA, December 1992. Benzel EC, Hart BL, Ball PA, Orrison WW, Espinosa M
148. Lateral Displacement of the Dens. Presented at the Cervical Spine Research Society Annual Meeting (Poster 11). Palm Springs, CA, December 1992. Ball PA, Hart BL, Rupp FW, Benzel EC, Orrison WW
149. The Definition of Soft Tissue Injury Associated with Acute Cervical Spine Trauma by MRI. Presented at the Joint Section on Disorders of the Spine Annual Meeting (Paper 28). Tucson, AZ, February 1993. Benzel EC, Hart BA, Ball PA, Baldwin NG, Orrison WW
150. A Biomechanically Improved Method of Sacral Fixation Utilizing Iliac Instrumentation and a New Variable Angle Screw Device. Presented at the Joint Section on Disorders of the Spine Annual Meeting (Paper 49). Tucson, AZ, February 1993. Baldwin NG, Benzel EC
151. Selective L1 Dorsal Rhizotomy for Ilioinguinal Neuralgia. Presented at the Joint Section on Disorders of the Spine Annual Meeting (Poster 24; session 1). Tucson, AZ, February 1993. Ball PA, Benzel EC, Orrison WW
152. The Sequential Hook Insertion (SHI) Technique for Universal Spinal Instrumentation Application. Presented at the Joint Section on Disorders of the Spine Annual Meeting (Poster 30; session 1). Tucson, AZ, February 1993. Benzel EC, Ball PA, Baldwin NG, Marchand EP
153. The Spectrum of C2 Body Fractures. Presented at the Joint Section on Disorders of the Spine Annual Meeting (Poster 2; session 2). Tucson, AZ, February 1993. Benzel EC, Ball PA, Hart BL, Baldwin NG, Orrison WW
154. Lateral Displacement of the Dens. Presented at the Joint Section on Disorders of the Spine Annual Meeting (Poster 11; session 2). Tucson, AZ, February 1993. Ball PA, Hart BL, Rupp FW, Benzel EC, Orrison WW
155. The Spectrum of C2 Body Fractures. Presented at the Rachidian Society Meeting (First Annual). Kona, HI, March 1993. Benzel EC

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156. Short Segment Fixation for Thoracic and Lumbar Spine Trauma. Presented at the Rachidian Society Meeting (First Annual). Kona, HI, March 1993. Benzel EC
157. The Definition by MRI of Soft-Tissue Injury Associated with Acute Cervical Spine Trauma. Presented at American Association of Neurological Surgeons Annual Meeting (paper 751). Boston, MA, April 1993. Benzel EC, Hart BL, Ball PA, Orrison WH, Espinosa M
158. Clinical Applications of Magnetic Source Imaging. Presented at American Association of Neurological Surgeons Annual Meeting (poster 1206). Boston, MA, April 1993. Orrison WW, Baldwin NG, Lewine D, Marchand EP, Benzel EC
159. Conservative Management of Large Epidural Hematomas. Presented at American Association of Neurological Surgeons Annual Meeting (poster 1233). Boston, MA, April 1993. Lerner BR, Ball PA, Marchand EP, Maher D, Benzel EC
160. The Effects of Nalmefene on Neurobehavioral and Anatomical Outcome after Sensorimotor Cortex Contusion in the Rat. Presented at American Association of Neurological Surgeons Annual Meeting (poster 1259). Boston, MA, April 1993. Benzel EC, Sutton RL, Feeney DM
161. C2 Body Fractures. Presented at American Association of Neurological Surgeons Annual Meeting (poster 1282). Boston, MA, April 1993. Benzel EC, Ball PA, Hart BL, Orrison WW
162. Clinical Applications of Magnetic Source Imaging. Presented at American Society of Neuroradiology Annual Meeting. Vancouver, May 1993. Orrison WW, Lewine JD, Sanders JA, Hart BL, Wood CC
163. Cerebrospinal Fluid Fistula Secondary to Basilar Skull Fracture. Presented at American Association of Neurological Surgeons Annual Meeting (poster 1234). Boston, MA, April 1993. Benzel EC, Loeffler P, Maher D, Hadden TA
164. The Definition of Soft Tissue Injury Associated with Acute Cervical Spine Trauma by MRI. Presented at the American Paraplegia Society 39th Annual Conference (paper # 40). Las Vegas, NV, September, 1993. Benzel EC, Ball PA, Hart BL, Baldwin NG, Orrison WW, Espinosa M
165. C2 Body Fractures. Presented at the American Paraplegia Society 39th Annual Conference (paper #42). Las Vegas, NV, September, 1993. Benzel EC, Hart BL, Ball PA, Baldwin NG, Orrison WW, Espinosa M
166. The Sequential Hook Insertion Technique for Universal Spinal Instrumentation Application. Presented at the Congress of Neurological Surgeons Annual Meeting (poster 715). Vancouver, October, 1993. Baldwin NG, Benzel EC, Ball PA, Hart BL, Orrison WO, Espinosa M
167. The Definition of Soft Tissue Injury Associated with Acute Cervical Spine Trauma by MRI. Presented at the Congress of Neurological Surgeons Annual Meeting (poster 721). Vancouver, October, 1993. Benzel EC, Ball PA, Hart BL, Baldwin NG, Orrison WO, Espinosa M
168. Clinical Applications of Magnetic Source Imaging. Presented at the Congress of Neurological Surgeons Annual Meeting (poster 818). Vancouver, October, 1993. Orrison WW, Baldwin NG, Lewine JD, Marchand EP, Benzel EC

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169. Radiographic Spectrum of C2 Fractures: Imaging Appearance and Mechanisms of Injury. Presented at Radiological Society of North America Annual Meeting. Chicago, IL, November, 1993. Hart BL, Benzel EC, Orrison WW, Baldwin NG, Espinosa MC
170. Vertical C2 Body Fractures. Presented at the Cervical Spine Research Society Annual Meeting (Poster). New York, NY, December, 1993. Benzel EC, Hart BL, Ball PA, Baldwin NG, Orrison WW, Espinosa M
171. Vertical C2 Body Fractures. Presented at the 10th Annual Meeting of the Joint Section on Disorders of the Spine and Peripheral Nerves AANS/CNS. Ft. Lauderdale, FL, February 1994. Benzel EC, Hart BL, Ball PA, Baldwin NG, Orrison WW, Espinosa M
172. Crossed-Screw Fixation of the Unstable Thoracic and Lumbar Spine. Presented at the 10th Annual Meeting of the Joint Section on Disorders of the Spine and Peripheral Nerves AANS/CNS. Ft. Lauderdale, FL, February 1994. Benzel EC, Baldwin NG
173. Rigidity Enhancement in Occipito-Axial Fusion Using Transarticular C1-2 Screws. Presented at the 10th Annual Meeting of the Joint Section on Disorders of the Spine and Peripheral Nerves AANS/CNS. Ft. Lauderdale, FL, February 1994. Baldwin NG, Anson J, Benzel EC
174. Traumatic Cervical Disc Herniation. Presented at the 10th Annual Meeting of the Joint Section on Disorders of the Spine and Peripheral Nerves AANS/CNS. Ft. Lauderdale, FL, February 1994. Benzel EC, Hart BL, Baldwin NG, Anson J, Orrison WW, Espinosa M
175. Sacral Fixation Using Iliac Instrumentation and a Variable Angle Screw Device. Presented at the 2nd Annual Meeting of the Rachidian Society. Kona, HI, March 1994. Baldwin NG, Benzel EC
176. A Comparison of Fluoroscopy and CT-Derived Holography for Guidance of Lumbar Pedicle Screw Insertion. Presented at the 2nd Annual Meeting of the Rachidian Society. Kona, HI, March 1994. Benzel EC, Rupp FW, McCormack BM, Baldwin NG, Anson JA
177. Traumatic Cervical Disc Herniation. Presented at the 62nd Annual Meeting of the American Association of Neurological Surgeons (poster 1362). San Diego, CA, April 1994. Benzel EC, Hart BL, Baldwin NG, Anson JA, Orrison WW, Espinosa M
178. Vertical C2 Body Fractures. Presented at the 62nd Annual Meeting of the American Association of Neurological Surgeons (poster 1368). San Diego, CA, April 1994. Benzel EC, Hart BL, Ball PA, Baldwin NG, Orrison WW, Espinosa M
179. Holography of Complex Spinal Fractures. Proceedings of the 32nd Annual Meeting of the American Society of Neuroradiology. Nashville, TN, May 1994. Rupp FW, Benzel EC, Hart BL, Sanders JA, Orrison WW
180. Posttraumatic Syndromes Evaluated by Magnetic Source Imaging. Proceedings of the 32nd Annual Meeting of the American Society of Neuroradiology. Nashville, TN, May 1994. Orrison WW, Hart BL, Lewine JD, Spar J, Sanders JA, Benzel EC, Rael JR

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181. A Comparison of Fluoroscopy and CT-Derived Holography for the Guidance of Lumbar Pedicle Screw Insertion. Presented at Congress of Neurological Surgeons Annual Meeting (Open Scientific Session; Joint Section on Spine). Chicago, IL, October 1994. Benzel EC, Rupp FW, McCormack BM, Baldwin NG, Anson JA
182. Crossed-Screw Fixation of the Unstable Thoracolumbar Spine. Presented at the Congress of Neurological Surgeons Annual Meeting (poster 89). Chicago, IL, October 1994. Benzel EC, Baldwin NG
183. Rigidity Enhancement in Occipitoaxial Fusion using Transarticular C1-2 Screws. Presented at the Congress of Neurological Surgeons Annual Meeting (poster 108). Chicago, IL, October 1994. Baldwin NG, Anson JA, Benzel EC
184. Anatomy of the Thoracic Pedicle. Presented at the Congress of Neurological Surgeons Annual Meeting (poster 112). Chicago, IL, October 1994. McCormack BM, Benzel EC, Adams MS, Baldwin NG, Rupp FW
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195. An Anatomic Study of Peripheral Nerve Entrapment Sites of the Lower Extremity. Presented at the Annual Meeting of the Joint Section on Disorders of the Spine and Peripheral Nerves (poster 25B). Phoenix, AZ, February 1995. Castillo MA, Benzel EC, Baldwin NG
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201. MRI Patterns of Soft Tissue Injury Accompanying Major Cervical Spine Fractures. Presented at the 30th Annual Rocky Mountain Neurosurgical Society Meeting. Sun Valley, June 1995. Hart BL, Adams MS, Gledhill KM, Benzel EC, Orrison WW
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203. A Comprehensive Back Pain Management Program. Presented at the 30th Annual Rocky Mountain Neurosurgical Society Meeting. Sun Valley, June 1995. Benzel EC
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208. Evaluation of Occipital Condyle Fractures in Patients with Craniocervical Trauma (poster 156). Presented at the 45th Annual Meeting of the Congress of Neurological Surgeons. San Francisco, CA, October 1995. Adams MS, Rael JR, Rupp FW, Hart BL, Benzel EC
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212. MRI Patterns of Soft Tissue Injury Accompanying Major Cervical Spine Fractures (poster 35). Presented at the 23rd Annual Meeting of the Cervical Spine Research Society. Santa Fe, NM, November/December 1995. Adams MS, Hart BL, Gledhill KM, Benzel EC, Orrison WW
213. Evaluation of Occipital Condyle Fractures in Patients with Craniocervical Trauma (abstract 1A; read by title). Presented at the 23rd Annual Meeting of the Cervical Spine Research Society. Santa Fe, NM, November/December 1995. Adams MS, Rael JR, Rupp FW, Hart BL, Benzel EC
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225. Slit Ventricle Syndrome in Children: Clinical Presentation and Treatment. Presented in Abstract Form in Annual Review of Hydrocephalus and Spina Bifida (Volume II), 1995. Benzel EC
226. Anatomical Considerations for Sacral (S1) Screw Placement: New Safe Zone for S1 Medial Screw Placement. Presented at the 10th Annual Meeting of the Korean Spinal Neurosurgery Research Society. Seoul, Korea, September 1996. Doh JW, Benzel EC
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234. Controlled Intervertebral Settling in Multiple Level Ventral Cervical Fusion Procedures with a Dynamic Stabilization Implant (poster 42): Joint Section on Disorders of the Spine and Peripheral Nerves Annual Meeting. Rancho Mirage, CA, February 1998. Adams MA, Benzel EC, Yuan HA, Weidner A, Johnston RA, Paneiro Pinto AJ, Huhlenkel KR, Geisler FH, Harkey HL, Ryken TC
235. Holographic Display of Helical 3D-CT in Patients Status Post Spinal Hardware Eliminates Display Artifacts (poster 53). Joint Section on Disorders of the Spine and Peripheral Nerves Annual Meeting. Rancho Mirage, CA, February 1998. Olan WJ, Schulz RA, Ridel CJ, Levine Z, Sekhar LN, Benzel EC
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241. Controlled Settling Following Multiple Level Ventral Cervical Fusion Procedures with a Dynamic Stabilization Implant. Congress of Neurological Surgeons Annual Meeting (oral poster 104). Seattle, WA, October 1998. Benzel EC, Yuan HA, Weidner A, Johnston RA, Paneiro Pinto AJ, Kuhlengel KR, Geisler FH, Harkey HL, Ryken TC
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247. The Effect of Cervical Spine Posture on Axial Load Bearing Ability: A Biomechanical Study. Presented at the Congress of Neurological Surgeons Annual Meeting (oral poster 141). Boston, MA, November 1999. Ferrara L, Oktenoglu T, Andalkar N, Ozer A, Sarioglu A, Benzel E
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250. The Use of Trained Shape Memory Alloy Fixtures in Spinal Instrumentation for the Correction of Spinal Deformities. Presented at the Congress of Neurological Surgeons Annual Meeting (poster 368). Boston, MA, November 1999. Ferrara L, Jaeger M, Keshavarzi A, Shahinpoor M, Benzel E

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260. The Biomechanics of Transfacet Screw Fixation in the Lumbar Spine. International Meeting on Advanced Spine Techniques (Poster). Paradise Island, Bahamas, July 2001. Ferrara LA, Paskiet JL, Wakefield A, Inceoglu S, Richmond BJ, Benzel EC.
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262. The Biomechanics of Transfacet Screw Fixation In The Lumbar Spine. World Federation of Neurological Societies 12th World Conference of Neurosurgeons (Poster). Sydney, Australia, September 2001. Ferrara LA, Paskiet JL, Wakefield A, Inceoglu S, Richmond BJ, Benzel EC

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278. Understanding Barriers to Neurological Randomized Clinical Trials: Community Equipoise, Individual Surgeon Equipoise, and Willingness to Randomize for a Complex Surgical Decision (oral paper.) Presented at the Congress of Neurological Surgeons 55th Annual Meeting. Boston, Massachusetts, October 10, 2005. Barker FG, Coumans JV, Benzel EC, Stabile L, Ghogawala Z
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288. Predicting Postoperative C5 Nerve Palsy: The Terrible Triad. Paper Abstract, Thirty-Sixth Annual Meeting of the Cervical Spine Research Society, Austin, Texas, December 4-6, 2008. Mroz TE, Steinmetz MP, Lieberman IH, Benzel EC, Wang JC
289. Reliability of Digital Cervical Alignment Measurements in Patients with Cervical Myelopathy. Oral Abstract, 77th Annual Meeting of the American Association of Neurological Surgeons, San Diego, California, May 6, 2009. Steinmetz MP, Iannotti C, Gwinn D, Benzel EC
290. Lumbar Spinal Fusion Reduces Risk of Re-Operation after Laminectomy for Lumbar Spinal Stenosis Associated with Grade I Degenerative Spondylolisthesis: Initial Results From the SLIP Trial. Congress of Neurological Surgeons Annual Meeting, San Francisco, California, October 16-21, 2010. Ghogawala Z, Benzel EC, Magge SN, Couman JV, Harrington JF, Barker FG
291. Surgical approaches to the thoracic spine; identifying the optimal exposure location. Cleveland Clinic Neurological Institute Research Day, Cleveland, Ohio, November 2011. Lubelski D, Abdullah KG, Shin JH, Mroz TE, Alvin MD, Benzel EC, Steinmetz MP
292. Complications Following Use of rhBMP-2 in Anterior Lumbar Interbody Fusion: An Institutional Cohort Controlled Study. 28th Annual Meeting of the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves. Orlando, Florida, March 7-10, 2012. Lubelski D, Abdullah KG, Alvin MD, Steinmetz MP, Benzel EC, Mroz T
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293. Radiographic Predictors of Early Failure Following Decompression Without Fusion for Degenerative Grade I Lumbar Spondylolisthesis. 28th Annual Meeting of the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves. Orlando, Florida, March 7-10, 2012. Blumenthal C, Curran J, Benzel EC, Magge SN, Harrington JF, Coumans JV, Ghogawala Z
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