

Retrospective Analysis of Conservative Treatment Modalities for Lumbar Spinal Stenosis: A Two Year Review

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Background & Objective

Lumbar stenosis is a common disorder of the spine primarily affecting the middle-aged and elderly population¹. The average age of presentation for LSS is 73 years of age². Symptoms include pain in the back and lower extremities, difficulty ambulating, leg paresthesias, and weakness. Nonsurgical treatments include: physical therapy, NSAID and opioid analgesics, epidural steroid injections.

Our objective is to review outcomes of interdisciplinary conservative treatment of lumbar stenosis patients to determine which interventions provide the greatest relief. With more knowledge of patient response to treatment, our goal is to target therapies in order to obtain the best therapeutic results with optimum resource utilization.

Study Methods

The study was conducted at Michigan Pain Consultants, an interdisciplinary community-based pain medicine practice, based in Grand Rapids, MI. The practice has 7 clinical locations covering a service area of 6 counties in West Michigan. The data was collected using the Pain Health Assessment (PHA) within the PRISM™ Care Management System. The PRISM™ System provides real-time clinical data to analyze and inform patient care, estimate narcotic risk, and track outcomes. This is an integral component of current healthcare movements toward patient centeredness, quality management and best practice in pain medicine as recommended by the Institute of Medicine³.

The PHA data is routinely gathered from chronic pain patients in the practice using IRB approved language in the consent forms.

Pain Health Assessment (PHA)

The Pain Health Assessment (PHA™) is a patient self-assessment instrument that provides demographic, medical and social history. It was inspired by the SF-36 and contains core outcomes domains that evaluate the efficacy and effectiveness of treatments, consistent with the recommendations of the Initiative on Methods, Measurement, and Pain Assessment in Clinical Trials (IMMPACT). Responses were coded on an 11 point numeric and descriptive pain intensity scale with 0 "most positive" and 10 "most negative".

PAM Advisor

The PAM Advisor is part of the PRISM™ Care Management System. It advises a patient risk score based on psychosocial impairment gathered from the PHA (Figure 1). The PAM Advisor is necessary for establishing comparison groups for research and population analyses purposes.

Methods (continued)

We conducted a retrospective cohort study of 2157 patients diagnosed with lumbar stenosis who completed an initial PHA questionnaire, received intervention, and then completed follow up PHA between 1/1/2011 – 3/31/2013.

To assess changes in functional lower body impairment and percent relief, analysis of covariance (ANCOVA) statistical testing were done and a criterion of significance of less than 0.05 was used. Covariates that were controlled for included age, gender, PAM score, opioid consumption, and initial lower body impairment (LBI).

From the PHA, a number of outcomes were measured at initial visit and at follow up in:

- The objective functional LBI was used to measure impairment of activities such as climbing stairs, bending/ kneeling, walking one block, walking several blocks, and walking a mile or more
- Percent relief

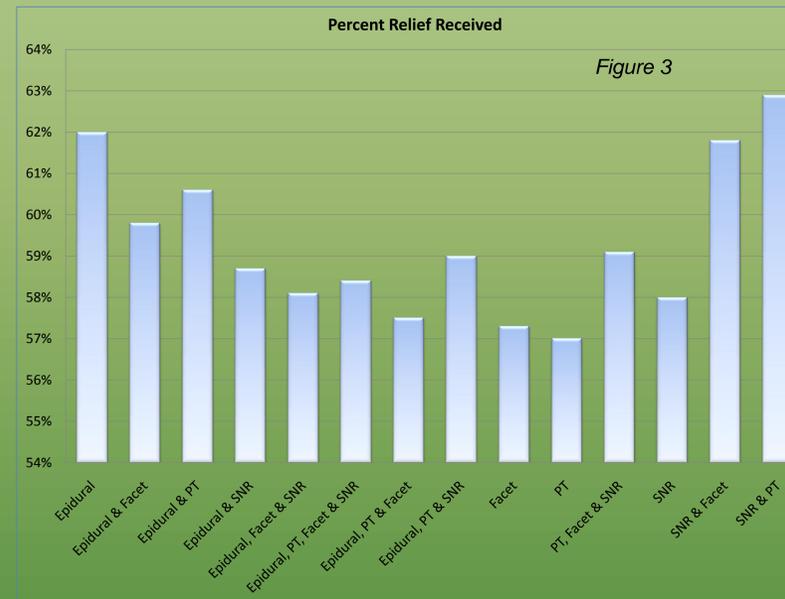
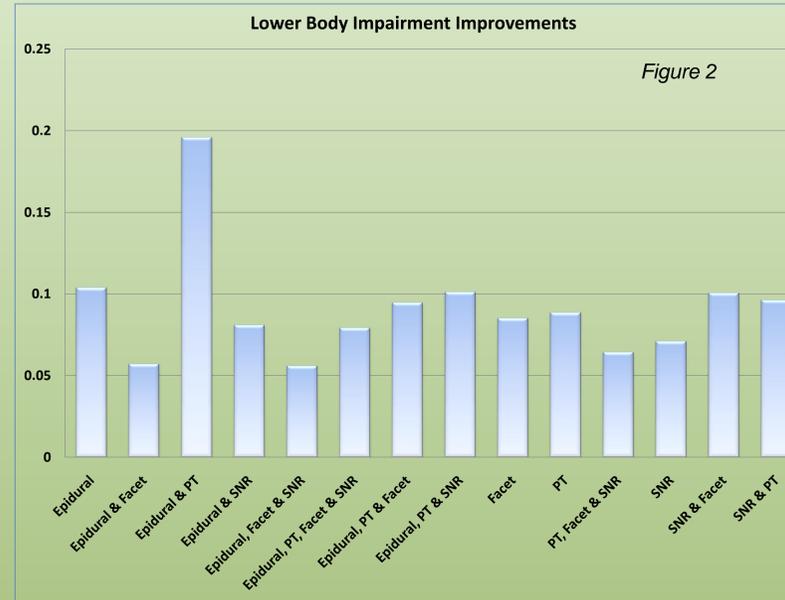
Results

- Patients with higher PAM scores were found to have, on average, 0.15 greater lower body impairment as compared to patients with lower PAM scores
- Patients who received epidural + PT had the highest improvement in objective functional LBI, showing an average of 0.196 improvement vs 0.088 using PT alone (Figure 2)
- SNRs and PT provided best pain relief at 62.9% (Figure 3), but did not provide the greatest benefit for LBI improvements
- LESIs provided 62% pain relief (Figure 3)
- 34% of patients were prescribed opioid analgesics
- On average, patients receiving opioids had significantly lower improvements in LBI compared to those not receiving opioids (p-value = .0004)
- Average number of LESI performed per year was 3.2
- Better response was found in males, younger age cohorts, higher initial LBI dysfunction. Poorest responders were in the PAM 3 level

Figure 1

PAM Score	Description
1	Low anatomical pathology, Good psychosocial health
2	High anatomical pathology, Good psychosocial health
3	Low anatomical pathology, Poor psychosocial health
4	High anatomical pathology, Poor psychosocial health

Results (continued)



Key Points

1. An interdisciplinary approach of Physical Therapy and Epidural treatment provides the best pain relief, as well as the best LBI improvements
2. Patients with poor psychosocial health had greater initial functional impairment and less improvement with treatment
3. Opioids did not improve pain relief or functional status

Discussion & Conclusions

Physicians should have better assessment tools that augment the history and physical examination to better understand how lumbar spinal stenosis affects the whole person. In order to obtain the best therapeutic results, psychosocial impairment should be addressed along with anatomical pathology. Our results support previous studies which show that patients with psychosocial impairments do not respond to pain treatments the same way other patients do^{4, 5}. To address both the pain and functional impairment of lumbar stenosis, multimodal therapies provide better overall results. We recommend a comprehensive conservative approach as a first line treatment for patient's with spinal stenosis without neurological deficits.

Recommendations

- Patients with lumbar stenosis should be evaluated with multidimensional whole person pain health and risk assessment tools
- To obtain best results in both pain relief and functional impairment, a combination of epidural steroid injections and physical therapy should be considered
- Opioids do not have a front line role in the treatment of lumbar stenosis

References

1. Alvarez JA, Hardy RH. 1998, Lumbar Spinal Stenosis: A common cause of back and leg pain. *American Family Physician*. Apr 15;57(8):1825-1834
2. Spivak JM, 1998, Degenerative Lumbar Spinal Stenosis. *J Bone Joint Surg Am*; 80 (7); 1053-1066
3. 2011, Relieving Pain in America: A Blue Print for Transforming Prevention, Care, Education, and Research. *Institute of Medicine of the National Academies*. June
4. Wasan AD, Jamison RN, Pham Loc, Tipirneni N, et al. 2009, Psychopathology predicts the outcome of medial branch blocks with corticosteroid for chronic axial low back or cervical pain: a prospective cohort study. *BMC Musculoskeletal Disorders*. 10:22doi:10.1186/1471-2474-10-22
5. Wasan AD, Davarb G, Jamison R. 2005, The association between negative affect and opioid analgesia in patients with discogenic low back pain. *Pain*. 117 450-461