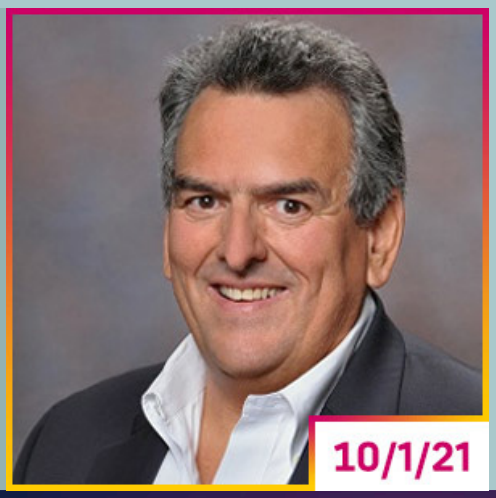
FIU Engineering & Computing
Biomedical Engineering

Wallace H. Coulter Foundation
Biomedical Engineering Seminar Series

CARLOS LAVERNIA, MD, FACS, FAAOS graduated from Tulane University in New Orleans with a BS in Mathematics and an MS in Biomedical Engineering. He received his medical degree from the University of Puerto Rico Medical School. He also completed a General Surgery Internship, a Surgeon Scientist NHI Fellowship and an Orthopedic Surgery Residency at the University of California San Diego. Subsequently, Dr. Lavernia completed a Lower Extremity Reconstruction Fellowship at Johns Hopkins School of Medicine. He is certified by the American Board of Orthopedic Surgery and has recertified in 2005 and 2015.

Throughout his distinguished career, Dr. Lavernia has developed hip and knee implants and has conducted numerous studies in the field of orthopaedics. His designs have been implanted in over 1 million patients. He has written many book chapters and has published over 300 abstracts and peer reviewed articles. These have been published in prestigious journals, including Clinical Orthopedics and Related Research, The Journal of Arthroplasty, Journal of Bone and Joint Surgery and International Orthopedics. In 2011 he was president of the American Association of Hip and Knee Surgery. This society is the largest society of arthroplasty surgeons in the world with over 2000 members. He also served as the president of the Florida Orthopedic Society in 2015.



DR. CARLOS LAVERNIA

Adjunct Professor Biomedical Engineering
University of Miami

FRIDAY, OCTOBER 1 / 9:00 AM

ROBOTICS IN ORTHOPEDICS

ABSTRACT: Robotic assisted surgery has been introduced as an alternative approach to hip and knee surgery. It can potentially increase implant longevity providing a more accurate component positioning. Robotic technology has been utilized in arthroplasty surgery for over 20 years . In its early stages, robotic interventions in arthroplasty were first utilized in THA but showed mixed results in improving outcomes. Haptic-guided robotic technology was introduced in partial knee arthroplasty around 2008 and has changed the landscape . Several papers have shown decreased complications and increased accuracy in component placement with this system . Haptic-guided robotic-arm assisted total hip replacement technology combines advanced imaging techniques with a robotic-arm. This allows the surgeon to plan the procedure in 3 dimensions and execute the surgical procedure with the help of a digitally defined haptic boundary. This methodology combined with the ability to change the plan and execution in real time provides a unique tool for the performance of total hip replacement . The use of this haptic technology in RATHA has been shown in several centers to reduce variance in the placement of implants, reduce incidence of leg length discrepancy, better recreate the patient's biomechanics, reduce complications and improve outcomes. The use of robotic technology with its ability to achieve desired component positions has the potential to enhance the outcomes of THA.

Through the generous support of the Wallace H. Coulter Foundation, the Department of Biomedical Engineering facilitates weekly lectures each year during academic terms. Experts in all areas of Biomedical Engineering are invited to provide a research seminar and to meet with faculty and students to discuss the latest developments and research in Biomedical Engineering.

Friday, October 1, 2021
9:00AM-10:00AM | https://bme.fiu.edu/seminars