



Case Based Spine Workshop for a PM&R Residency – A Resident Led Initiative

Dylan Banks MD, Christopher Ortiz MD, David Jevotovsky MD
New York University, Rusk Rehabilitation



Introduction

- The authors, a group of PM&R residents, aimed to enhance our program's spine curriculum by developing an interactive case-based spine workshop to allow residents to explore the intricate nuances of spine pathologies.
- Workshop goals: improve residents' understanding of similarly presenting diagnoses, identify key history and exam findings to guide clinical decision-making, examine characteristic imaging for different pathologies, and discuss treatment algorithms for managing these complex conditions.
- Additionally, we sought to improve resident understanding, proficiency and comfort in performing interventional spine procedures.

Methods

- **Overview:**
 - Two-part spine workshop for our PM&R residency program, led by the authors of this submission, along with three fellowship-trained pain and spine physicians.
 - A pre-and post-workshop assessment was developed to evaluate self-reported subjective understanding and objective competency with the workshop material.
- **Part I**
 - Six resident-created case scenarios which examined unique spine pathologies including cervical radiculopathy, lumbar radiculopathy, lumbar axial pain, vertebrogenic pain, sacroiliac pain, and persistent pain following spinal surgery.
 - Each case utilized primary literature to identify common presenting symptoms, key physical exam findings, and potential differential diagnoses.
 - Participating residents examined corresponding imaging before engaging in an in-depth discussion of literature-based treatment recommendations and procedural considerations.
- **Part II**
 - Hands-on interventional spine workshop, utilizing a lumbar spine model and fluoroscopic C-arm.
 - Procedures practiced included lumbar interlaminar and transforaminal epidural steroid injections, lumbar medial branch blocks, and sacroiliac joint injections. Procedural techniques were discussed with a fellowship trained pain physician (**Image 1**).
 - Residents gained exposure maneuvering the C-arm to obtain appropriate views of needle placement and target landmarks.

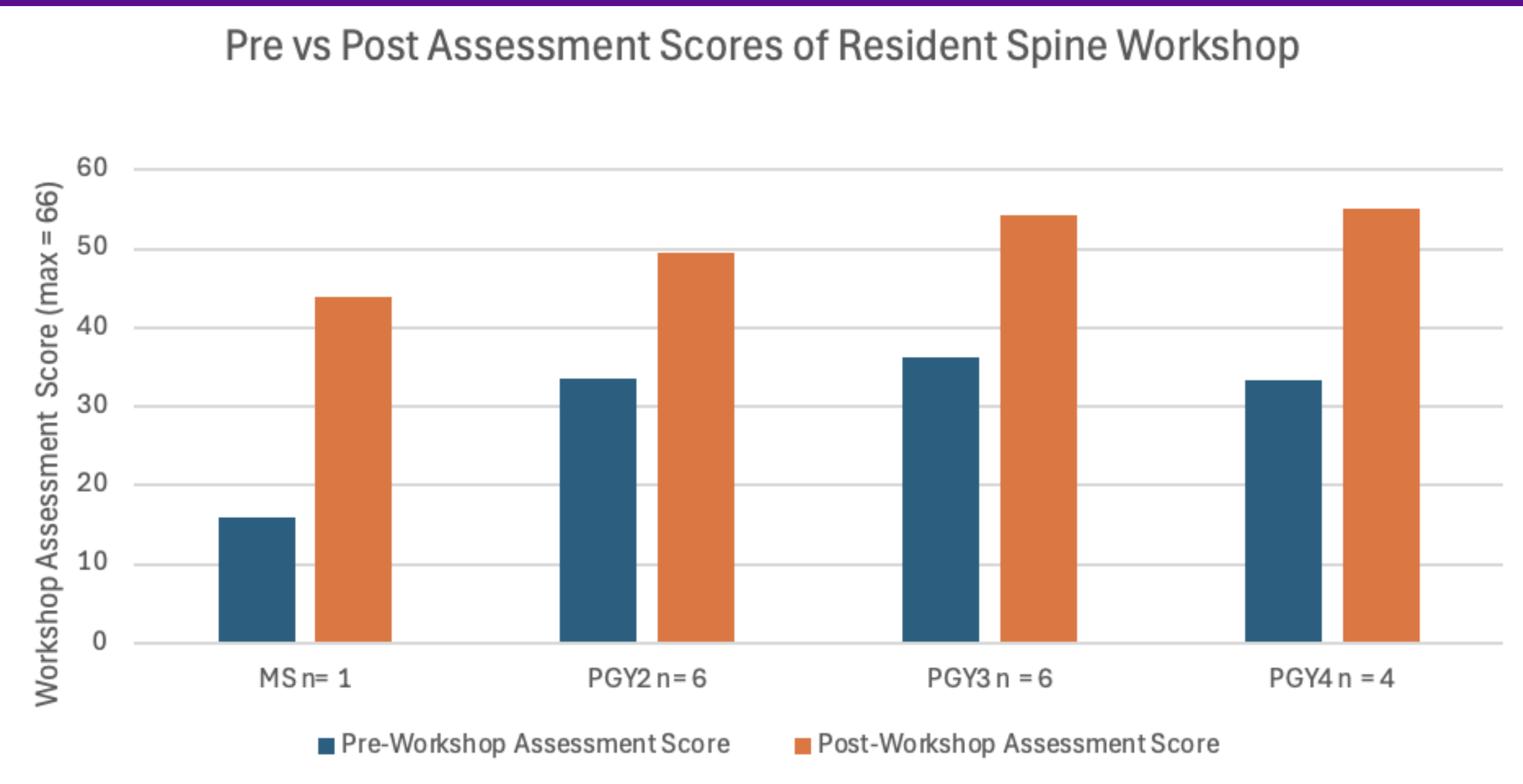


Image 1: Hands on resident training on a fluoroscopic compatible lumbar model

Assessment/Results

- An average 28% improvement was noted in the pre- versus post-workshop assessment scores across all training levels. Raw scores are demonstrated in **Graph 1**.
- The largest average improvement was by the medical student (n=1) at 42%, followed by PGY4's (n=4) at 33%.
- PGY2's (n=6) had a 24% average improvement and PGY3's (n=6) had an average 27% improvement.

Discussion

- Our resident-led project aimed to create an enjoyable, educational, and interactive workshop that provided a comprehensive analysis of six spine pathologies.
- Given the nuanced and complex nature of spine pathologies, we hypothesized this model of learning would enhance residents' understanding and ability to differentiate these conditions in clinical practice.
- Furthermore, the workshop offered a low-stakes simulation environment to practice procedural knowledge and skills.
- Our workshop's success is supported by improvement in self-reported understanding and objective competency of workshop material, based on our workshop assessments.
- Notably, the medical student had the largest improvement which the authors suspect is due to prior unfamiliarity with spine pathologies.
- We believe our model could be integrated into other residency programs aiming to enhance education of spinal pathologies and better prepare residents for the clinical management of spine conditions.