Percutaneous Lumbar Intervertebral Disc Decompression Using the Dekompressor: 8-Year Outcomes.

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Introduction:

Percutaneous intervertebral discectomy (PD) is a treatment option for individuals with radicular pain of discogenic origin who have failed conservative and injection therapy. Few non-industry conflicted studies have investigated the efficacy of PD with Dekompresor, and no study has assessed outcomes beyond 2-years. This study aimed to determine 8-year outcomes of PD using Dekompresor for the management of lumbosacral radicular pain caused by intervertebral disc herniation (IDH).

Methods:

This longitudinal cohort study was conducted at a tertiary academic spine center. Consecutive patients evaluated 12/2004-11/2005 were included if they had lumbosacral radicular pain caused by IDH, failed conservative treatment including epidural steroid injections, and subsequently underwent PD with Dekompresor. IDH as the etiology of radicular pain was corroborated by history, examination, and magnetic resonance imaging. Oswestry Disability Index (ODI) score, visual analog scale (VAS) leg pain score, patient satisfaction on a 5-point Likert scale, and surgical rate data were collected by phone at 8-year follow-up.

Results:

Seventy patients underwent PD. Twenty-five had pre-procedure data and were successfully contacted. At 8-year follow-up, 72% (95% Confidence Interval [CI] 54%, 90%) reported >30% improvement in ODI score, and 80% (CI 64%, 96%) experienced >50% improvement in leg pain on the VAS. Eight (67%) of the original 12 patients who took opioids had discontinued these medications. Seven (28%) patients had spinal surgery after PD. The median (25%-75% interquartile range) patient satisfaction score was 4 (2, 5), indicating “moderate satisfaction.”

Conclusions/Discussion:

While limited by loss-to-follow-up, the present study suggests that treatment of lumbosacral radicular pain caused by intervertebral disc herniation with Dekompresor results in decreased in disability and leg pain, as well as reduced opioid use and favorable satisfaction with treatment at 8-year follow-up. Further study is needed to determine if Dekompresor reduces surgical rates compared to other non-surgical treatments at long-term follow-up.
Abstract 2

Patient factors associated with a clinically significant decrease in pain intensity at a free-standing, interdisciplinary pediatric and adolescent chronic pain treatment center: a retrospective study

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Introduction: Interdisciplinary care is effective for management of pediatric chronic pain (APS 2012). However, patients' demographic, interpersonal, and comorbid illness with respect to treatment response have not been identified consistently. Further information on these factors is needed to optimize treatment and outcomes for patients and families.

Methods: After IRB approval, a retrospective chart review of 114 patients, ages 8-18, presenting consecutively at an interdisciplinary pain clinic between 2006-2014 was conducted. Factors identified included, 1) Gender, 2) Medicaid status, 3) Pain type, 4) Pain intensity at initial/final clinic visit (on 11-point NRS scale), 5) Treatment duration, and 6) Presence of psychiatric symptoms (anxiety, depression, ADHD, conduct problems). A decrease in pain intensity of ≥30% was designated as a clinically important change for analysis (Jensen 2009). Optimal data analysis (ODA) was used to assess each factor in predicting a clinically important decrease in pain intensity over the patients' duration of treatment, and a classification tree was developed to determine the combination of factors providing the most powerful predictors.

Results: 46.5% of patients reported a clinically significant decrease in pain intensity. Pain type, initial pain intensity, and generalized anxiety were associated with clinically significant decreases in pain intensity. Less anxiety predicted clinically meaningful decreases in pain intensity 57.5% of the time. For patients with greater anxiety prior to treatment, the combination of greater anxiety and neuropathic pain correctly predicted a clinically meaningful decrease in pain 60% of the time, while having greater anxiety and non-neuropathic pain predicted a poor response to treatment 81% of the time. Pain intensity did not improve prediction in either group.

Conclusions/Discussion: Anxiety may impede pain treatment success in clinical settings, especially among pediatric patients with non-neuropathic pain. Screening for anxiety and emphasizing psychological interventions as a major component of interdisciplinary treatment would likely improve outcomes. Prospective, randomized studies are needed to provide further information about factors and indicators of treatment success and failure.

References:


Utility of Biomechanical Assessment before and after an Integrative Training Program for Adolescents with Juvenile Fibromyalgia

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Introduction: The recommended treatment of juvenile fibromyalgia (JFM) symptoms is primarily through learning self-management strategies such as pain coping strategies and healthy lifestyle habits with particular focus on physical exercise [1]. Adolescents with JFM tend to be sedentary [2] and show altered biomechanics [3] which may contribute to their exercise avoidance. A novel intervention combines evidence-based cognitive behavioral therapy with specialized neuromuscular exercise training (Fibromyalgia Integrative Training for Teens; FIT Teens) to promote improved functioning, including enhanced movement skills and confidence in adolescents with JFM [4]. The aim of this study was to establish whether objective biomechanical assessment is useful in measuring improvements in strength, balance, gait, and functional performance after participation in the FIT Teens program.

Methods: Eleven female participants with JFM (ages 12-18 years) participated in the eight-week FIT Teens intervention and pre- and post-assessments, including walking gait analysis, lower extremity strength assessment, functional performance, and dynamic postural stability.

Results: Participants’ walking stride length increased significantly from pre- to post-intervention (p<.05), and mechanics of walking gait and functional performance demonstrated improvement (p<.05). Right knee extension strength and right hip abduction strength increased significantly (p≤.05). Dynamic postural control (balance) demonstrated small improvements bilaterally (p<.10). Additional analyses of patient-reported variables indicated significant decreases in fear of movement and functional disability from pre to post-intervention (p<.05).

Conclusions/Discussion: Overall, the results of this study offer initial evidence for the utility of biomechanical assessment to objectively demonstrate small yet observable changes in biomechanical performance after an integrated training intervention for youth with JFM. Results suggest that through the FIT Teens intervention, adolescents with JFM can progress towards normalized strength and biomechanics, which may translate into improved movement confidence and engagement with physical exercise. Sophisticated measurement of biomechanics may offer enhanced capabilities to better design intervention protocols specifically targeting biomechanical deficits for optimal outcomes.


Biofeedback and Relaxation Training: an Interdisciplinary Treatment Modality.

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Introduction: Biofeedback and relaxation training is an important component in our intensive interdisciplinary pain management programs (Full program: 8 hours per day, 5 days per week, or Half Day 4-5 hours per day, 1-2 days per week). We seek to assess the outcomes from this treatment modality as well as better understand the relationships of these outcomes and how they may differ among patient subsets.

Methods: Measures included a modified version of the Chronic Pain Self-Efficacy Scale (CPSS) and a numeric rating scale (0 “no pain” to 10 “worst imaginable”) was used to assess average pain and average tension at initial treatment and at discharge.

Results:

Patients reported significant reductions in both pain (p = .001) and tension (p = .000) with mean reductions of greater than ½ of a point (0.65 and 0.78, respectively). Patients reported increased self-efficacy in their ability to manage their pain and successful do biofeedback following treatment (p’s = .000). Furthermore, patient’s increased self-efficacy to manage pain was associated with greater reductions in average pain ratings (r = .322, p = .005). Men and women had similar outcomes and patient outcomes did not differ based on program participation, all p’s >.05. Patients receiving workers compensation had similar improvements in their perceived ability to biofeedback and in their overall perceived ability to control their pain; however, they showed significantly smaller reductions in average pain (p = .012) and average tension (p = .018) than those without a worker’s compensation claim.

Conclusions/Discussion: Biofeedback has a substantial impact on a patient’s abilities to both manage and reduce their pain and tension. However, in this small sample those with potential secondary gain reported less improvement in both pain and tension, but did show increased perceived ability to manage their condition.
Central pain inhibitory and excitability measures are independent of each other

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Introduction: Pain sensitivity varies widely among individuals and reflects the balance between endogenous inhibition and excitation. Central inhibition is commonly assessed using conditioned pain modulation (CPM) while central excitability is commonly assessed using temporal summation (TS). Individuals with chronic pain often exhibit reduced CPM or higher TS. However, it is unclear if CPM and TS are related or independent measures.

Methods: Pain-free adults (n=103, 52M; 18-52 yr) were assessed for pressure TS by applying pressure to the dorsal forearm (custom apparatus, 1 cm² tip, individualized pressure) for 30 sec at 0.5 Hz. CPM was assessed using a 60s hand immersion in 0°C water as the conditioning stimulus. Two CPM test stimuli were considered: pressure pain thresholds (PPTs) of the middle deltoid (Somedic, 1 cm² tip, 30 kPa/sec; CPMPPT) and the pressure TS test (CPMTS) before and after contralateral cold water hand immersion. Participants rated their pain every 15 sec (Borg CR-10) during TS and cold-water immersion. Responder status was defined as increased pain ≥ 0.5 for TS, increased PPTs ≥ 1 standard deviation for CPMPPT, and decreased TS pain ≥ 0.5 for CPMTS.

Results: 66.0%, 48.5%, and 41.7% of participants exhibited TS, CPMPPT, and CPMTS, respectively. TS responders and non-responders showed similar CPMPPT responder rates (Χ²1,103=0.178, p=0.67), and TS responders showed similar CPMTS responder rates (Χ²1,72=6.241, p=0.01), but TS non-responders were less likely to exhibit CPMTS (floor effect, p = 0.001). TS responders exhibiting CPMPPT were more likely to also exhibit CPMTS and vice versa (Χ²1,51=4.464, p=0.04).

Conclusions/Discussion: These results suggest that central inhibition and excitation measures are independent from each other. That is, deficient CPM does not necessarily indicate enhanced TS and vice versa. Future research is needed to determine if these findings are consistent in a patient population.

References:


Abstract 5
Post-Operative Predictors of Persistent Pain Following Total Knee Arthroplasty

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Introduction: At least 20% of patients experience persistent pain following Total Knee Arthroplasty [Wylde et al., 2013]. Preoperative pain severity and psychological distress have been shown to predict the development of persistent postoperative pain in this population [Utrillas-Compaired et al., 2014]. It is unknown if these predictors change following surgery and if postoperative care influences this outcome. The purpose of this study was to examine postoperative predictors of persistent pain following TKA.

Methods: This study examined the impact of post-operative resting and movement pain, psychological distress (depression, anxiety, and pain catastrophizing), and pain sensitivity on persistent pain at 6 months following TKA. Participants included TKA patients (N = 193); the sample was 56% female and the mean age was 62 years (SD = 9.44). Participants completed questionnaires, rated pain at rest and during active range-of-motion, and underwent quantitative sensory testing 6 weeks and 6 months postoperatively. These data were collected as a part of a larger randomized control trial, testing the efficacy of TENS following TKA.

Results: Sixteen percent of the sample continued to report moderate to severe knee movement pain six months after surgery (as reported previously in Noiseux, et al., 2014). In further analyses, (i.e. logistic regression analyses) controlling for treatment group, each independent variable of interest significantly predicted pain intensity during active flexion/extension of the knee at 6 months: postoperative resting and movement pain, state anxiety, and pain catastrophizing (p’s<.05). Depression approached significance (p=.06). Pain sensitivity measures were not significant. Conclusions/Discussion: These findings suggest that 6 week postoperative resting and movement pain, state anxiety, and pain catastrophizing predict higher movement pain six months following TKA. We expect this study to aid in the development of interventions to reduce persistent pain following TKA.

References:


Dexamethasone versus Particulate Steroid Injections for the Treatment of Needle Electromyography-Confirmed Painful Lumbosacral Radiculopathy

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Introduction:

Transforaminal epidural steroid injection (TFESI) using non-particulate versus particulate steroid is a source of controversy. No study has compared steroid type for the treatment of needle electromyography (EMG)-confirmed painful lumbosacral radiculopathy. This study investigated whether dexamethasone or particulate steroid is more effective in the treatment of EMG-confirmed painful lumbosacral radiculopathy, as measured by pain and opiate consumption.

Methods:

This is a longitudinal cohort study, conducted at two tertiary academic spine centers. Consecutive patients, age ≥18 years, with EMG-confirmed lumbosacral radiculopathy who underwent TFESI to treat radicular pain within 6 months of EMG were included. The primary outcome measure was the proportion of patients with >50% pain reduction at intermediate follow-up after TFESI.

Results:

Seventy-eight individuals, age (±standard deviation) 56±16 years and EMG-confirmed painful lumbosacral radiculopathy underwent a TFESI. Eight (10%) and 30 (38%) were lost to follow-up prior to short-term (≤30 days) and intermediate (>30 days) outcome assessment, respectively. Forty-one (52%) received dexamethasone, 23 (30%) received triamcinolone, and 14 (18%) received betamethasone. The mean time to short-term and intermediate outcome assessment was 18±6 and 86±55 days, respectively. There was no significant difference between non-particulate and particulate steroid groups in the proportion of patients who reported >50% pain reduction at short-term (35%, 95% confidence interval (CI)[21%,50%] vs. 21%, CI[1%,46%]) or intermediate (28% CI[7%,49%] vs. 34% [14%,54%]) follow-up. There was no intergroup difference in the mean change in DME at either time point (p=0.84; p=0.66), in mean number of repeat TFESIs (p=0.15), or in the proportion of individuals who underwent repeat TFESI (p=0.26).

Conclusions/Discussion:

This study demonstrates no significant differences in pain reduction, opioid dose reduction, or repeat injections with dexamethasone compared to particulate TFESI in patients with EMG-confirmed painful lumbosacral radiculopathy. These findings define a new population for whom dexamethasone appears effective as a first-line therapy.
Intrathecal versus Oral Baclofen; a Comparative Matched Cohort Study of Long-term Spasticity, Pain, Sleep, Fatigue and Quality of Life

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Introduction:

No study has compared outcomes of long-term intrathecal versus oral baclofen therapy for spasticity. This study aimed to compare spasticity levels, pain, sleep, fatigue, and quality of life between individuals receiving treatment with intrathecal versus oral baclofen.

Methods:

Standardized surveys were administered during clinic appointments or by telephone to adult patients with spasticity, treated with intrathecal or oral baclofen for at least 1 year, matched 1:1 for age, gender, and diagnosis in this Cross-sectional matched cohort survey study.

Results:

62 matched subjects were enrolled. The mean (standard deviation (SD)) age was 46 (11) years with a mean duration of intrathecal baclofen or oral baclofen treatment of 11 (6) and 13 (11) years, respectively. There were 40 (64%) males and 22 (36%) females. Primary diagnoses included spinal cord injury (SCI) (n=38), cerebral palsy (n=10), stroke (n=10) and multiple sclerosis (n=4). The mean (SD) dose of intrathecal and oral baclofen at the time of survey were 577 (1429) mcg/day and 86 (50) mg/day, respectively. Patients receiving intrathecal compared to oral baclofen experienced significantly fewer [1.44 (0.92) vs. 2.37 (1.12)] and less severe [1.44 (0.92) vs. 2.16 (0.83)] spasms, respectively as measured by the PSFS (p<0.01; p<0.01). There were no significant differences in pain, sleep, fatigue and quality of life between groups. Subanalysis of patients with SCI mirrored results of the entire study sample, with significant decreases in spasm frequency and severity associated with intrathecal compared to oral baclofen (p<0.01; p<0.01), but no other between group differences. The mean (SD) percent change in dose of oral (21% [33%]) compared to intrathecal (3% [28%]) baclofen was significantly larger two years prior to the date of survey (p=0.02).

Conclusions/Discussion:

Long-term treatment with intrathecal compared to oral baclofen is associated with reduced spasm frequency and severity as well as greater dose stability. These benefits must be weighted against the risks of internal pump and catheter placement in patients considering intrathecal baclofen therapy.

Rajiv D. Reddy, Benjamin Marshall, Zachary McCormick, David Walega

Introduction: Cooled radiofrequency ablation is a novel technique for joint denervation via larger lesion size compared to traditional radiofrequency ablation. While described for facet and sacroiliac joint denervation, there is a paucity of literature addressing this technique for the treatment of chronic knee pain from osteoarthritis. We describe a standardized protocol for selecting patients for cooled radiofrequency ablation of the genicular nerves in addition to the outcomes of four sequential patients with chronic knee pain from osteoarthritis who underwent the procedure with our protocol.

Methods:

A detailed protocol for patient selection using diagnostic genicular blocks and a subsequent detailed protocol for cooled radiofrequency ablation is outlined. This protocol was used for the above cases. The threshold for selection based on diagnostic genicular nerve block was >80% pain reduction and subsequently cooled radiofrequency ablation including the superior lateral, superior medial and inferior medial genicular nerves was used. Reported outcomes included pain, function, analgesic medication, opioid use, and progression to total knee arthroplasty at 1, 3, and 6 month follow up.

Results:

The proposed methodology for patient selection and the cooled radiofrequency ablation protocol resulted in > 90% pain reduction, improved function and surgical sparing at 3-6 months in all four cases. Opioid and all analgesic medication use decreased or remained neutral in all four cases. No adverse effects were reported.

Conclusions/Discussion:

We present a protocol for patient selection and cooled radiofrequency ablation of the genicular nerves for the treatment of chronic knee pain due to osteoarthritis. The accompanying case series suggests that this protocol is promising and deserving of randomized, prospective study.

References:

5. Protzman NM, Gyi J, Malhotra AD, Kooch JE. Examining the feasibility of radiofrequency treatment for chronic knee pain after total knee arthroplasty. PMR. 2014;6(4):373