

Mark M. Mikhael, M.D.

Board Certified Orthopaedic Spine Surgeon
Illinois Bone and Joint Institute, LLC
2401 Ravine Way
Glenview, IL 60025
Office: 847-832-1695

EXPERIENCE:

Illinois Bone and Joint Institute

Orthopedic Spine Surgeon, August 2011 – Present

Chair, Section of Spine Surgery, 2018 – Present

Degenerative cervical and lumbar spine conditions, complex cervical spine, minimally invasive procedures, spinal cord neurostimulators, cervical disc arthroplasty

NorthShore University Health System – Evanston/Skokie/Glenbrook Hospital

Department of Orthopedic Surgery, Division of Spine Surgery, September 2011 – Present

Director of Spine Research, Orthopedic Surgery, January 2016 – Present

Co-Chair of Orthopedic Quality Committee, January 2019 – Present

University of California Los Angeles – Comprehensive Spine Center

UCLA Spine Surgery Fellowship, August 2010 – July 2011

Mayo Clinic – Rochester, MN

School of Graduate Medical Education, Department of Orthopedic Surgery

Orthopedic Surgery Residency 7/2005 – 6/2010

EDUCATION:

University of Illinois at Chicago College of Medicine, Class of 2005

Alpha Omega Alpha Honor Medical Society

James Scholar Program for Independent Study

Honors in Basic Sciences: Anatomy, Embryology, Biochemistry, Human Physiology, Neuroanatomy, Human Development, Brain and Behavior, Clinical Pathophysiology, Molecular Medicine & Genetics, Pharmacology, and Essentials of Clinical Medicine.

University of Michigan – Ann Arbor, Class of 2001

Major: General Biology

Degree: Bachelor of Science, With Highest Distinction

Phi Beta Kappa National Honor Society

Golden Key National Honor Society

Michigan Class Honors (1997-2000)

Michigan Angell Scholar Award

National Dean's List

APPOINTMENTS:

Orthopedic Quality Committee, NorthShore University Health System (2014, Co-Chair 2019 – Present)

Chair, Section of Spine Surgery, Illinois Bone and Joint Institute (2018 – Present)

Executive Committee Member, NorthShore Orthopedic and Spine Hospital (2018 – Present)

Vice Chair, Center of Excellence Committee, Illinois Bone and Joint Institute (2017 – Present)

Orthopedic Research Committee, NorthShore University Health System (2017 – Present)

Medical Executive Member, Ravine Way Surgery Center (2016 – Present)

Director of Spine Research, NorthShore University Health System (2016 – Present)

North American Spine Society (NASS), Section on Radiology (2012 – Present, Co-Chair 2017 – Present)

North American Spine Society (NASS), Section on Allied Health (2015 – Present)

North American Spine Society (NASS), Evidence-Based Guidelines Committee (2013 – Present)

Clinical Assistant Professor, Pritzker School of Medicine, University of Chicago (2011 – Present)

Clinical Instructor, University of California Los Angeles (UCLA) (2010 – 2011)

MEMBERSHIPS:

Alpha Omega Alpha (AOA) Honor Medical Society

American Academy of Orthopedic Surgery (AAOS); Active Fellow (FAAOS)

North American Spine Society (NASS)

AO Spine International

American Medical Association (AMA)

Illinois State Medical Society (ISMS)

ACCREDITATION:

Board Certified, American Board of Orthopedic Surgeons – 2010, 2013

American Academy of Disability Evaluating Physicians

–Earned CEDIR in the *AMA Guides* Sixth Edition, 2012

REVIEWER/ EDITOR:

The Spine Journal, Manuscript Reviewer: 2020 – Present

SPINE Journal (Phila Pa 1976), Manuscript Reviewer: 2012 – Present

Spine Casebook, Oxford University Press, Book Editor: 2013 – 2018

Journal for Orthopedics and Rheumatology, Associate Editor: 2014 – 2018

NASS Annual Spine Meeting, Abstract Reviewer: 2012 – Present

PUBLICATIONS:

Divi, S., **Mikhael, M.M.** *Use of allogenic mesenchymal cellular bone matrix in anterior and posterior cervical spinal fusion: a case series of 21 patients.* Asian Spine J. 2017 Jun;11(3): 454-462.

Gjolaj, J.P., Carrino, J.A., **Mikhael, M.M.**, Bederman, S.S., Sciubba, D.M., Khanna, A.J. *Contemporary Radiation Reduction Strategies for Spine Surgery and Interventional Spine Procedures.* SpineLine. 2016 July/August;12-14.

Reddy, D., **Mikhael, M.M.**, Shapiro, G.S., Farrell, T. *Extensive Deep Venous Thrombosis from Anterior Lumbar Spine Surgery in a Patient with Iliac Vein Compression Syndrome: A Case Report and Literature Review.* Global Spine J. 2015 Aug;5(4):e22-7.

Eleswarapu, A., Salib, C.G., **Mikhael, M.M.** *Radiographic Lucency around Pedicle Screws with Cobalt Chromium Rod Constructs in the Setting of Lumbar Fusion.* MOJ Orthop Rheumatol. April 2015; 2(4).

Eleswarapu, A., **Mikhael, M.M.**, Koh, J.L. *Number of Recent Inpatient Admissions as a Risk Factor for Increased Complications, length-of-stay, and Cost in Patients Undergoing Posterior Lumbar Fusion.* Spine. Dec 2014; 39(26):2148-56.

Mikhael, M.M., Chioffe, M.A., Shapiro, G.S. *Calcium Pyrophosphate Dihydrate Deposition Disease (CPPD)/ Pseudogout of the Lumbar Spine mimicking Osteomyelitis-Discitis with Epidural Phlegmon.* American Journal of Orthopedics, August 2013; E64-E67.

Mikhael, M.M., Shapiro, G.S., Wang, J.C. *High-grade adult isthmic L5-S1 spondylolisthesis: A report of intraoperative slip progression treated with surgical reduction and posterior instrumented fusion.* Global Spine Journal. 2012; 2 (2): 119-124

Mikhael, M.M., Wolf, C.F., Wang, J.C. *Cervical Laminoplasty*, in Tornetta, P (ed), Instructional Course Lectures – Volume 61: Advanced Techniques in Cervical Spine Surgery. AAOS. February 2012; 461-8.

Celestre, P.C., Pazmino, P.R., **Mikhael, M.M.**, Wolf, C.F., Feldman, L.A., Laurysen, C., Wang, J.C. *Minimally Invasive Approaches to the Cervical Spine.* Orthopedic Clinics of North America. January 2012;43 (1):137-47

Mikhael, M.M., Celestre, P.C., Wolf, C.F., Mroz, T.E., Wang, J.C. *Minimally Invasive Cervical Spine Foraminotomy and Lateral Mass Screw Placement.* Spine. March 2012; 1;37(5):E18-22.

Mikhael, M.M., Wolf, C.F., Shamie, A.N., Wang, J.C. *Minimally Invasive Techniques for the Posterior Cervical Spine: Foraminal Decompression and Instrumented Fusion.* Operative Techniques in Orthopaedics. September 2011; 21: 240-244.

Mikhael, M.M., Huddleston, P.M., Nassr, A. *Postoperative Culture Positive Surgical Site Infections After the Use of Irradiated Allograft, Non-Irradiated Allograft, or Autograft for Spinal Fusion.* Spine. October 2009; 34(22): 2466-8.

Mikhael, M.M., Hanssen, A.D., Sierra, R.J. *Failure of Metal-on-Metal Total Hip Arthroplasty Mimicking Hip Infection.* Journal of Bone and Joint Surgery (Am). February 2009; 91:443-6.

Mikhael, M.M., Bach, H.G., Huddleston, P.M., Maus, T.P., Berbari, E.F. *Multi-Level Diskitis and Vertebral Osteomyelitis after Diskography.* Orthopedics. January 2009; 32:60.

Mikhael, M.M., Huddleston, P.M., Zobitz, M.E., Chen, Q., Zhao, K.D., An K.N. *Mechanical Strength of Bone Allografts Subjected to Chemical Sterilization and Other Terminal Processing Methods.* Journal of Biomechanics. September 2008; 41(13):2816-20.

TEXTBOOKS / CHAPTERS:

Editor, *Spine Imaging: A Case-Based Guide to Imaging and Management.* Gupta, S., Sciubba, D.M., **Mikhael, M.M.**, Nicolau, S. (eds). Oxford University Press. 2016.

Castillo, M., Chiang, F., **Mikhael, M.** *Chapter 2: Spontaneous Epidural Hematoma*, in Gupta, Sciubba, Mikhael, Nicolau (eds): Spine Imaging: A Case-Based Guide to Imaging and Management. Oxford University Press. 2016; page 7.

Lester, M., Naidich, M., **Mikhael, M.** *Chapter 35: Baastrup's Disease*, in Gupta, Sciubba, Mikhael, Nicolau (eds): Spine Imaging: A Case-Based Guide to Imaging and Management. Oxford University Press. 2016; page 131.

Lester, M., Naidich, M., **Mikhael, M.** *Chapter 37: Cord Compression*, in Gupta, Sciubba, Mikhael, Nicolau (eds): Spine Imaging: A Case-Based Guide to Imaging and Management. Oxford University Press. 2016; page 137.

Lester, M., Naidich, M., **Mikhael, M.** *Chapter 38: Synovial Cyst*, in Gupta, Sciubba, Mikhael, Nicolau (eds): Spine Imaging: A Case-Based Guide to Imaging and Management. Oxford University Press. 2016; page 140.

Wenokor, C., **Mikhael, M.** *Chapter 80: Spinal Instrumentation Failure*, in Gupta, Sciubba, Mikhael, Nicolau (eds): *Spine Imaging: A Case-Based Guide to Imaging and Management*. Oxford University Press. 2016; page 310.

Wolf, C.F., **Mikhael, M.M.**, Shamie, A.N. *Chapter 31: Interspinous Process Implants*, in Kim, D, Vaccaro, A, Whang, P, Kim, S, Kim, SH (eds): *Lumbosacral and Pelvic Procedures*, Vol 1; 2014. Page 503.

Mikhael, M.M., Wang, J.C. *Chapter 5: Critical Outlook and Overview*, in Hartl, R, Korge, A (eds): *Minimally Invasive Spine Surgery – Techniques, Evidence, and Controversies*. AO Spine; 2013.

Mikhael, M.M., Wolf, C.F., Wang, J.C. *Chapter 37: Cervical Laminoplasty*, in Tornetta, P (ed), *Instructional Course Lectures – Volume 61: Advanced Techniques in Cervical Spine Surgery*. AAOS. February 2012; 461-8.

Wolf, C.F., **Mikhael, M.M.**, Shamie, A.N. *Chapter 31: Interspinous Process Motion-Sparing Implants*, in Vaccaro, A, Baron, E (eds): *Operative Techniques Spine Surgery*. Vol 2; 2012. Page 292.

PRESENTATIONS:

Mikhael, M.M. Cervical Corpectomy: Indications, Pearls and Pitfalls. “Clariance Connects” Spine Surgeon Panel. Chicago, IL. January 26, 2020.

Mikhael, M.M. Radiation Reduction Strategies for Minimally Invasive Procedures Symposium: Biological Effects and Risks of Radiation Exposure. North American Spine Society (NASS) Online CME Course. May 11, 2020.

Mikhael, M.M. Emerging Techniques for Advanced Imaging of the Complex Post-Surgical Spine Patient. Friend or Foe? Rethinking Advanced Imaging for the 21st Century Symposium. North American Spine Society (NASS) Annual Meeting. September 27, 2019.

Mikhael, M.M. Current Strategies for Decreasing Radiation Exposure During Spine Surgery and Interventional Procedures: Minimally Invasive Spine Surgery, One Step Forward, Two Steps Back? North American Spine Society (NASS) Annual Meeting. September 27, 2018.

Mikhael, M.M. Common Spinal Conditions and Surgical Treatment Options. IL Academy of Physician Assistants (IAPA). Fall CME Meeting. Deerfield, IL. September 14, 2018.

Divi, Srikanth, Eleswarapu, A., Koh, JL, **Mikhael, M.M.** Number of Recent Inpatient Admissions as a Risk Factor for Increased Complications Following Anterior Cervical Discectomy and Fusion. American Academy of Orthopedic Surgeons (AAOS) Annual Meeting. Poster Presentation. March 8, 2018.

Mikhael, M.M. Current Strategies for Decreasing Radiation Exposure During Spine Surgery and Interventional Procedures: The Role of Image Guidance in Reduction of Radiation Exposure. North American Spine Society (NASS) Annual Meeting. October 26, 2017.

Mikhael, M.M. Move Back...Spinal Emergencies and Spinal Stenosis. Annual Advanced Practitioner and Physician (APP) Bootcamp. April 30, 2017.

Mikhael, M.M. Imaging and Ancillary Testing in Patients with Neck and Shoulder Girdle Pathology. North American Spine Society (NASS) Annual Meeting. October 28, 2016.

Mikhael, M.M. Update on Current Strategies for Decreasing Radiation Exposure During Spine Surgery and Interventional Procedures; Free-hand Technique in Spine Surgery: Radiation Reduction at its Best. North American Spine Society (NASS) Annual Meeting. October 27, 2016.

Mikhael, M.M. Spinal Imaging Pearls for Staying out of Trouble and Detecting Problems When They Occur: Post-operative Evaluation. North American Spine Society (NASS) Annual Meeting. October 27, 2016.

Mikhael, M.M. Complex Cervical Spine Surgery: Anterior Cervical Corpectomy. Medical Education and Research Center of Illinois (MERC-Platinum), Park Ridge, IL. June 3-4, 2016. Sponsor – DePuy Synthes Institute for Advancing Education and Research.

Mikhael, M.M. Current Strategies for Decreasing Radiation Exposure During Spine Surgery and Interventional Procedures; Free-hand Technique in Spine Surgery: Radiation Reduction at its Best. North American Spine Society (NASS) Annual Meeting. October 15, 2015.

Mikhael, M.M. MRI of Complications and Failures of Spine Surgery: MRI Evaluation of Postoperative Infection. North American Spine Society (NASS) Annual Meeting. October 15, 2015.

Mikhael, M.M. Complex Spine Imaging II. The Art and Science of the Physical Examination. NASS Spine Education and Research Center, Burr Ridge, IL. June 27, 2015.

Eleswarapu, A., **Mikhael, M.M.**, Koh, J.L. Number of Recent Inpatient Admissions as a Risk Factor for Increased Complications, length-of-stay, and Cost in Patients Undergoing Anterior Lumbar Fusion. Mid-America Orthopaedic Association Annual Meeting. Poster Presentation. April 22-26, 2015.

Mikhael, M.M. An Update on Cervical Laminoplasty: Comparative Studies and Technique. University of Chicago Orthopaedic Surgery Grand Rounds. Pritzker School of Medicine. Chicago, Illinois. April 15, 2015.

Eleswarapu, A., **Mikhael, M.M.**, Koh, J.L. Number of Recent Inpatient Admissions as a Risk Factor for Increased Complications, length-of-stay, and Cost in Patients Following Anterior Cervical Discectomy and Fusion. OneAO: Common Problems and Common Solutions Across Disciplines Meeting. AO North America. Paper Presentation. Feb 6, 2015.

Eleswarapu, A., **Mikhael, M.M.**, Koh, J.L. Prior Admissions are the Most Important Independent Predictor of Risk in Posterior Lumbar Fusion. 2015 American Academy of Orthopedic Surgery (AAOS) Annual Meeting. Paper Presentation. March 25, 2015.

Mikhael, M.M. Controversies in Spine Imaging; An Update on The Instrumented Spine: MRI versus CT Myelogram. North American Spine Society (NASS) Annual Meeting. November 12, 2014.

Mikhael, M.M. Section on Radiology Precourse Symposium on Imaging of the Spine; An Update on CT and CT Myelography of the Spine: indications and spectrum of diseases. North American Spine Society (NASS) Annual Meeting. November 11, 2014.

Mikhael, M.M. High Grade Spondylolisthesis in Adults. Chicago Orthobiologics and Cell Regenerative Summit; Chicago Lower Extremity Surgical Foundation (CLESF). June 21, 2014.

Mikhael, M.M. Lumbar Osteomyelitis – Surgical Options. Chicago Orthobiologics and Cell Regenerative Summit; Chicago Lower Extremity Surgical Foundation (CLESF). June 21, 2014.

Mikhael, M.M. Spine Imaging II. The Art and Science of the Physical Examination. NASS Spine Education and Research Center, Burr Ridge, IL. March 8, 2014.

Mikhael, M.M. Controversies in Spine Imaging; The Instrumented Spine: MRI versus CT Myelogram. North American Spine Society (NASS) Annual Meeting. October 11, 2013.

Mikhael, M.M. Dynamic MRI: Current Studies and Utility in Patient Care. North American Spine Society (NASS) Annual Meeting. October 10, 2013.

Mikhael, M.M. Section on Radiology Precourse Symposium on Imaging of the Spine; CT and CT Myelography of the Spine: indications and spectrum of diseases. North American Spine Society (NASS) Annual Meeting. October 9, 2013.

Mikhael, M.M. Cervical Laminoplasty: An Update on Comparative Studies and Technique. University of Chicago Orthopaedic Surgery Grand Rounds. Pritzker School of Medicine. Chicago, Illinois. August 15, 2012.

Mikhael, M.M., Larson, D., Nassr, A., Huddleston, P.M. Infections Using Irradiated or Non-Irradiated Allograft versus Autograft for Spinal Fusion. Presenting Author. 2011 AO Spine Fellows Forum. Banff, Alberta, Canada. April 1, 2011.

Mikhael, M.M., Huddleston, P.M., Nassr, A. Infections Using Irradiated or Non-Irradiated Allograft versus Autograft for Spinal Fusion. Presenting Author. 2010 American Academy of Orthopedic Surgery (AAOS) Annual Meeting. March 9, 2010.

Mikhael, M.M., Huddleston, P.M. *Infection in Spine Fusion Procedures Using Either Irradiated Allograft, Non-Irradiated Allograft, or Autograft.* Presenting Author. Minnesota Orthopaedic Society 2008 Annual Meeting. May 9, 2008.

Mikhael, M., Amirouche, F., Wagner, F., Guppy, K., Bergin, C. *Investigation of lumbar interbody fusion at different levels and its effect on spinal stenosis.* The International World Spine II Conference: Second Interdisciplinary Congress On Spine Care. Presenting/Primary Author. Chicago, August 2003.

RESEARCH:

7/2020-Present	NorthShore University Health System / University of Illinois at Chicago Biomechanics Lab of Dr. Farid Amirouche, PhD <ul style="list-style-type: none">◆ Assessment of Cervical and Lumbar Kinematics in Simulated Open and Closed Chain Pelvic Tilting◆ Assess if axial rotation is a factor◆ Preliminary Cadaveric Model	Chicago, IL
7/2020-Present	NorthShore University Health System / University of Illinois at Chicago Biomechanics Lab of Dr. Farid Amirouche, PhD <ul style="list-style-type: none">◆ Biomechanical Evaluation of Cervical Spine Kinematics with Anterior and Posterior Pelvic Tilt◆ Preliminary Cadaveric Study	Chicago, IL
6/17-12/2020	NorthShore University Health System <ul style="list-style-type: none">◆ Surgical outcome data analysis to evaluate predictive risk factors for epidural hematoma◆ Case control matched cohort study to compare outcomes associated with risk factors	Evanston, IL
1/16-11/2020	NorthShore University Health System / Illinois Bone and Joint Institute	Evanston, IL

- ◆ Evaluate use of allogenic mesenchymal cell bone product in multilevel ACDF surgery
 - ◆ Prospective clinical trial monitoring fusion rates and patient reported outcomes
- 1/17-6/17 **NorthShore University Health System** Evanston, IL
- ◆ Retrospective review of patients that underwent multilevel cervical surgery (anterior and posterior)
 - ◆ Analysis of fusion rate when allogenic mesenchymal cell bone material was used in those cases
- 1/13-3/18 **NorthShore University Health System** Evanston, IL
- ◆ Surgical outcome data analysis for postoperative cervical and lumbar procedures
 - ◆ Evaluate predictive risk factors and complication rates for common cervical and lumbar surgeries
- 7/13-7/16 **Illinois Bone and Joint Institute / Saint Francis Hospital IRB** Glenview, IL
- ◆ Randomized prospective study investigating treatment for foot drop (EHL/AT weakness)
 - ◆ Evaluate response of treatment group versus control placebo group for return of function
- 8/13-7/15 **Illinois Bone and Joint Institute / NorthShore University Health System** Evanston, IL
- ◆ Multicenter randomized prospective spine surgery study
 - ◆ Evaluate fusion rate using viable cell bone product in multilevel cervical fusion (Biomet funded)
- 8/06-5/10 **Mayo Clinic – Department of Orthopedic Surgery and Statistical Analysis** Rochester, MN
- ◆ Retrospectively studied post-operative infections in spine fusion patients
 - ◆ Compared incidence of infection between irradiated/non-irradiated allograft and autograft
- 2/07-9/08 **Mayo Clinic – Biomechanics Research Laboratory** Rochester, MN
- ◆ Investigated the effect of chemical sterilization on bone allografts
 - ◆ Tested the mechanical strength of bone allografts under different stresses
- 5/02-6/05 **University of Illinois at Chicago Biomechanics Lab** Chicago, IL
- Laboratory of Dr. Farid Amirouche, PhD
- ◆ Worked on the development of a finite element model of the lumbar spine
 - ◆ Investigated the effects of lumbar fusion on spinal stenosis of adjacent levels
- 4/99-7/00 **University of Michigan Veteran Affairs Medical Center** Ann Arbor, MI
- Laboratory of Dr. Stephen W. Chensue, MD, PhD
- ◆ Worked as a lab assistant in research on T cell chemokine receptor responses
 - ◆ Developed research protocols and procedure