

CURRICULUM VITAE

I. PERSONAL DATA

Name Avery Lee Buchholz MD MPH FAANS

Title Neurosurgeon – Board Certified
Capital Spine and Pain Institute

Citizenship United States of America

Email DrBuchholz@CapitalSpineInstitute.com

Website <https://CapitalSpineInstitute.com>

II. EDUCATION

University of Wisconsin School of Medicine and Public Health

2010 Masters of Public Health. M.P.H. (Injury Prevention)

University of Wisconsin School of Medicine and Public Health

2010 Doctor of Medicine

The Citadel, Military College of South Carolina

2003 Bachelor of Science in Biology

III. PROFESSIONAL EXPERIENCE

2003-2005 Research Specialist, Department of Medicine Division of Cardiology Medical University of South Carolina. (Advisor: Donald Menick PhD). Project: gene regulation and failure in cardiac hypertrophy

2005-2008 Medical Student Research, Department of Orthopedics and Rehabilitation University of Wisconsin School of Medicine and Public Health. (Advisor: Lee Kaplan MD). Project: treatment and prevention of PARC lesions

2012-2016 Sports Medicine Concussion Team, Medical University of South Carolina. Organized and presented community education regarding concussion protocols and return to play. Clinical assessment of post-concussion patients.

2014-2015	Graduate Medical Education Committee, Medical University of South Carolina.
2017-present	AOSNA Strategic Initiative Task Force on Knowledge Translation
2018-present	NASS Resident and Fellow Education Committee member
2019-present	AO Spine North America Faculty
2020-present	AO Spine North America Community Development Committee
2020-present	AANS CME Subcommittee
2021-2022	UVA Neurosurgery Operating Room Committee
2021-2022	UVA Neurosurgery Associate Program Director
2021-present	National Spine Health Foundation Medical and Scientific Board Member
2024-present	Fellow of the Congress of Neurosurgeons

IV. POST-GRADUATE EDUCATION

Internship	Medical University of South Carolina 2010-2011 Department of General Surgery	Charleston, SC
Residency	Medical University of South Carolina 2011-2017 Department of Neurological Surgery	Charleston, SC
Chief Resident	Medical University of South Carolina 2015-2016 Chief Resident - Department of Neurological Surgery Advisors: Sunil J Patel MD	Charleston, SC
Fellowship	University of Virginia 2016-2017 AO Spine North America Fellowship, Departments of Neurological Surgery Advisors: Christopher I. Shaffrey, MD and Justin S Smith MD	Charlottesville, VA
	University of Virginia 2016-2017 Complex Spine Fellowship, Departments of Neurological Surgery Advisors: Christopher I. Shaffrey, MD and Justin S Smith MD	Charlottesville, VA

V. ACADEMIC APPOINTMENTS / EMPLOYMENT

<i>Surgeon</i>	Capital Spine and Pain Institute	2026-present
<i>Surgeon</i>	Hess Spine and Orthopedics	2026-present
<i>Surgeon</i>	Orlando Health Orlando Regional Medical Center Jewett Orthopedic Center Southlake Hospital	2023-2026
<i>Surgeon</i>	Florida Spine and Orthopedics Winter Park, FL	2018-2023
Assistant Professor	Department of Neurological Surgery University of Virginia, Charlottesville, VA	2018-2022
Affiliate Assistant Professor	Department of Neurological Surgery Medical University of South Carolina, Charleston, SC	2018-2023
Assistant Professor	Department of Neurological Surgery Medical University of South Carolina Charleston, SC	2017-2018

VI. CERTIFICATION AND LICENSURE

<i>Certification:</i>	ABNS Board Certification Neurologic Surgery	2020
	UVA Certificate of Commitment to Faculty Development in Medical Education	2020
<i>Licensure</i>	<i>Washington DC</i>	2026
	New York	2026
	New Jersey	2026
	Florida Medical License ME137026	2019
	Virginia medical license, 0101263406	2017
	South Carolina medical license, MD32799	2017
	Virginia medical license, Limited license	2016
	South Carolina medical license, LL32799	2010

VII. HONORS AND AWARDS

Appointed to the National Spine Health Foundation Medical Scientific Board Member	and	2021
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Awarded UVA Certificate of Commitment to Faculty Development in Medical Education	2021
Received 4 th Annual International Spine Deformity Symposium Best Paper Award	2018
Top Reviewer 2017 from Global Spine Journal	2017
AO Spine Best Clinical Research Award. AOSNA Banff Fellows Forum	2017
Received the MUSC resident Neurosurgery Teaching Award	2016
1 st place award for the Cleveland Spine Review Poker Run	2015
Awarded Resident Research Day Most Promising New Research Neurosurgery	2015
Best Presentation 2013 North Carolina Spine Society Meeting	2013
Received the Max S Rittenbury MD Intern of the Year Award: MUSC	2010
Received the Shapiro Summer Research Grant Recipient	2006
Awarded the Metcalf Biology Scholarship (academics)	2003
Received the Dr. Francis Eugene Zemp Biology Award	2003
Tri Beta Biological Honor Society	2002
Phi Kappa Phi National Honor Society	2002
Received the Citadel Foundation Scholarship (academics)	2002
Received the Vance E Hightower Scholarship (service)	2001

VIII. HOSPITAL APPOINTMENTS

Medical University of South Carolina.	Charleston, SC	2017-2018
Ralph H Johnson VA Hospital.	Charleston, SC	2017-2018
University of Virginia Health System	Charlottesville, VA	2018-2023
Orlando Regional Medical Center	Orlando FL	2023-present
Southlake Hospital	Orlando FL	2023-present
Jewett Orthopedic Center	Orlando FL	2023-present

IX. MAJOR COMMITTEE ASSIGNMENTS

AOSNA Strategic Initiative Task Force on Knowledge Translation	2018-present
NASS Resident and Fellow Education Committee	2018-present
UVA Clinical Radiation Safety Committee (CRSC)	2018-2023
AO Spine North America Faculty	2019-present
AO Spine North America Community Development Committee	2019-2023
UVA Neurosurgery Trauma Liaison	2020-2022
UVA Neurosurgery Operating Room Committee	2021-2022
UVA Neurosurgery Associate Program Director	2021-2022
Appointed to the National Spine Health Foundation Medical and Scientific Board Member	2021-present

X. MILITARY SERVICE

Wisconsin Army National Guard 13 th MEDD. Second Lieutenant, Medical Service Corp	2005-2010
South Carolina Army National Guard Medical Command, Captain, Medical Service Corp	2010-2017

XI. PROFESSIONAL AFFILIATIONS AND COMMITTEES

A. INTERNATIONAL

Candidate Fellow Scoliosis Research Society	2020-present
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B. NATIONAL

Member National Spine Health Foundation Medical and Scientific Board	2021
Abstract Selection Committee American Association of Neurological Surgeon	2021
Abstract Selection Committee AO Spine Fellows Forum	2021
Abstract Selection Committee Congress of Neurological Surgeon	2020
Abstract Selection Committee AO Spine Fellows Forum	2020
Member AANS/CNS Joint Section Spine and Peripheral Nerve	2017-present
Member Society of Lateral Access Surgery	2017-present
Member North American Spine Society	2017-present

Member	American Association of Neurological Surgeons	2017-present
Member	Congress of Neurological Surgeons	2017-present
Member	AO Spine North America	2016-present
Resident member	American Association of Neurological Surgeons	2011-2017
Resident member	Congress of Neurological Surgeons	2011-2017
Member	American Medical Association	2005-present

C. REGIONAL AND LOCAL INSTITUTION

	UVA Clinical Radiation Safety Committee (CRSC)	2018-2022	UVA Neurosurgery Trauma
Liaison	2020-2022	UVA Neurosurgery Operating Room Committee	
2021-2022		UVA Neurosurgery Associate Program Director	2021-2022

D. BOARD MEMBERSHIP

Medtronic Mazor X education board	2019
Medtronic Titan Nanolock advisory board	2019
Medtronic Single Position Surgery education board	2020
Mazor robotic study group	2020
National Spine Health Foundation Medical and Scientific Board	2021

XII. FUNDED GRANTS None

XIII. AREAS OF RESEARCH INTERESTS AND CURRENT PROJECTS

A. MAJOR RESEARCH INTERESTS

1. Adult deformity surgery and outcomes.
2. Spine surgery outcomes.
3. Work flow and efficiency
4. OR design and management

B. SELECTED CURRENT PROJECTS

SCI Registry, North American Clinical Trials Network (NACTN) for Spinal Cord Injury.
2018-2022

Sponsor: Christopher Reeve Foundation/North American
Clinical Trials Network/Department of Defense

Role: Sub-Investigator

A Multi-Center, Randomized, Placebo Controlled, Double-Blinded, Trial of Efficacy and Safety of Riluzole in Acute Spinal Cord Injury 2018-2022
Sponsor: AO Spine North America
Role: Sub-Investigator

A Multi-Center, Prospective, Comparative Study of Anterior vs. Posterior Treatment for Lumbar Isthmic Spondylolisthesis 2018-2022 Surgical
Sponsor: AO Spine North America
Role: Sub-Investigator

Prospective Evaluation of Elderly Deformity Surgery. A Prospective Observational, Multicenter Study 2018 -2022
Sponsor: AO Spine International
Role: Sub-Investigator

North American Clinical Trials Network (NACTN) for the of Spinal Cord Injury 2018 -2022 Treatment
Sponsor: Christopher Reeve Foundation; Department of Defense
Role: Sub-Investigator

A Multi-Center Prospective Study of Quality of Life in Adult Scoliosis 2018 -2022
Sponsor: International Spine Study Group Foundation (ISSGF)
Role: Sub-Investigator

Prospective Radiographic and Clinical Evaluation of Surgical Treatment for Cervical Deformity: A Multi-Center Study 2018 -2022
Sponsor: International Spine Study Group Foundation (ISSGF)
Role: Sub-Investigator

Prospective, Multi-Center Adult Spinal Deformity Outcomes Database Registry 2018 -2022
Sponsor: International Spine Study Group Foundation (ISSGF) Role: Sub-Investigator

A Prospective, Randomized, Multi-Center, Open-Label Pilot Study of Infuse® Bone Graft with Mastergraft® Strip and Posterior Fixation for Posterolateral Fusion (PLF) Treatment of Multi-Level Degenerative Lumbosacral Spinal Conditions 2018 -2022
Sponsor: Medtronic – Sofamor Danek
Role: Sub-Investigator

Anterior versus Posterior Surgery for Isthmic Spondylolisthesis (I-Spondy) 2018 -2022 Sponsor: AO Spine North America
Role: Sub-Investigator

Neurosurgical Spine Patient Outcomes – a Retrospective Review 2018 -2022
Sponsor: UVA Neurosurgery
Role: Sub-Investigator

Outcomes in long segment anterior cervical discectomy and fusion with minimum 2 year follow up. 2018 -2022

Sponsor: UVA Neurosurgery
Role: PI

A Prospective Multicenter Study Evaluating the Effect of Implant Material and/or Surface Structure on Progression of Fusion in XLIF Surgery 2018 -2022

Sponsor: NuVasive
Role: Sub-Investigator

Effectiveness of Surgery for Adult Spinal Deformity: Impact of Approach and Category on Pain, Disability, and Quality of Life. 2019 -2022

Sponsor: NeuroPoint Alliance Inc.
Role: PI

SILVIA: SIJ Stabilization in Long Fusion to the Pelvis: Randomized Controlled Trial 2019 -2022

Sponsor: SI-Bone
Role: PI

XIV. TEACHING ACTIVITIES

A. Classroom, Seminar, or Grand Rounds

2001-2003	Teaching Assistant, Department of Chemistry and Biology, The Citadel
2014-2016	Teaching Assistant, Department of Neurological Surgery, Medical University of South Carolina School of Medicine.
October 23, 2016	Adult Spine Deformity: Importance of Pelvic Parameters. Medical University of South Carolina Neurosurgery Grand Rounds.
November 3, 2017	Current Concepts in adult spine deformity correction: Importance of alignment in decision making. Medical College of Georgia Neurosurgery Grand Rounds.
October 15, 2019	Current Concepts in Spine Biologics. Neurosurgery Resident and Attending Conference. Department of Neurosurgery, University of Virginia.
March 22, 2020	The Omentum in the Treatment of Alzheimer's Disease. Neurosurgery Resident and Attending Conference. Department of Neurosurgery, University of Virginia.
July 22, 2020	Neurosurgeons as High Performance Athletes. Duke Neurosurgery Department Grand Rounds. Durham, NC.

September 03, 2021	Decision Making in Spinal Surgery. Neurosurgery Resident and Attending Conference. Department of Neurosurgery, University of Virginia.
April 28-30, 2022	AO North American Faculty Education Program. Jacksonville, FL

B. Clinical teaching: lectures, cadaveric lab, surgical skills workshops, indications

August 8-9, 2006	Co Moderator. From Battlefield to Home Front: Caring for the Combat Wounded. National Military Medical Conference. Hyatt Regency Milwaukee, WI.
October 23, 2016	Adult Spine Deformity: Importance of Pelvic Parameters. Medical University of South Carolina Neurosurgery Grand Rounds.
March 12, 2016	Minimally Invasive Percutaneous Screw Fixation of Traumatic Spondylolisthesis of the Axis. MUSC Resident Research Day. Charleston, SC.
November 3, 2017	Current Concepts in adult spine deformity correction: Importance of alignment in decision making. Medical College of Georgia Neurosurgery Grand Rounds.
March 22-24, 2018	Faculty 16 th Annual AO Spine North America Fellows Forum. Banff Springs. Alberta Canada.
June 16, 2018	Faculty. NuVasive Intro to XLIF lab. Charlottesville VA.
July 20-21, 2018	Faculty. Senior Neurosurgery Society Intern Bootcamp. Atlanta GA.
July 24-29, 2018	Faculty. Cleveland Clinic Spine Review. Cleveland OH.
May 15-17, 2019	Faculty. Medtronic Mazor X Stealth Edition. Advances in technology. Global Spine Congress. Toronto ON.
July 17-20, 2019	Faculty. NuVasive. Deformity correction through use of reduction towers. International Meeting of Advanced Spine Technologies. Amsterdam, the Netherlands.
September 25, 2019	Resident Fellow Education Pathway: Transition to Practice. Pitfalls. North American Spine Society. Chicago, IL.
Sept 26, 2019	Faculty. NuVasive X360. How it Has Affected My Practice. Pitfalls. North American Spine Society. Chicago, IL.
Jan 24, 2020	Faculty. Medtronic Mazor X Stealth Edition. How Pre-Op Planning, Navigation and Robotic Guidance are Changing Spine Surgery. Spine Base to Summit. Vail, CO.

March 8, 2020	Anterior vs. Posterior Approach for Adult Spinal Deformity Case Debate. NuVasive Sponsored. Spine Summit. Las Vegas NV.
December 3-4, 2020	Faculty. AO Spine North America Resident Fundamentals in Spine Course. Web based course
April 16-17, 2021	Faculty. Mazor training lab. Austin, TX.
February 2, 2021	Spine Deformity Review. China Grand Rounds. Shanghai Changzheng Hospital
March 24, 2021	Mazor as a Practice Builder. State of Spine Surgery Webinar
July 24, 2021	AO Spine North America Faculty Course Update. Chicago IL.
April 28-30, 2022	AO North American Faculty Education Program. Jacksonville, FL
April 5, 2023	Seattle Science Foundation. Spine Technology Education and Discovery lecture. Surgeons as High Performance Athletes.

XV. TEACHING ACTIVITIES OTHER THAN CLASSROOM AND CLINICAL

A. Curriculum and material development

AO Spine North America Faculty and Program Coordinator
AO North American Faculty Education Program. Jacksonville, FL

B. Educational scholarship / creation of enduring materials

1. Kappler CS, **Buchholz AL**, Xu L, Menick DR. Interaction of the Na⁺/Ca²⁺ Exchanger with Signaling Cofactors in the Cardiomyocyte. *Biophysical Journal*. 2005 88: 5928.
2. **Buchholz AL**, Valppu L, Xu L. Expression of Alternative Splicing Factors Are Changed in Pressure-Overloaded Cardiac Hypertrophy. *Circulation Research*. 2005 97 (2): e35.
3. Quinn JC, **Buchholz AL**, Buell TJ, Smith JS, Shaffrey CI. Adjacent Segment Disease and Proximal Junctional Kyphosis – Part 2: Prevention and Treatment Strategies. *Contemporary Neurosurgery*: Dec 30, 2018. 40:18.
4. Buell TJ, **Buchholz AL**, Quinn JC, Smith JS, Shaffrey CI. Adjacent Segment Disease and Proximal Junctional Kyphosis – Part 1. Etiology and Classification. *Contemporary Neurosurgery*: Nov 30, 2018. 40:17.
5. **Buchholz AL**, Quinn JC, Buell TJ, Yen CP, Haid RW, Shaffrey CI, Smith JS. TLIF: A Review of Techniques and Advances. *Contemporary Neurosurgery*: Feb 15, 2019. 41:2.

C. Mentorship and guidance

Jesse McClure BS

Research Year 2019-2020

Project 1: Retrospective review of PJK with use of tethers.

Outcome:

1. Rabinovich EP, Snyder MH, McClure JJ, Buell TJ, Smith JS, Shaffrey CI, **Buchholz AL**. Posterior polyethylene tethers reduce occurrence of proximal junctional kyphosis after multilevel spinal instrumentation for adult spinal deformity: a retrospective analysis. *Neurosurgery*. 2021 May 10;nyab123. PMID 33971008.

Project 2: Review of outcomes in long segment ACDF

Outcome:

1. McClure J, Desai B, Shabo L, Buell TJ, Yen CP, Smith JS, Shaffrey CI, Shaffrey ME, **Buchholz AL**. A Single-Center Retrospective Analysis of Three or More Level Anterior Cervical Discectomy and Fusion: Surgical Outcomes in 66 Patients. *J Neurosurg Spine*. 2020 Oct 9;1-7. PMID 33036003

Thomas Buell MD

Resident 2017-2019

Project 1: Review of outcomes in long segment ACDF

Outcome:

1. McClure J, Desai B, Shabo L, Buell TJ, Yen CP, Smith JS, Shaffrey CI, Shaffrey ME, **Buchholz AL**. A Single-Center Retrospective Analysis of Three or More Level Anterior Cervical Discectomy and Fusion: Surgical Outcomes in 66 Patients. *J Neurosurg Spine*. 2020 Oct 9;1-7. PMID 33036003

Project 2: Video of surgical technique for scoliosis

Outcome:

1. **Buchholz AL**, Buell TJ, Shaffrey ME, Haid RE, Shaffrey CI. Deformity Correction Through the Use of Reduction Towers. *Operative Neurosurgery*. 2020 Aug 1;19(2):E157-E158. PMID 31828343

Project 3: Outcomes with use of kickstand rod in scoliosis

Outcome:

1. Buell TJ, **Buchholz AL**, Mazur MD, Mullin JP, Chen CJ, Sokolowski JD, Yen CP, Shaffrey ME, Shaffrey CI, Smith JS. Kickstand Rod Technique for Correcting Coronal Imbalance in Adult Scoliosis: 2 Dimensional Operative Video. *Oper Neurosurgery*. 2020 Aug 1;19(2):E163-E164. PMID 31584101

Project 4: Sacral insufficiency fractures after fixation

Outcome:

1. Buell TJ, **Buchholz AL**. Sacral Insufficiency Fractures after Lumbosacral Arthrodesis: Salvage Lumbopelvic Fixation and a Proposed Management Algorithm. *Journal of Neurosurgery: Spine*. 2020 Mar 27;1-12. PMID: 32217798.

Project 5: Outcomes in patients with severe scoliosis

Outcome:

1. Buell TJ, Chen CJ, Nguyen JH, Christiansen PA, Murthy SG, **Buchholz AL**, Yen CP, Shaffrey ME, Shaffrey CI, Smith JS. Surgical Correction of Severe Adult Lumbar Scoliosis (Major Curves >75 degrees: Retrospective Analysis with Minimum 2-Year Follow-up. *J Neurosurgery Spine*. 2019 June 21;1-14. PMID 31226681

Project 6: Video of extended PSO

Outcome:

1. Buell TJ, **Buchholz AL**, Quinn JC, Mullin JP, Garces J, Mazur MD, Shaffrey ME, Yen CP, Shaffrey CI, Smith JS. Extended Asymmetrical Pedicle Subtraction Osteotomy for Adult Spinal Deformity: 2-Dimensional Operative Video. *Operative Neurosurgery*. 2019 Feb1;16(2):52-53.

David Azuzu MD MPH

Resident 2018-current

Project 1: Use of Mazor X robot in cervical spine surgery

Outcome:

1. Azuzu DA, **Buchholz AL**. MAZOR-X robotic-navigated percutaneous C2 screw placement for hangman's fracture. *Journal of Spine Surgery*. Accepted for publication 2021

Project 2: QOD evaluation of cervical spine myelopathy outcomes.

Outcome:

1. Azuzu DA, **Buchholz AL**. Delayed surgical treatment >12 months for cervical myelopathy is not associated with worsened post-operative outcomes. A multi-center analysis from the Quality Outcomes Database. *Journal of Spine Surgery*. Accepted for publication 2021.

1.

XVI. OTHER PROFESSIONAL ACTIVITIES

A. Journal review and editorial board

1. The Spine Journal, ad hoc reviewer 2018-2020
2. Global Spine Journal . ad hoc reviewer 2017-present
3. World Neurosurgery, ad hoc reviewer 2016-present

B. Session Moderator for National/International Meetings

1. Session moderator: Resident Fellow Education Pathway. North American Spine Society. Chicago IL. Sept 27, 2019.
2. Session moderator: Adult Deformity Updates Oral Session. Joint CNS/AANS. Las Vegas, NV March 24, 20129.

C. Grant Review Panel/Committee none

XVII. CLINICAL ACTIVITIES

A. School of Medicine/University/UVA Hospital

UVA Clinical Radiation Safety Committee (CRSC)	2018-2022
UVA Neurosurgery Trauma Liaison	2020-2022
UVA Neurosurgery Operating Room Committee	2021-2022
UVA Neurosurgery Associate Program Director	2021-2022

B. Departmental

UVA Neurosurgery Trauma Liaison	2020-2022
UVA Neurosurgery Operating Room Committee	2021-2022
UVA Neurosurgery Associate Program Director	2021-2022

C. National

AOSNA Strategic Initiative Task Force on Knowledge Translation	2018-present
NASS Resident and Fellow Education Committee	2018-present
AO Spine North America Faculty	2019-present
AO Spine North America Community Development Committee	2019-present

D. International none

E. Active Society Membership

1. American Medical Association (AMA)
2. Congress of Neurological Surgeons (CNS)
3. American Association of Neurological Surgeons (AANS)
4. AO Spine
5. North American Spine Society (NASS)
6. Society of Lateral Access Surgery
7. Scoliosis Research Society (SRS)
8. AANS/CNS Joint Section Spine and Peripheral Nerve

XVIII. FINANCIAL RESOURCES (GRANTS AND CONTRACTS)

XIX. PERSONNEL CURRENTLY SUPERVISED

Physician Assistant

Evan Turnbull, PA

2018 - 2022

Nurse

JoAnne Wilson, RN

2018 - 2022

Administrative Support

Doris Strother (clinic coordinator)

2018 – 2022

XX. PAPERS PUBLISHED, IN PRESS, OR SUBMITTED

A. MANUSCRIPTS SUBMITTED FOR PUBLICATION

- 1 Azuzu DA, **Buchholz AL**. Delayed surgical treatment >12 mo for cervical myelopathy is not associated with worsened post-operative outcome. A multi-center analysis from the Quality Outcomes Database. Journal of Spine Surgery. Accepted for publication 2021.
- 2 Azuzu DA, **Buchholz AL**. MAZOR-X robotic-navigated percutaneous C2 screw placement for hangman's fracture. Journal of Spine Surgery. Accepted for publication 2021.
- 3 Lee NJ, Buchanan IA, Boddapati V, Mathew J, Marciano G, Park PJ, Leung E, **Buchholz AL**, Khan A, Pollina J, Jazini E, Haines C, Schuler TC, Good CR, Lombardi J, Lehman RA. Do Robot-related Complications Influence 1 Year Reoperations and Other Clinical Outcomes After Robot-Assisted Lumbar Arthrodesis? A Multicenter Assessment of 320 Patients. JOSR (Accepted on 4/27/21)
- 4 Ampie L, **Buchholz AL**, Smith JS. Bone Grafting and Biologic Agents for Spinal Fusion in the Pediatric Population: Current Understanding and Future Perspectives. Accepted JNS Focus June 2021.
- 5 Conner BD, Lieberman I, Shaffrey MA, **Buchholz AL**. Robotic sacroiliac fixation technique for triangular titanium sacroiliac implant in adult degenerative scoliosis surgery. Operative Neurosurgery 2021. Accepted for publication.
- 6 90 day complication, revision, and readmission rates for current generation robotic-assisted thoracolumbar spinal fusion surgery: results of a multicenter case series. Accepted for publication Journal of Neurosurgery Spine.
- 7 Asuzu DT, Desai B, Maggio D, Mandell J, Ray-Chaudhury A, Abdullaev Z, Aldape K, Heiss J, **Buchholz AL**. FGFR1-TACC1 fusion associated with malignant transformation in a primary spinal cord glioma: a case report. Accepted Journal Spine Surgery.
- 8 High Impact Chronic Pain Transition in Surgical Recipients with Cervical Spine Myelopathy," submitted to Journal of Neurosurgery: Spine, has been accepted for publication
- 9 Differences in Patient-Reported Outcomes between Anterior and Posterior Approaches for Treatment of Cervical Spondylotic Myelopathy: A Quality Outcomes Database Analysis. Accepted for publication World Neurosurgery

- 10 A multicenter study of the 5-year trends in robot-assisted spine surgery outcomes and complications. Accepted for publication . JSS
- 11 Lee. Trends in Robot-related Complications, Operative Efficiency, Radiation Exposure, and Clinical Outcomes After Robot-Assisted Spine Surgery: A Multicenter Study of 722 Patients and 5,005 Screws From 2015 to 2019. Accepted for publication
- 12 Social Risk factors predicting outcome of cervical myelopathy surgery. Accepted JNS
- 13 **Management of Anticoagulation/Antiplatelet Medication and Venous Thromboembolism Prophylaxis in Elective Spine Surgery: Concise Clinical Recommendations Based on a modified Delphi Process Spine**
- 14 **Management of Anticoagulation/Antiplatelet Medication and Venous Thromboembolism Prophylaxis in Elective Spine Surgery: Concise Clinical Recommendations Based on a Modified Delphi Process**, has been published in [Spine in Vol. 48, No. 5, March 1, 2023](#)
- 15 **Which supervised machine learning algorithm can best predict achievement of minimum clinically important difference in neck pain after surgery in patients with cervical myelopathy? A QOD study" - FOCUS-Jun-23-23-72R1.** Accepted for publication
- 16 **Sleep Disturbances in Cervical Spondylotic Myelopathy: Prevalence and Postoperative Outcomes—an Analysis From the Quality Outcomes Database**, has been published in [Clinical Spine Surgery in Vol. 36, No. 3, April 2023](#)
- 17 3-Level ACDF vs 3-Level Laminectomy and Fusion: Are There Differences in Outcomes? An Analysis of the QOD CSM Cohort" - FOCUS-Sep-23-23-295R1 accepted for publication.
- 18 **What Predicts the Best 24-Month Outcomes Following Surgery for Cervical Spondylotic Myelopathy (CSM)? A QOD Prospective Registry Study,"** submitted to Journal of Neurosurgery: Spine,

B. INVENTIONS AND PATENTS None

C. BIBLIOGRAPHY

1. Ampie L, Synder MH, Dominguez JF, **Buchholz AL**, Yen CP, Shaffrey ME, Syed HR, Shaffrey CI, Smith JS. Clinical characteristics and long-term outcomes for patients that

- undergo cytoreductive surgery for thoracic meningiomas: a retrospective analysis. *Neurosurgery Focus*. 2021 May;50(5):E18. PMID 33932925.
2. Rabinovich EP, Snyder MH, McClure JJ, Buell TJ, Smith JS, Shaffrey CI, **Buchholz AL**. Posterior polyethylene tethers reduce occurrence of proximal junctional kyphosis after multilevel spinal instrumentation for adult spinal deformity: a retrospective analysis. *Neurosurgery*. 2021 May 10;nyab123. PMID 33971008.
3. McClure JJ, Desai BD, Ampie L, You W, Smith JS, **Buchholz AL**. A Systematic Review of the Cost-Utility of Spinal Cord Stimulation for Persistent Low Back Pain in Patients With Failed Back Surgery Syndrome. *Global Spine Journal*. 2021 Apr;1191 suppl):66S-72S. PMID 33890806.
4. Soldozy S, Montgomery SR, Sarathy D, Young S, Skaff A, Desai B, Sokolowski JD, Faheem S, Voyadzis, JM, Yagmurlu K, **Buchholz AL**, Shaffrey ME, Syed HR. Diagnostic, surgical and technical considerations for lumbar interbody fusion in patients with osteopenia and osteoporosis: a systematic review. *Brain Sciences*. 2021. Feb 14;11(2):241. PMID 33673005.
5. Buza JA, Good CR, Lehman RA, Pollina J, Chua RV, **Buchholz AL**, Gum JL. Robotically assisted cortical bone trajectory (CBT) screws using the Mazor X Stealth Edition (MXSE) system: workflow and technical tips for safe and efficient use. *J Robotic Surgery*. 2021 Feb;15(1):13-23. PMID 32989623.
6. Huang M, **Buchholz AL**, Goyal A, Bisson E, Ghogwala Z, Potts E, Knightly J, Coric D, Asher A, Foley K, Mummaneni PV, Park P, Shaffrey ME, Fu KM, Slotkin J, Glassman S, Bydon M, Wang M. Impact of Surgeon and Hospital Factors on Surgical Decision Making for Degenerative Grade 1 Lumbar Spondylolisthesis: A Quality Outcomes Database (QOD) Analysis. *J Neurosurg Spine*. 2021 Feb 19;1-11. PMID 33607612.
7. Dunn LK, Chen CJ, Taylor DG, Esfahani K, Brenner B, Luo C, Buell TJ, Spangler SN, **Buchholz AL**, Smith JS, Shaffrey CI, Nemergut EC, Durieux ME, Naik BI. Postoperative low-dose tranexamic acid after major spine surgery: A matched cohort analysis. *Neurosurgery*. 2020 Dec;17(4):888-895. PMID 33401867.
8. McClure J, Desai B, Shabo L, Buell TJ, Yen CP, Smith JS, Shaffrey CI, Shaffrey ME, **Buchholz AL**. A Single-Center Retrospective Analysis of Three or More Level Anterior Cervical Discectomy and Fusion: Surgical Outcomes in 66 Patients. *J Neurosurg Spine*. 2020 Oct 9;1-7. PMID 33036003.
9. Soldozy S, Sarathy D, Skaff A, Montgomery SR, Young S, Desai B, Sokolowski JD, **Buchholz AL**, Shaffrey ME, Syed HR. Pharmacologic considerations in patients with osteoporosis undergoing lumbar interbody fusion: A systematic review. *Clin Neurol Neurosurg*. 2020 Sep;196:106030. PMID 32622110.
10. **Buchholz AL**, Buell TJ, Shaffrey ME, Haid RE, Shaffrey CI. Deformity Correction Through the Use of Reduction Towers. *Operative Neurosurgery*. 2020 Aug 1;19(2):E157-E158. PMID 31828343.

11. Buell TJ, **Buchholz AL**, Mazur MD, Mullin JP, Chen CJ, Sokolowski JD, Yen CP, Shaffrey ME, Shaffrey CI, Smith JS. Kickstand Rod Technique for Correcting Coronal Imbalance in Adult Scoliosis: 2 Dimensional Operative Video. Oper Neurosurgery. 2020 Aug 1;19(2):E163-E164. PMID 31584101.
12. Laratta J, Carreon LY, **Buchholz AL**, Yew AY, Bisson E, Mummaneni PV, Glassman SD. Preoperative Obesity and Psychiatric Comorbidities Do Not Affect Minimum Clinically Important Difference (MCID) for Lumbar Fusion in Grade 1 Degenerative Spondylolisthesis: An Analysis of the Prospective Quality Outcomes Database (QOD) Registry. J of Neurosurgery Spine. 2020 Jul 24;1-8. PMID 32707556.
13. Labaran L, Nikhil J, Puvanesarajah V, Jain A, **Buchholz AL**, Hassanzadeh H. A Retrospective Database Review of the Indications, Complications, and Incidence of Subsequent Spine Surgery in 12,297 Spinal Cord Stimulator Patients. Neuromodulation. 2020 Jul;23(5): 634-638. PMID 31009145.
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D. Books and Monographs

None

E. Book Chapters

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F. Scientific Posters and Oral Presentation

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3. Rabinovich EP, Snyder MH, McClure JJ, Buell TJ, Smith JS, Shaffrey CI, **Buchholz AL**. Posterior polyethylene tethers reduce occurrence of proximal junctional kyphosis after multilevel spinal instrumentation for adult spinal deformity: a retrospective analysis. AANS August 20-25 Orlando, FL. Oral Presentation
4. Nathan J. Lee, Venkat Boddapati, Justin Mathew, Ian A. Buchanan, Scott L. Zuckerman, Paul J. Park, Eric Leung, **Avery L Buchholz**, John Pollina, Ehsan Jazini, Colin Haines, Thomas C. Schuler, Christopher R. Good, Joseph M. Lombardi, Ronald A. Lehman. "Robot-Assisted Spine Surgery in Complex Adult Spinal Deformity: Surgery: Multicenter Trends (2016-2020) of Robot Time Per Screw, Radiation Exposure, Screw Accuracy, and Robot Abandonment." ISASS 2021. Poster.
5. Nathan J. Lee, Scott L. Zuckerman, Ian Buchanan, Venkat Boddapati, Eric Leung, Paul Park, Justin Mathew, Avery L. Buchholz, John Pollina Jr, Ehsan Jazini, Colin M. Haines, Thomas C. Schuler, Asham Khan, Jeffrey P. Mullin, Christopher R. Good, Joseph M. Lombardi, Ronald A. Lehman Jr. **"How does the Mazor X Stealth Edition Compare with the Mazor X for Robot-Assisted Spine Surgery? A Multicenter, Propensity-Matched Analysis of 2,800 Screws and 372 Patients."** 36th Annual NASS 2021. Boston, MA. Oral Presentation
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17. **Buchholz AL**. Robotic Single Position Surgery. Seattle Science Foundation. 4th Annual Spinal Navigation, Emerging Technologies and Systems Integration Course. Seattle, WA. Nov 9, 2019. Oral
18. **Buchholz AL**. Resident Fellow Education Pathway: Transition to Practice. Pitfalls. North American Spine Society. Chicago, IL. Sept 25 2019.Oral
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20. **Buchholz AL**. NuVasive X360. How it Has Affected My Practice. Pitfalls. North American Spine Society. Chicago, IL. Sept 26, 2019. Oral
21. **Buchholz AL**. Medtronic. Circumferential Fixation in the Complex Corpectomy Patient. 48th Annual Cervical Spine Research Society. Nov 21, 2019. New York, NY. Oral
22. **Buchholz AL**. NuVasive. Deformity correction through use of reduction towers. International Meeting of Advanced Spine Technologies. Amersterdam, the Netherlands. July 17-20, 2019. Oral
23. **Buchholz AL**. Medtronic Posterior Cervical Infinity. Advances in technology. Spine Base to Summit. Vail CO. January 18-21, 2019. Oral
24. **Buchholz AL**, Lieberman I. Medtronic Mazor X Stealth Edition. Advances in technology. Global Spine Congress. Toronto ON. May 15-17, 2019. Oral
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31. Buell D, **Buchholz AL**, Quinn JC, Nguyen J, Mazur MD, Bess S, Line BG, Ames CP, Schwab F, Lafage V, Shaffrey CI, Smith JS. A Pilot Study on Posterior Polyethylene Tether to Prevent Proximal Junctional Kyphosis After Multilevel Spinal Instrumentation For Adult Spinal Deformity. AANS/CNS Section on Disorders of the Spine and Peripheral Nerves Spine Summit 2018. Oral
32. **Buchholz AL**. Treatment of Adult Deformity: Whenever and When Never to Perform. 2018 MUSC Health Spine Conference – Controversies in Spine Care. April 14, 2018. Kiawah Island, SC. Oral
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34. **Buchholz AL**. Primary Infections. Patient Care – Discitis. AO Global Spine Congress. May 2-5, 2018. Singapore. Oral
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59. **Buchholz AL**, Valppu L, Xu L. Unbalanced Expression of Antagonistic Splicing Factors in Cardiac Hypertrophy. 2nd Annual Symposium of AHA Council on Basic Cardiovascular Sciences, Keystone, CO. Poster