

OrthoCarolina Spine Fellowship Overview

February 24, 2017

OrthoCarolina Spine Center

- 20,000 square foot free standing facility dedicated to evaluation and treatment of spine conditions
 - Clinical offices
 - MRI units
 - Arthrograms
 - Spinal Injections



Fellowship and Teaching



Fellowships and Teaching

- The OrthoCarolina Spine Center, since 1992, runs the most comprehensive Spine fellowship program in the region.
- Spine Center staff teach residents and fellows at:
 - Carolinas Medical Center
 - Charlotte Institute of Rehabilitation
 - CMC-Mercy
 - Charlotte Orthopedic Hospital
 - Lake Norman Regional Medical Center
- Adjunct faculty of Engineering at UNC – Charlotte.
- AO North America Spine accredited fellowship
- Not ACGME accredited

OrthoCarolina Spine Surgery Fellowship Faculty



- Bruce Darden
 - Davidson
 - UNC Chapel Hill
 - CMC
 - Baylor
 - Alex Brodsky
 - Jesse Dickson
 - Wendell Erwin

OrthoCarolina Spine Surgery Fellowship Faculty



- Eric Laxer
 - Vanier
 - McGill
 - McGill
 - Max Aebi,
 - SUNY Buffalo
 - Ed Simmons

OrthoCarolina Spine Surgery Fellowship Faculty



- Alden Milam
 - Furman
 - Vanderbilt
 - UPenn
 - Case Western Reserve
 - Henry Bohlman

OrthoCarolina Spine Surgery Fellowship Faculty



- Al Rhyne
 - Davidson
 - UNC Chapel Hill
 - Wake Forest
 - U of Maryland
 - Charles Edwards and Alan Levine

OrthoCarolina Spine Surgery Fellowship Faculty



- Brad Segebarth
 - Kentucky
 - Kentucky
 - Vanderbilt
 - OrthoCarolina
 - Bruce Darden

OrthoCarolina Spine Surgery Fellowship Faculty



- Leo Spector
 - Colgate
 - Umass
 - Umass
 - OrthoCarolina
 - Bruce Darden

OrthoCarolina Spine Surgery Fellowship Faculty



- Todd “Matt” Chapman
 - Davidson
 - Georgetown
 - Wake Forest
 - Duke University
 - Washington University
 - Dr Riew, Lenke

OrthoCarolina Spine Surgery Fellowship Adjunct Faculty

- David Anderson, MD
 - Fellowship – Dr Thomas Mroz, Cleveland Clinic, Cleveland, OH
- Stefan Renaud, DO
 - Fellowship - Seattle Minimally Invasive Spine Center/Swedish Medical Center, Seattle, Washington



OrthoCarolina Spine Surgery

Fellowship Adjunct Faculty – **Physiatrists**



- James Alexander, MD
 - Spine Center
 - Pineville
- Kinjal Parikh, DO
 - Spine Center



- Ron VanDerNoord, MD
 - Spine Center
 - Matthews
- Alicia Lazeski, MD
 - Spine Center
 - Ballantyne



OrthoCarolina Spine Surgery Fellowship Faculty

- **Specialty Societies represented:**
 - American Orthopaedic Association (AOA)
 - Scoliosis Research Society (SRS)
 - Cervical Spine Research Society (CSRS)
 - **Past President**
 - Lumbar Spine Research Society (LSRS)
 - **Secretary**
 - North American Spine Society (NASS)
 - Orthopaedic Trauma Association (OTA)
 - Spine Society of Europe
 - International Society for the Advancement of Spine Surgery (ISASS)
 - Neurophysiological Monitoring Society

OrthoCarolina Spine Surgery Fellowship Facilities

Charlotte Orthopedic Hospital

- 160 inpatient beds
- 12 operating suites
- 8,000 cases yearly



OrthoCarolina Spine Surgery Fellowship Facilities

CMC- Mercy Hospital

- 185 Bed Hospital
- Full operative spine capabilities
- Dedicated Spine staff
 - OR and Floor
- Hospitalist pre-op clinic and post-op care
- ICU
- Imaging



OrthoCarolina Spine Surgery Fellowship Facilities

Carolinas Medical Center

- 850 inpatient beds
> 30 operating suites
- Level one trauma center
- Orthopaedic residency
- Biomechanical labs, complete animal labs, biochemistry labs



OrthoCarolina Spine Surgery Fellowship Facilities

William States Lee College of Engineering
University of NC-Charlotte



OrthoKinetic Technologies

- Lisa Ferrara,
PhD, Director
 - Former Head of
Spine Research,
Cleveland Clinic



OrthoCarolina Spine Surgery Fellowship Facilities

- OrthoCarolina Research Institute
 - Non-profit research institute
 - 8 research coordinators
 - Dedicated spine coordinator
 - 2 statisticians



OrthoCarolina Spine Surgery Fellowship Experience

- **Two fellows per year**
- Cases 1,800-2,000/yearly available
- Fellows participate in ~500 cases, primary surgeon or first assistant
- Cases: 60% degenerative, 20% deformity, 10% trauma, 5% tumor, 5% pediatric
- All areas of spine-cervical, thoracic, lumbar-represented
- Fellows have own clinics, participate in residency spine clinic



OrthoCarolina Spine Surgery Fellowship Responsibilities

- Neuropedics Call
 - 1st 6 months
 - Precepting 1 day/month service dependent
 - 2nd 6 months
 - Independent paid call, backed up by attending; service dependent
- Weekend Rounding
 - Alternating weekend
 - including holidays
 - Except when at fellowship sponsored meetings
- Weekday Rounding
 - Round on the patients you operate on

Fully Funded Meetings



- Two national meetings (CSRS and LSRS)
- CSRS-ES Cadaver course, Barcelona, Spain
- Any meeting with papers or posters accepted
- AOSNA Fellows Hands-on Bioskills Course
- AOSNA resident & Fellows Course, Banff, Canada



OrthoCarolina Spine Surgery Fellowship Education

- **Weekly Spine Conferences**

- Didactic Lecture
- Surgical indications
- Current Concepts Review
- Quarterly Visiting Professors



Visiting Professors

- John Heller, MD, Emory University
- Jan Goffin, MD, PhD, KU Leuven, Belgium
- Todd Albert, MD, Rothman Institute
- Alan Hilibrand, MD, Rothman Institute
- Brad Currier, MD, Mayo Clinic
- Dan Riew, MD, Washington Univ. St Louis
- Tom Zdeblick, MD, Univ. Wisconsin
- Jose Casamitjana, MD, Barcelona, Spain
- Sandy Emery, MD, MBA, West Virginia Univ.
- Paul Anderson, MD, Univ. Wisconsin
- Jeff Fischgrund, MD, Beaumont, MI
- Robert Heary, MD, NINJ
- Lou Jenis, MD, Boston Spine Group
- Darrel Brodke, MD, Univ. of Utah
- Kevin McGuire, MD, The Spine Center @ BIDMC
- Ronald Lehman, MD, New York-Presbyterian Hospital
- Tom Mroz, MD, Cleveland Clinic

Publications 2014- 2016

Journal Articles

- Darden BV, Dixon D, A Review of Cervical Disk Arthroplasty Biomechanics. SciTechnol, Accepted July, 2016
- Rainville, J, Laxer EB, Keel JC, Carkner EP, Milam RA, Kim DH. Exploration of Sensory Impairments Associated with C6 and C7 Radiculopathies. The Spine Journal, 16 (2016) 49–54
- Loumeau TP, Darden BV, Laxer, EB, Kesman TJ, Odum SM, Murrey DB. Single Center Results at 7 years of Prospective, Randomized ProDisc- C Total Disc Arthroplasty vs. Anterior Cervical Discectomy and Fusion for Treatment of One Level Symptomatic Cervical Disc Disease. European Spine Journal dxdoi.org / 10.1007 / 500586-016-4431-6 2016 E Pub Feb 2016
- Chapman, Jr. TM, Blizzard DJ, Brown CR, CT Accuracy of Percutaneous vs. Open Pedicle Screw Techniques: A series of 1609 screws. European Spine Journal, 2016 Jun; 25(6):1781-6
- Chapman, Jr. TM. Baseline Patient Outcomes Correlate Weakly with Radiographic Parameters: A Multicenter, Prospective NIH Adult Symptomatic Lumbar Scoliosis Study of 286 Patients. Spine – Accepted, April 2016, Published ahead of print

Publications

- Segebarth B, Kurd M, Haug P, Davis R “Routine Upright Imaging for Evaluating Degenerative Lumbar Stenosis: Incidence of Degenerative Spondylolisthesis Missed On Supine MRI” [J Spinal Disord Tech.](#) 2015 Dec;28(10):394-7
- Janssen ME, Zigler JE, Spivak JM, Delamarter RB, Darden, II, BV, Kopjar B. Seven-year Follow-up of the Food and Drug Administration Investigational Device Exemption Study of the ProDisc-c Total Disc Replacement vs. Anterior Cervical Discectomy and Fusion for Single level Symptomatic Cervical Disc Disease. [Journal of Bone and Joint Surgery](#), Volume 97 (21): 1738-1747, November 4, 2015
- Elliot IS, Spiker WR, Caputo AM and Darden BV, “The Standard of Care for a 40-year-old with an Anterior Cervical Decompression and Fusion vs Cervical Disc Arthroplasty, [Journal of Spinal disorder an Techniques](#). Vol 28 Mp69, pp 309-312, November 2015
- Ghobrial GM, Theofanis T, Darden BV, Arnold P, Fehlings M, “Unintended Durotomy in Lumbar Degenerative Spine Surgery: A 10 Year Systemic Review of the Literature”. [Neurosurgery Focus](#), Oct 2015 39(4) E8

Publications

- Laxer EB, Brigham CD, Darden BV, Segebarth PB, Milam RA, Rhyne AL, Odum S, Spector LR. “Adjacent Segment Degeneration Following Cervical Total Disc Replacement and Anterior Cervical Discectomy and Fusion: Does Surgeon Bias Effect Radiographic Interpretation” Accepted, 2015 –[European Spine Journal](#)
- Rainville James, Laxer, EB, Keel JC, Carkner EP, Milam RA, Kim, DH , “Exploration of Sensory Impairments Associated with C6 and C7 Radiculopathies“, [The Spine Journal](#), 2015 Aug 4 (15)1203-6.
- Segebarth PB, Bible Kaneyama S, Sumi M, Takabatake M, Kasahara K, Kanemura A, Koh A, Hirata H, Darden BV –“S-line (Swallowing Line) – A Useful Indicator of Normal Swallowing and Dysphagia after Occipitospinal Fusion” Submitted to [Spine](#) 2015.
- Grimm BD, Blessinger BJ, Darden BV, Brigham CB, Rhyne AL, Kneisl J, Laxer EB, “Mimickers of Lumbar Radiculopathy”, [JAAOS](#). 2015 Jan 23 (1) 7-17

Publications

- Kaneyama S, Sumi M, Takabatake M, Kasahara K, Kanemura A, Koh A, Hirata H, Darden BV –“S-line (Swallowing Line) – A Useful Indicator of Normal Swallowing and Dysphagia after Occipitospinal Fusion” Submitted to Spine 2015.
- Segebarth PB, Darden, II, BV, Ferrara L. The Impact of Surface Topography at the Bone Interface for Improving Screw Fixation: A Biomechanical Evaluation of a Novel Screw Design. Submitted- 2014- International Journal of Spine Surgery
- Grimm BD, Laxer EB, Patt JC, Darden BV, “Mimickers of Cervical Radiculopathy”, JBJS Reviews –2014 Nov; 2(11) e2
- O’Boynick C, Kurd MF, Darden B, Vaccaro AR, Fehlings M. “Timing of Surgery in Thoracolumbar Trauma: Is early Intervention Safe?” Neurosurg Focus. 2014 Jul;37(1):E7.
- Grimm BD, Laxer EB, Rhyne AL, Darden BV, “Wrong Level Spine Surgery”, JBJS-A 2014 Mar; 2 (3): e2
- Segebarth PB, Darden, II, BV, Ferrara L. The Impact of Surface Topography at the Bone Interface for Improving Screw Fixation: A Biomechanical Evaluation of a Novel Screw Design. Submitted- 2014- International Journal of Spine Surgery

Book Chapters

- Rhyne AL III, Spector LR, Schmidt GL, Madigan L, Odum SM, Darden BV II, Siddiqui F. Anatomic mapping and evaluation of the esophagus in relation to the cervical vertebral body. *Eur Spine J.* 2007 Mar 13
- Darden, II, Bruce V. and Raposo, Juan, Biomechanics of Cervical Spine Arthroplasty *The Cervical Spine, 5th Edition.* Lippincott-Raven.
- Darden, II, Bruce V., Cervical Disc Replacement is Superior to Anterior Cervical Discectomy and Fusion. *Evidence-Based Medicine in Spine Surgery*, Eck, J and Vaccaro AR editors. Thieme Publishing NY, NY
- Meinhardt P, Milam RA, Darden BV., Plain Radiographic Evaluation of the Cervical Spine, The Cervical Spine 5th Edition Lippincott- Raven, Publication Pending
- Darden BV, O'Boynick C, "Cervical Disc Arthroplasty: Recent Advances in Arthroplasty", Intech, Accepted for publication 2015
- Caputo A, Darden, BV, "Cervical Intervertebral Disc Replacement", Heterotopic Ossification Basic Science General Principles and Clinical Correlates in Orthopaedic Surgery. Saltzman, Brian, editor, Nova Science Publishers, Hauppauge, NY accepted 2015
- O'Boynick Christopher, Casamitjana Jose and Darden II, Bruce V. "Cervical Spine Disorders Associated with skeletal Dysplasias and Metabolic Diseases" Herkowitz, Rothman and Simeone, The Spine 7th Edition. Garfin, Bell, Eismouth, Fischgrund and Bono- Editors, Elsevier, Philadelphia, PA – Publisher- Accepted

Welcome to Charlotte!

