Jorge A. Ochoa

Ph.D., P.E.

Principal, Director

Dr. Jorge A. Ochoa is a Principal at ESi. Dr. Ochoa has over 35 years of broad experience across all medical device R&D-related areas: design of medical devices, surgical instruments and techniques, biomaterials, combination devices, and preclinical regulatory testing. Dr. Ochoa is a classically trained mechanical engineer whose expertise bridges the domains of mechanical engineering and biology in therapeutic and diagnostic medical applications. Dr. Ochoa is an authority on the significant aspects of the medical device total product lifecycle: design control, risk management, biocompatibility, verification/validation testing, device retrieval analysis, post-market surveillance, recalls, and failure analysis. Dr. Ochoa also consults with clients on intellectual property issues related to validity and infringement.

Dr. Ochoa's particular interests encompass solving complex interdisciplinary problems in the domains of cardiovascular, musculoskeletal, and ophthalmological tissue mechanics and associated medical devices. He applies fundamental mechanical engineering principles to the study of medical device performance, durability and wear, failure, and their interface with the human body. Dr. Ochoa routinely utilizes experimental and computational/analytical methods to execute *in vivo* and *in vitro* medical device performance evaluations and failure analyses, including computational methods (CFD & FEA). His strong background in mechanical metallurgy and biomaterials enables him to apply advanced techniques to study fracture and fatigue failures of components and determine the role of the mechanical behavior of metals, polymers, and coatings in the function and failure of medical devices.

Before joining ESi, Dr. Ochoa was a founding member of Exponent, Inc.'s Biomedical Engineering & Sciences practice, which he helped substantively grow. Before joining Exponent, Dr. Ochoa was the Chief Technology Officer at Archus Orthopaedics, a privately held medical device start-up company. Before that, he spent 13 years at DePuy Orthopaedics, a division of Johnson & Johnson, in various roles of increasing responsibility within R&D, including Vice President of R&D. His responsibilities included new product development, customer needs analysis and support, M&A due diligence and integration, intellectual property analysis,

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Areas of Specialization

- Biomechanics
- Design Analysis
- Intellectual Property
- Medical Devices
- Medical Investigations
- Risk Analysis

and litigation support. Dr. Ochoa has directed or has had executive oversight of the commercialization of hundreds of Class I, Class II Pre-Market Notification (510(k))-cleared, and Class III Pre-Market Approval (PMA)- approved medical devices.

Education

PhD, Mechanical Engineering, Purdue University, 1991

MS, Mechanical Engineering, Purdue University, 1987

BS, Mechanical Engineering, Missouri University of Science and Technology (cum laude), 1985

Licenses & Certifications

- State of California P.E. License 36186
- State of Massachusetts P.E. License 40846
- State of Michigan P.E. License 6201309350
- State of North Carolina P.E. License 049456
- State of Texas P.E. License 118411
- State of Washington P.E. License 40751

Languages

- Spanish

Positions Held

Engineering Systems Inc, Dallas, TX

- Principal, 2024 – Present

Exponent, Austin, TX

- Principal Engineer, 2018 – 2022

Exponent, Menlo Park, CA

- Principal Engineer, 2013 - 2018

Exponent, Bellevue, WA

- Principal Engineer, 2011 – 2013
- Senior Managing Engineer, 2008 - 2011

Archus Orthopedics Inc, Redmond, WA

- Vice President, R&D and Chief Technology Officer, 2004 - 2008

DuPuy Orthopedics, a Johnson & Johnson Co, Warsaw, IN

- Vice President, R&D, DePuy, 2000 – 2004
- Director, Hip R&D, DePuy, 1998 - 2000

Johnson & Johnson Professional, Raynham, MA

- Manager, Hip R&D, 1994 – 1998
- Project/Senior Project Engineer, R&D, 1991 - 1994

Chrysler Corp, Detroit, MI

- Research Engineer, Manufacturing Technical Center, 1985 – 1987

Teaching Experience

Affiliate Associate Professor, Department of Mechanical Engineering of the University of Washington, 2006 – 2018

Guest Lecturers

Chiba University, Tokyo, Japan

Colorado School of Mines, Golden, CO

Indiana University, Bloomington, IN Purdue University, W. Lafayette, IN

University of Illinois – Chicago, Chicago, IL

University of Pennsylvania, Philadelphia, PA

University of Tennessee, Knoxville, TN

University of Washington, Seattle, WA

California Polytechnic State University, San Luis Obispo, CA

University of Texas at Austin, Austin, TX

University of Texas at El Paso, El Paso, TX

Advisory Appointments

Board of Trustees, Missouri University of Science and Technology (2021-present)

Dean's Leadership Council, College of Arts, Sciences and Business, Missouri University of Science and Technology (2018–2022)

Missouri University of Science and Technology, External Advisory Board (EAB), Center for Bone and Tissue Repair and Regeneration (2012–present)

Missouri Center of Excellence of the Life Sciences Research Board—Screening Committee: Life Sciences Trust Fund (2008–2010)

Missouri University of Science and Technology, Industrial Advisory Board, School of Mechanical Engineering (1999–present)

Engineering Advisory Committee, Purdue University Schools of Engineering (2001– 2008) Industrial

Advisory Board, Purdue University School of Biomedical Engineering (2002–present) Industrial Advisory

Board, University of Tennessee School of Biomedical Engineering (2003–2008)

Academy of Mechanical and Aerospace Engineers, School of Mechanical Engineering, Missouri University of Science and Technology (President), (2005–present)

University of Illinois-Chicago, Industrial Advisory Board, School of Mechanical Engineering (2001–2004)

Board of Directors, International Society of Technology in Arthroplasty (ISTA) (2003–2006)

Intelligent Biomedical Devices and Musculoskeletal Systems, NSF-IUCRC Industrial Advisory Board (Chairperson), Denver, CO (1996–2003)

Professional Affiliations/Honors

American Society of Mechanical Engineering (ASME)

- Member

ASM Internationals

- Member

ASTM International

- Member

Association for the Advancement of Medical Instrumentation (AAMI)

- Member

Biomedical Engineering Society

- Member

National Society of Professional Engineers (NSPE)

- Member

North American Spine Society

- Member

Orthopedic Research Society

- Member

Society of Hispanic Professional Engineers

- Life Member

Phi Eta Sigma

Pi Tau Sigma

Johnson & Johnson Professional Achievement Award, 1995

Clinical Biomechanics Best Paper Award, European Society of Biomechanics, 1998

Best Scientific Paper, Spine Arthroplasty Society, 2008

Outstanding Mechanical Engineer, Purdue University, 2002

Professional Degree, Mechanical Engineering, Missouri University of Science and Technology, 2005

Academy of Mechanical and Aerospace Engineers – Missouri University of Science and Technology, 2005

Distinguished Engineering Alumnus, Purdue University, 2009

Missouri University of Science and Technology Alumni Achievement Award, 2016

Project Experience

Medical Device Design and Development Support

- Assist inventors, investors, and potential acquirers in validating the science and technology underlying novel medical devices and their market viability, performing thorough due diligence and technical evaluations. Evaluated a client's innovative tissue scaffold/regeneration technology and another's minimally invasive image-guided surgery platform for novelty, utility, and obviousness during the freedom to practice phase and patenting process. Evaluated the impact of potential prior art on the ultimate product designs, reduction to practice, manufacturability, safety, and effectiveness. Tissue engineering technology was used to stand up a start-up medical device company, while a market leader acquired the image-guided surgery platform.
- Guided individual inventor clients (practicing physicians) through the technical aspects of IP strategy, regulatory strategy, and fundraising. Led a multidisciplinary team that collaborated with clients to define product specifications and subsequent design inputs for an intelligent, combination implantable drug-delivery medical device. The team developed design outputs along with a comprehensive set of tests and evaluations to verify and validate product concepts. Risk management was considered and continuously applied to monitor and guide the project's risk profile. Guided clients and team members in selecting suitable manufacturing vendors and compiling the Design History File. A leading medical device manufacturer acquired the technology product line.
- Led team that developed a comprehensive capability to evaluate MRI compatibility of medical devices using a combination of computational and experimental techniques in compliance with

relevant ASTM and ISO standards. This included passive and active devices, fully and partially implanted devices, and devices residing within and outside the bore of an MRI scanner.

Verification and Validation of Medical Devices

- Augmented a medical device manufacturer's existing internal new product development team's capability by advising during the establishment of the required verification and validation strategy for a novel spinal implant device being developed by a medical device company. Supervised the execution, troubleshooting, and reporting of the results and was an integral part of interaction with the FDA, from the presubmission (Q-subs) through response to FDA's questions about the regulatory submission.
- Assisted clients with evaluating novel biomaterials and coatings designed to be used with and on orthopaedics, spinal, neurosurgical, ophthalmic, and cardiovascular medical devices. The evaluation strategy satisfied FDA (Design Control) and EU (MDD/MDR) regulatory guidance and verification and validation requirements and was included in the corresponding regulatory submissions in support of the safety of the device, which were successfully cleared or approved via 510(k), IDE/PMA, and De Novo pathways.
- Working in concert with research surgical veterinarians, medical toxicologists, and the client, designed a comprehensive, bespoke, preclinical testing strategy requiring regulatory compliance. This included biocompatibility and animal functional and safety studies. Suggested non-GLP feasibility evaluations were used to optimize the definitive GLP studies required for FDA approval of an implantable urological device. Evaluated, selected, and oversaw the work and reporting of certified preclinical research services laboratories.
- Directed or had executive oversight of the commercialization of hundreds of Class I, Class II Pre-Market Notification (510(k))-cleared, and Class III Pre-Market Approval (PMA)- approved medical devices.

Post-market Surveillance and Failure Analysis of Medical Devices

- Routinely examines explanted medical devices, tissues, surgical tools, and hospital equipment to understand in vivo device performance and failure. This analysis sheds light on device/tissue interactions and the biomechanical, biochemical, bioelectrical, and biothermal conditions affecting device function. Reports on device and tissue analysis, failure and root cause investigations, and regulatory compliance support clients in development, clinical trials, and post-market activities, including medical device recalls.
- Provide independent, impartial, and critical support to device manufacturers for their Failure Analyses, Health Hazard Evaluations, Root Cause Analyses, and Complaint Handling and Recall processes based on real-world clinical evidence. Clients typically use reports to communicate with regulatory agencies and support product liability litigation. Serve as an expert witness in product liability and intellectual property cases involving medical devices, drawing on experience, investigations, and insights.

Publications

"Establishing the biofidelity of a multiphysics finite element model of the human heart," Kreuzer SM, Briant PL, **Ochoa JA**, Published online April 13, 2021. doi:10.1007/s13239-021-00538-7.

"The mechanics of corneal deformation and rupture for penetrating injury in the human eye," Rau A, Lovald ST, Nissman S, McNulty J, **Ochoa JA**, Baldwinson M, *Injury.* 2018;49(2):230- 235.

"Finite element analysis and experimental evaluation of penetrating injury through the cornea," Lovald ST, Rau A, Nissman S, et al, Journal of the Mechanical Behavior of Biomedical Materials. 2017;66:104-110

"Factors affecting lethal isotherms during cryoablation procedures," Rau AC, Siskey R, **Ochoa JA**, Open Biomed Eng J. 2016;10(1):62-71.

"Outcomes and cost of care for patients with distal radius fractures," Farner S, Malkani A, Lau E, Day J, **Ochoa JA**, Ong K, Orthopedics Sep 1, 2014; 37(10):e866–878.

"Comparative finite-element analysis for defect reconstruction with rhomboid flaps," Syamal MN, Lovald ST, **Ochoa JA**, Ghanem T, Otolaryngol Head Neck Surg. 2014 Sept; 151(1) suppl:138-139.

"Perioperative outcomes, complications, and costs associated with lumbar spinal fusion in older patients with spinal stenosis and spondylolisthesis." Ong KL, Auerbach JD, Lau E, Schmier J, **Ochoa JA**, Neurosurg Focus Jun 2014; 36(6): E5.

"Contact-coupled impact of slender rods: Analysis and experimental validation." Sanders AP, Tibbitts I, Kakarla D, Siskey S, **Ochoa JA**, Ong K, et al., Experimental Mechanics 2013/08/10 2013:1–12.

"Predictions of vacuum loss of evacuated vials from initial air leak rates," Prisco MR, **Ochoa JA**, Yardimci AM, J Pharm Sci Aug 2013; 102(8):2730–2737.

"Biomechanics of the monopedicle skin flap," Lovald ST, Topp SG, **Ochoa JA**, Gaball CW, Otolaryngol Head Neck Surg. Dec 2013;149(6):858-864.

"Trends in permanent pacemaker implantation in the United States 1993–2009: Increasing complexity of patients and procedures," Greenspon AJ, Patel J, Lau E, **Ochoa JA**, Frisch DE, Ho RT, Pavri BB, Kurtz SM, J Am Coll Cardiol 2012; 59(13s1):E703–E703.

"Biomechanical evaluation of the Total Facet Arthroplasty System® (TFAS ®): Loading as compared to a rigid posterior instrumentation system," Sjovold SG, Zhu Q, Bowden A, Larson CR, de Bakker PM, Villarraga ML, **Ochoa JA**, Rosler DM, Cripton PA, Eur Spine J 2012 Aug; 21(8):1660–1673.

"Contact mechanics of impacting slender rods: Measurement and analysis," Sanders A, Tibbitts I, Kakarla D, Siskey S, **Ochoa JA**, Ong K, Brannon R, 2011 SEM Annual Conference on Experimental and Applied Mechanics, Springer New York, pp. 229–236, Uncasville, CT, June 13–16, 2011.

"Biomechanical assessment of a PEEK rod system for semi-rigid fixation of lumbar fusion constructs," Gornet MF, Chan FW, Coleman JC, Murrell B, Nockels RP, Taylor BA, Lanman TH, **Ochoa JA**, Journal of Biomechanical Engineering 2011 Aug; 133(8):081009:1:12.

"Sixteen year trends in the infection burden for pacemakers and implantable cardioverter-defibrillators in the United States: 1993–2008," Greenspon AJ, Patel JD, Lau E, **Ochoa JA**, Frisch D, Ho RT, Pavri BB, Kurtz SM, Journal of the American College of Cardiology 2011; 58(10):1001–1006.

"Implantation trends and patient profiles for pacemakers and implantable cardioverter defibrillators in the United States: 1993–2006," Kurtz SM, Lau E, **Ochoa JA**, Shkolnikov Y, Pavri BB, Ho RT, Frisch D, Greenspon AJ, Pacing and Clinical Electrophysiology 2010 Jan.

"L5 – S1 segmental kinematics after facet arthroplasty," Voronov LI, Havey RM, Rosler DM, Sjovold SG, Rogers SL, Carandang G, **Ochoa JA**, Yuan H, Webb S, Patwardhan AG, SAS Journal 2009; 3(2).

"Effect of the Total Facet Arthroplasty System after complete laminectomy-facetectomy on the biomechanics of implanted and adjacent segments," Phillips FM, Tzermiadianos MN, Voronov LI, Havey RM, Carandang G, Renner SM, Rosler DM, **Ochoa JA**, Patwardhan AG, Spine Journal 2009 Jan; 9(1):96–102.

"Quality of motion considerations in numerical analysis of motion restoring implants," Bowden AE, Guerin HL, Villarraga ML, Patwardhan A, **Ochoa JA**, Clinical Biomechanics 2008 Jun; 23(5):536–544.

"Image processing, geometric modeling and data management for development of a virtual bone surgery system," Niu Q, Chi X, Leu MC, **Ochoa JA**, Journal of Computer Aided Surgery 2008 Jan; 13(1):30–40.

"Knee mechanics: A review of past and present techniques to determine in vivo loads," Komistek RD, Kane T, Mahfouz M, **Ochoa JA**, Dennis DA, Journal of Biomechanics 2005 Feb; 38(2):215–228.

"In vivo comparison of hip separation after metal-on-metal or metal-on-polyethylene THA," Dennis DA, Komistek RD, **Ochoa JA**, Haas BD, Hammill C, J Bone Joint Surg Am 2002 Oct; 84(10):1836–1841.

"Analysis of the stem-sleeve interface in a modular titanium alloy femoral component for total hip replacement, in functional biomaterials," Kurtz SM, Srivastav S, Dwyer K, **Ochoa JA**, Brown S, Trans Tech Publications, Switzerland. Katsube N, Soboyejo WO, Sacks M (eds), pp. 41–68, 2001.

"In vivo determination of hip joint separation and the forces generated due to impact loading conditions," Dennis DA, Komistek RD, Northcut EJ, **Ochoa JA**, Ritchie A, Journal of Biomechanics 2001 Apr; 34(5):623–629.

"Simulation of initial frontside and backside wear rates in a modular acetabular component with multiple screw holes," Kurtz SM, **Ochoa JA**, Hovey CB, White CV, Journal of Biomechanics 1999 Aug; 32(9):967–976.

"Backside nonconformity and locking restraints affect liner/shell load transfer mechanisms and relative motion in modular acetabular components for total hip replacement," Kurtz SM, **Ochoa JA**, White CV, Srivastav S, Cournoyer J, Journal of Biomechanics 1998 May; 31:431–437.

"In vivo observations of hydraulic stiffening in the canine femoral head," **Ochoa JA**, Sanders AP, Kiesler TW, Heck DA, Toombs JP, Brandt KD, Hillberry BM, Journal of Biomechanics Engineering 1997 Feb; 119:103–108.

"Finite element analysis in the characterization of an absorbable cement restrictor," Wilson SF, **Ochoa JA**, Rogers LL, Lancaster RL, Ritchie A, Journal of Engineering in Medicine, IMechEng 1995; 209:163–167.

"Stiffening of the proximal femur due to intertrabecular fluid and intraosseous pressure," **Ochoa JA**, Sanders AP, Heck DA, Hillberry BM, Journal of Biomechanical Engineering 1991; 113(3):259–262.

"The effect of intertrabecular fluid on femoral head mechanics," **Ochoa JA**, Heck DA, Hillberry BM, Journal of Rheumatology 1991; 18(4):580–584.

Presentations

"Wearable medical devices: intersection of technology, regulation, and hype," **Ochoa JA**, Bio2Device Group (B2DG) Member Meeting. Sunnyvale, CA, September 20, 2016.

"Drug, device and biotechnology diary of an expert—An insider's view on the proper care and feeding of experts," **Ochoa JA**, IADC 2014 Midyear Meeting, La Jolla, CA, February 12, 2014.

"Medical device regulatory compliance & recalls. Life Sciences Legal Summit," **Ochoa JA**, American Bar Association, San Francisco, CA, February 27, 2014.

"Why did the FDA refuse more than 58% of 510(k) submissions in 2013?," **Ochoa JA**, The 10x Medical Device Conference, Minneapolis, MN, May 13, 2014.

"Biomedical research—Helping others," **Ochoa JA**, Keynote Speaker. Emerging Ideas in Biomedical Research (EIBR) Conference, College of Engineering, Brigham Young University, San Provo, UT, October 17, 2013.

"From start-up to market leader: Lessons learned in the orthopaedic R&D industry," **Ochoa JA**, Careers in Biomaterials Engineering-Professional Advancement Series, School of Medicine, Stanford University, San Antonio, TX, January 28, 2013.

"How to use the design process to manage risk: Elements of design controls and why it matters," **Ochoa JA**, Stanford Industry Insights, School of Medicine, Stanford University, Stanford, CA, March 13, 2013.

"Panelist on anatomy of medical device litigation in today's market," **Ochoa JA**, Hot Topics in Medical Device and Pharmaceutical Litigation – Bowman and Brooke, Minneapolis, MN, April 18, 2013.

"From benchtop to bedside: The role of the (bio) engineer in new product realization," **Ochoa JA**, Distinguished Biomedical Engineering Lecture, School of Biomedical Engineering, Purdue University, West Lafayette, IN, February 10, 2012.

"The role of analysis in medical device NPD," **Ochoa JA**, 2010 MD&D Annual Conference & Exhibition, Minneapolis, MN, October 13, 2010. Session Chair: Preclinical Testing of Implantable Medical Devices.

"Technical fundamentals of R&D and portfolio management: New product realization in medical devices—The whole story," **Ochoa JA**, Invited Speaker, 2009 RAPS Annual Conference & Exhibition, Philadelphia, PA, September 14, 2009.

"Career perspectives in the medical device industry," **Ochoa JA**, Penn Biotech Group Seminar, University of Pennsylvania, Philadelphia, PA, September 15, 2009.

"Values and value-the role of the leader in work and life," **Ochoa JA**, 2008 NAE Engineer of 2020 Workshop, Purdue University, September 30, 2008.

"Panelist on Consulting Agreements with Physicians: The Role of Bias and Compliance at the Philadelphia Medical Device Symposium," **Ochoa JA**, Philadelphia, PA, November 12, 2008.

"Undergraduate research—(Why) does it matter?," **Ochoa JA**, 4th Annual Undergraduate Research Conference, Keynote Speaker, Missouri University of Science & Technology, Rolla, MO, April 9, 2008.

"The role of the biomedical engineer in new product realization," **Ochoa JA**, BME 390, Professional Seminar, Weldon School of Biomedical Engineering, Purdue University, W. Lafayette, IN, September 21, 2006.

"Emerging field of biomedical engineering—A mechanical engineer's perspective," **Ochoa JA**, ASME District C Student Conference, Missouri University of Science and Technology, Rolla, MO, March 4, 2006.

"Values based decision-making and its role in value creation," **Ochoa JA**, Technology MBA Graduate Seminar, University of Washington, Seattle, WA, October 16, 2004.

"From bioengineering to interfacial and scale engineering—Evolution of new engineering disciplines," **Ochoa JA**, Graduate Seminar, School of Mechanical Engineering, Missouri University of Science and Technology, October 30, 2003.

"Panelist on career and leadership development forum," **Ochoa JA**, Hispanic Organization for Leadership and Achievement (HOLA) at J&J, New Brunswick, NJ, October 23, 2003.

"Values and value—The role of the leader in work and life," **Ochoa JA**, Society of Hispanic Professional Engineers Eastern Technical Career Conference (SHPE-ETCC '03), Keynote Speaker, Washington DC, November 14, 2003.

"Orthopaedic research—The way forward," **Ochoa JA**, Oak Ridge National Laboratory, University of Tennessee Mechanical Engineering Combined seminar, Knoxville, TN, March 13, 2003.

"Technology and IP management in new product commercialization," **Ochoa JA**, Guest Lecture, School of Engineering Management EMgt 320 Technical Entrepreneurship, Missouri University of Science and Technology, Rolla, MO, October 10, 2002.

"The fruit of orthobiologic research," **Ochoa JA**, Faculty of Contemporary Techniques and Issues in Orthopaedics, Whistler, BC, Canada, March 6, 2002.

"The pitfalls that remain in orthopaedic design in 2001," **Ochoa JA**, Contemporary Techniques and Issues in Orthopaedics, Vail, CO, February 12, 2001.

"The role of design, materials, and testing in total joint replacement," **Ochoa JA**, Guest Lecture, SAE Fort Wayne Chapter, Fort Wayne, IN, April 2000.

"Improved wear using gamma sterilization in a vacuum-foil package and calcium stearate-free material," **Ochoa JA**, Faculty of the 1st International Symposium on Total Knee Arthroplasty, Chiba University, Tokyo, Japan, May 1997.

"Mechanisms of failure in THR," **Ochoa JA**, Faculty of the 6th Annual Symposium of Arthritis of the Hip and Knee, Vail, CO, March 9, 1996.

"Proper femoral offset and its impact on THA biomechanics," **Ochoa JA**, Faculty at the Total Hip and Knee Replacement Symposium (Italy-US), Marco Island, FL, February 1995.

"Experimental verification of hydraulic stiffening of cancellous bone," **Ochoa JA**, Invited lecture 2nd World Congress of Biomechanics Symposium on Bone Structure and Remodeling, Amsterdam, The Netherlands, July 1994.

"The effect of intertrabecular fluid on the viscoelasticity of bone," **Ochoa JA**, 14th Annual Garceau-Wray Lectures, Indiana University School of Medicine, November 1989.

"Orthopaedic biomechanics—An introduction," **Ochoa JA**, Seminar, School of Electrical Engineering, Purdue University, October 1987.

"The effect of internal fluid on the viscoelasticity of bone," **Ochoa JA**, Design Seminar, School of Mechanical Engineering, Purdue University, November 1987.

Book Chapters

"Medical Device Regulation and Retrieval Analysis," **Ochoa JA**, Siskey, RL, Kuehn, CM, and Ciccarelli, L, In: Mihalko WM, Lemons J, Greenwald AS, Kurtz S, eds. Beyond the Implant Retrieval Analysis Methods for Implant Surveillance. STP 1606. ASTM International, West Conshohocken, PA, 2018:23–38.

"Contact mechanics of impacting slender rods: Measurement and analysis," Sanders, AP, Tibbitts, I, Kakarla, D, Siskey, S, **Ochoa JA**, Ong KL, Brannon R, In: Dynamic Behavior of Materials, Vol. 1. Springer, New York, NY; 2011:229-236.

Conference Papers and Abstracts

"Variability in the analysis burden for evaluating radiofrequency induced heating of implanted medical devices," Dillon A, Torres W, Bullard A, **Ochoa JA**, Siskey R, Presented at: 2022 Annual Meeting, Biomedical Engineering Society (BMES); October 12-15, 2022; San Antonio, TX.

"Simulating MRI heating of surgical staples for wound closure in orthopaedic surgery," Shaw CB, Hamed E, Siskey RL, White J, **Ochoa JA**, 65th Annual Meeting Orthopaedic Research Society, PS1-035:0920, Austin, TX, February 2-5, 2019.

"MRI heating of interbody fusion devices with radiographic markers," Siskey RL, Midha P, Okafor I, White J, Shaw CB, **Ochoa JA**, 65th Annual Meeting Orthopaedic Research Society, 44: PS1-034:0873, Austin, TX, February 2-5, 2019.

"The ABAQUS living heart: comparison to static and dynamic in- vivo measurements," Briant P, Kreuzer S, **Ochoa JA**, VVS2016-8001, ASME Verification and Validation Symposium, p. 49, Las Vegas, NV, May 19, 2016.

"Finite element analysis of penetrating injury to the human eye," Lovald ST, Rau A, Nissman S, Ames N, McNulty J, **Ochoa JA**, Baldwinson M, 2016 BMES/FDA Frontiers in Medical Device Conference, Innovations in Modeling and Simulation: Patient-Centered Healthcare, Washington, DC, May 23, 2016.

"Finite element analysis of penetrating injury to the human eye," Lovald ST, Rau A, Nissman S, Ames N, McNulty J, **Ochoa JA**, Baldwinson M, Ann Biomed Eng (2016). doi:10.1007/s10439-016-1710-7.

"Finite element analysis of penetrating injury to the human eye," Lovald ST, Rau A, Nissman S, Ames N, McNulty J, **Ochoa JA**, Baldwinson M, 2016 ARVO Annual Meeting, 2399- A0128, Seattle, WA, May 2, 2016

"Finite Element Analysis of Whole Globe Goldmann Applanation Tonometry: A Closer Look at Mechanics," Garcia M, Day J, Rau A, **Ochoa JA**, Lovald ST, 2016 ARVO Annual Meeting, 6458-D0178, Seattle, WA, May 5, 2016.

"Comparative finite-element analysis for defect reconstruction with local flaps," Syamal MN, Lovald ST, **Ochoa JA**, Gaball CW, Ghanem T, Triological Society Combined Sections Meeting, Miami Beach, FL, January 10–12, 2014.

"Comparative finite-element analysis for defect reconstruction with rhomboid flaps," M Syamal MN, Lovald SL, **Ochoa JA**, Ghanem TA, SP108, AAO-HNSF Annual Meeting, Orlando, FL, September 21–24, 2014.

"Treatment patterns, outcomes, and cost of care for distal radius fracture patients in the Medicare population. Paper No. 606," Farner S, Malkani AL, Lau E, Day J, **Ochoa JA**, Ong K, 80th Annual Meeting of the American Academy of Orthopaedic Surgeons, Chicago, IL, March 19–23, 2013.

"Comparative finite element analysis for defect reconstruction with local flaps," Syamal MN, Lovald ST, **Ochoa JA**, Gaball CW, The Triological Society 2014 Combined Sections Meeting, Miami Beach, FL, January 10–12, 2014. Middle Section Joseph Ogura, MD – Research Award.

"Trends in revascularization and mortality for BMS and DES coronary stenting procedures: A Medicare study of 156,300 patients," Patel J, Ong K, Watson W, Kuehn C, **Ochoa JA**, Poster No. 659, Transcatheter Cardiovascular Therapeutics (TCT) Conference, Miami, FL, October 22–26, 2012.

"Historical trends in outcomes following aortic and mitral heart valve replacement procedures: A population-based study of 29,582 Medicare patients from 1997 to 2009," Patel J, Ong K, Watson W, Helmus M, Kuehn C, **Ochoa JA**, Poster No. 877 (Top 25 Poster), Transcatheter Cardiovascular Therapeutics (TCT) Conference, Miami, FL, October 22– 26, 2012.

"Perioperative outcomes, complications, and costs associated with lumbar spinal fusion in older patients with spinal stenosis and spondylolisthesis: Analysis of the United States Medicare claims database," Auerbach JD, Ong KL, Lau E, **Ochoa JA**, Schmier J, Zigler JD, NASS 27th Annual Meeting, Dallas, TX, October 24–27, 2012.

"Cost-effectiveness of interlaminar stabilization compared with instrumented posterior spinal fusion for spinal stenosis and spondylolisthesis," M Auerbach JD, Ong KL, Lau E, **Ochoa JA**, Schmier J, Zigler JD, NASS 27th Annual Meeting, Dallas, TX, October 24–27, 2012.

"Descriptive epidemiology of medical device use among patients with breast, lung or prostate cancer in the national inpatient sample," Kuehn CM, Watson H, Ong KL, Mohamed M, **Ochoa JA**, Fryzek J, ISPE's 28th ICPE: International Conference on Pharmacoepidemiology & Therapeutic Risk Management, Barcelona, Spain, August 22–26, 2012.

"Perioperative outcomes, complications, and costs associated with lumbar spinal fusion in older patients with spinal stenosis and spondylolisthesis: analysis of the United States Medicare claims database," M Auerbach JD, Ong KL, Lau E, **Ochoa JA**, Schmier JK, Zigler JD, International Society of Pharmacoeconomics and Outcomes Research 17th Annual International Meeting, Washington, DC, June 2–6, 2012.

"Historical trends in outcomes following aortic and mitral heart valve replacement procedures: A population-based study of 29,582 Medicare patients from 1997 to 2009," Ong KL, Patel JP, Watson H, Helmus M, Kuehn CM, **Ochoa JA**, Presentation No. P20, Quality of Care and Outcomes Research in Cardiovascular Disease and Stroke (QCOR), Atlanta, GA, May 9–11, 2012.

"Perioperative outcomes, complications, and costs associated with lumbar spinal fusion in older patients with spinal stenosis and spondylolisthesis: analysis of the United States Medicare claims database. Paper No. 516," M Auerbach JD, Ong KL, Lau E, **Ochoa JA**, Schmier JK, Zigler JD, International Society for the Advancement of Spine Surgery, Barcelona, Spain, March 20–23, 2012.

"Historical trends in outcomes following aortic and mitral heart valve replacement procedures: A population-based study of 29,582 Medicare patients from 1997 to 2009," Ong K, Patel J, Watson H, Helmus M, Kuehn CM, **Ochoa JA**, 4th Annual Joint Scientific Session of the Heart Valve Society of America and Society for Heart Valve Disease, Valves in the Heart of the Big Apple VII: Evaluation & Management of Valvular Heart Diseases, New York, NY, April 12–14, 2012.

"Population-based analysis of the epidemiology and reintervention rates of cardiovascular stenting procedures: A Medicare study," Ong K, Watson H, Patel JD, Kuehn CM, **Ochoa JA**, TCT 23rd Annual Scientific Symposium, San Francisco, CA, November 7–11, 2011.

"Why are implantable cardioverter-defibrillators and pacemakers being revised today?," M Hanzlik JA, Patel JD, Kurtz SM, Horn QC, Shkolnikov YP, **Ochoa JA**, Pavri BB, Greenspon AJ, MPMD 2011 – Fatigue Life and Durability of Medical Devices Session I, Minneapolis, MN, August 8–10, 2011.

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