

BIOENGINEERING

Fall 2020 Seminar

Date: Thursday, October 1, 2020

Time: 12:00 pm - 1:00pm

Location: Virtual

Join Zoom Meeting—[https://gmu.zoom.us/j/92554249038?](https://gmu.zoom.us/j/92554249038?pwd=V2p1ZUdqM1Y2RnBCcWhDU0V0T2FZZz09)

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Meeting ID: 925 5424 9038 Passcode: 640851



Jonia Alshiek, Ph.D.

Biography: Dr. Jonia Alshiek is an Alt. Assistant Professor of Biomedical Engineering at GMU, Senior Research Scholar at Inova Dept of OB/GYN, and a Lecturer at Technion Faculty of Medicine in Israel. Dr. Alshiek is a member of the Ultrasound of Pelvic Floor Investigation and Therapeutics (UPFIT) team and focuses her research on Ultrasound Imaging and Assessment of Pelvic Floor Structures. “I focus on geometric and structural analysis of the collected ultrasound 3D volumes to assess minimal levator hiatus, levator ani muscle deficiency, and the levator plate descent angle. This information along with the quantitative ultrasound, elastography, and fetal data will enable us to achieve our aims of elucidating pelvic floor injuries in Women during childbirth. Additionally, I focus on innovation and evolution of medical devices in the field of medical robots and ultrasonography”.

S. Abbas Shoibeiri , MD.

S. Abbas Shoibeiri, MD is the Vice Chair of the Department of Obstetrics and Gynecology at Inova Fairfax Hospital. He is a professor of obstetrics and gynecology, cell biology, and biomedical engineering. Dr. Shoibeiri obtained his Bachelor degree from the University of Washington, Medical Degree from TUFTS University, and completed his residency and fellowship at Louisiana State University in New Orleans. Dr. Shoibeiri is the director of the NAFC designated national center of excellence. The program has possessed competitive ICS and IUGA research scholar program. Dr. Shoibeiri is also the director of the Inova-GMU multidisciplinary Ultrasound of Pelvic Floor Investigation and Therapeutics (UPFIT) team. Dr. Shoibeiri has been the recipient of many research and educational awards, including AUGS Best Educational Research award, APGO Excellence in teaching award, and the BJOG best reviewer award to name a few. He has received funding from NICHD, AUGS, ACOG and the industry. Dr. Shoibeiri’s research interests include basic science neuroanatomy, the study of pelvic floor and ultrasound imaging. He has been a grant reviewer for NIH, ACOG, AUGS, and American Federation for Aging Research. He is a manuscript reviewer for multiple journals. He has authored >140 articles in scientific journals as well as many chapters for textbooks standard to the field of Urogynecology. He is the editor of “Practical Pelvic Floor Ultrasonography” and “The Innovation and Evolution of Medical Devices” books.



Title: Pelvic floor injury and childbirth

Abstract: Mechanistic research on pelvic supportive structures and how these are altered with pregnancy, delivery, and aging has been identified as a critical knowledge gap in the American Urogynecologic Society Prolapse Consensus Conference Summary Report. The levator ani muscle (LAM) is a functionally important pelvic support structure. Its main functions include the control of defecation, urination, and the ability to have intercourse while supporting the internal organs in the pelvic cavity. When these functions are dysregulated, women and their family units suffer physically, mentally, socially, and economically. During vaginal birth, when damage occurs to the LAM, a host of conditions classified under pelvic floor disorders (PFD) can develop. Approximately 37% of all women are affected by PFD with about 19% requiring surgery during their lifetime. Currently, three-dimensional ultrasound (3D US) imaging is the most widely available and the most economical imaging modality for the evaluation of LAM changes associated with pregnancy and vaginal birth. Microscopic muscle stretching and irreversible LAM overdilatation (LAM-OD) can result from prolonged second stage of labor and passage of large fetal head. Less frequently frank separation of the LAM from its bony insertion (avulsion) occurs mostly when forceps is used in 13% of patients. When women deliver babies vaginally, one in three develops LAM hematomas as a result of overdilatation within hours of delivery. While the hematomas within the LAM resolve and the overdilatated muscles heal, 28.5% of women sustain irreversible LAM-OD. The effect of these injuries can be additive with subsequent births resulting in further LAM-OD and increasing odds of developing pelvic organ prolapse in the future. Inova-GMU Ultrasound of Pelvic Floor Investigation and Therapeutics group investigates factors that lessens the risk of pelvic floor injury in women.