

## Ergonomics in Operating Room: A Case Study of Vaginal Surgeons

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**Abstract:** Increasing attention has been drawn to the prevalence of work-related musculoskeletal disorders (MSDs) among surgeons in various medical specialties; however, the risk of work-related MSDs among vaginal surgeons has not received much attention. Postural stress has been found to be highly associated with the development of work-related MSDs. This study aimed to investigate the postural load among vaginal surgeons for various surgical tasks during vaginal surgery. The frequency and percentage of duration of awkward upper body postures experienced by vaginal surgeons during eleven different vaginal surgical tasks observed during thirteen surgeries were collected using a new observational ergonomic job analysis tool, Ergonomic Posture Assessment in Real Time (ErgoPART). Results indicate that the postural loading is high for many surgical tasks but that the frequency and duration of awkward neck, shoulder, and trunk postures is variable across tasks. Surgeons' postural load was significantly higher for the transvaginal hysterectomy compared to others. This task, in particular, is a candidate for ergonomics interventions designed to reduce postural stress.

**Bio:** *Dr. Xinhui Zhu* is an Assistant Professor in the School of Mechanical, Industrial, and Manufacturing Engineering, Oregon State University. She received her Ph.D. degree in Industrial Engineering from University at Buffalo, the State University of New York. Her research centers around three themes: 1) occupational safety, 2) usability of products and environments across diverse user populations including wheelchair users, and 3) development of new assessment tools to assist with data collection in ergonomics studies. Her most recent research focuses on the workload experienced by surgeons during surgeries. She is interested in the interactions between physical, cognitive and psychosocial factors in the operating rooms and how these factors influence surgeons' workload. Her work to date have resulted multiple journal papers and conference proceeding articles focusing on addressing human factors/ergonomic issues in office, healthcare, construction and forest work environments. She has been a member of Human Factors and Ergonomics Society since 2011. She is an active member of the Tau Beta Pi Engineering Honor Society and the Alpha Pi Mu Industrial Engineering Honor Society. She starts to serve as the Membership Chair of the Willamette Valley Section of the Society of Women Engineers in 2016.

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