

# **Spine Surgery for Occupational Injuries: Should we do more or less?**

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**The Future is Now: Challenges and Opportunities**

**2018 NECOEM/MaAOHN**

**November 30, 2018**

# **Disclosures**

**Consultant**

**CRICO**

**Department of Industrial Accidents**

**ExamWorks**

**FutureComp**

# **Association Between Compensation Status and Outcome After Surgery**

## **A Meta-analysis**

Harris I, Mulford J, Solomon M, et al  
JAMA 2005;293(13):1644-1652.

**Compensation status is associated with poor outcome after surgery**

- **On compensation > 3 times the odds of unsatisfactory outcome compared those not on compensation**

**Injured workers on Workers Compensation derive less benefit from spine surgery than the general population.**

- **Need to understand why**
- **Need to question current surgical practice**

**Injured workers on Workers Compensation derive less benefit from spine surgery than the general population**

**Why?**

- **Patient factors**
- **Injury factors**
- **System factors**
- **Surgical factors**

**Injured workers on Workers Compensation derive less benefit from spine surgery than the general population**

## **Patient factors**

### **General population and WC population**

- **the same anatomy and physiology**
- **likely start with the same psychopathology**
- **Societal behavior/peer pressure may be the difference**

Google i hurt my back at home

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**Home Care for Lower Back Pain - WebMD**  
https://www.webmd.com - Back Pain - Feature Stories  
If you get up this morning and thought, "Ugh, my back hurts," you're not alone. About one in five Americans report having experienced back pain at least once ...




**10 Ways to Manage Low Back Pain at Home - WebMD**  
https://www.webmd.com - Back Pain - Feature Stories  
Mar 12, 2014 - Whatever the cause, once you have low back pain, it can be hard to shake. ... injured, or you feel numbness, weakness, or tingling in the legs.

**Lower Back Pain & Back Injury Treatment: Tips for Relief - WebMD**  
https://www.webmd.com - Back Pain - Reference  
Dec 10, 2017 - While exercise is one of the best things you can do to relieve back pain, it shouldn't hurt or make your pain worse. If so, check it with your ...

People also ask

- What should I do if I hurt my back?
- How do you treat a strained back?
- What is the best treatment for lower back pain?
- What is the home remedy for back pain?

Videos

-  How to Treat Lower Back Pain at Home - Low Back Pain Exercises
-  How to Fix "Low Back" Pain (INSTANTLY)
-  Low Back Tweak Fast Fixes | Feat. Kelly Starrett | MobilityWOD

**I hurt my back at home?**

**I deserve help**



**I hurt my back at work?**

**I deserve**

**compensation**



**Injured workers on Workers Compensation derive less benefit from spine surgery than the general population**

## **2. Injury factors**

### **General population and WC population**

- **Similar mechanism of injury**
- **Similar pathological result of injury**
- **WC injuries are worse**
- **Perceived/real risk of re-injury may be different**

**Injured workers on Workers Compensation derive less benefit from spine surgery than the general population**

### **3. System factors**

**General population and WC population**

- **Do not get the same treatment**

# Non work related back injury – Timeline

- Day 1** Low back pain while golfing/doing yard work
- Day 2** Ibuprofen, ice, adjust activity
- Days 3,4,5** Ibuprofen, goes to work, pain extends from back to right leg
- Day 6** Sees NP. Dx: Sciatica. Rx: Medrol dose pack, PT
- Days 7 - 16** Pain eases, some numbness, **working w PT**
- Days 17 - 28** Pain increasing, numbness, leg gives way, working w PT
- Day 29** Sees NP. Rx: Medrol dose pack, Tramadol, MRI ordered
- Day 33** **MRI completed** – Right L5-S1 disc herniation.
- Day 34** Worse pain, numbness, weakness. Not able to work. Continues PT. Referred to Spine Group.
- Day 42** **Sees physiatrist.** +ve SLR, 4/5 plantar flexion, absent AJ, S1 numbness, antalgic gait. Referred to Pain clinic.
- Day 48** Pain Clinic Consult

# Non work related back injury – Timeline

**Day 52**

**ESI**

**Day 55**

**Slight improvement in pain initially, now pain, numbness, weakness worse, fell at home**

**Calls Pain Clinic and PCP office – referred to ED**

**Rx: Toradol, script for Oxycodone, Referred to spine surgery**

**Day 59**

**Seen by Spine surgeon. Severe pain. Using cane/wife to walk +ve SLR, 3/5 plantar flexion, Absent AJ, S1/L5 numbness**

**Admitted to hospital**

**Day 60**

**L5-S1 hemilaminotomy & microdiscectomy**

**Day 88 -102**

**PT**

**Day 102**

**Returns to work, pacing himself.**

**Injured workers on Workers Compensation derive less benefit from spine surgery than the general population**

## **Non work related back injury – Timeline**

**Dictated by:**

- **Access to care**
- **Evidenced based guidelines**

**Returned to work 102 days after injury, 42 days after surgery  
Normal activity at 365 days. Mild residual numbness in toes, absent AJ.**

**Injured workers on Workers Compensation derive less benefit from spine surgery than the general population**



# Work related back injury – Timeline

- Day 1** Low back pain while lifting at work
- Day 2** Ibuprofen, ice, adjust activity
- Days 3,4,5** Ibuprofen, goes to work, pain extends from back to right leg  
Reports injury. Referred to Occupational Health
- Day 6** Sees Occupational Health NP. Dx: Sciatica. Rx: Medrol dose pack, PT. Light duty.
- Days 7 - 16** Pain eases, some numbness, working w PT. Still light duty
- Days 17 - 28** Pain increasing, numbness, leg gives way, working w PT
- Day 29** Sees Occupational health NP. Rx: Medrol dose pack, Tramadol, MRI ordered
- Day 30** **Review: Injury unwitnessed, report filed days later, prior history of back problems. WC status under review.**
- Day 33** MRI denied. PT denied.
- Day 34** Worse pain, numbness, weakness. Not able to work.

# **Work related back injury – Timeline**

- Day 35** Sees NP at PCP's office. Rx: Tramadol, Flexeril
- Day 38** Goes to ED. X-rays negative. Oxycodone x 3 days.
- Day 42** Sees NP at PCP's office +ve SLR, 4/5 plantar flexion, absent AJ, S1 numbness, antalgic gait. Tramadol renewed. NP refers to spine clinic.
- Day 44** Spine Clinic determines no active claim number. No appointment given
- Day 52** IME. Dx: Lumbar radiculopathy. Had preexisting back injury with intermittent sciatica. Aggravation of preexisting condition, but causally related.
- Day 55** Now pain, numbness, weakness worse, fell at home  
Calls PCP office – referred to ED  
Rx: Toradol, script for Oxycodone, Referred back to PCP



# Work related back injury – Timeline

- Day 56**      **Calls attorney. No paycheck in 4 weeks.**
- Day 66**      **IME with MD arranged by attorney “Significant S1 radiculopathy, causally related to lifting injury at work. Needs MRI scan, PT, pain management. **Totally disabled.**”**
- Day 90**      **WC claim re-instated.** Referred to physiatry
- Day 91**      **Attends ED. Gets first paycheck in 2 months.**
- Day 100**     **Seen by physiatry.** Severe pain. 3/5 weakness of ankle plantar flexion, +ve SLR, absent AJ, numbness in L5, S1 distributions  
MRI scan ordered, PT ordered. Rx: Tramadol.
- Day 108**     **PT evaluation – modalities only, unable to participate**
- Day 113**     **PCP’s office.**
- Day 115**     **MRI scan completed**
- Day 122**     **Seen by physiatrist. HNP L5-S1. Referred to spine surgery.**

# Work related back injury – Timeline

- Day 140**      **Seen by spine surgeon.** Surgery recommended. Oxycodone prescribed.
- Day 160**      **Sent for IME.** Significant radiculopathy. Disabled from all work activities. Surgery reasonable.
- Day 175**      **Approved for surgery**
- Day 180**      **Seen at surgeon's office**
- Day 190**      **Fees negotiated**
- Day 200**      **L5-S1 hemilaminotomy & microdiscectomy**
- Day 214**      **Follow-up w surgeon.** Improving, sent to PT
- Day 242**      **Follow-up w surgeon.** Only 4 PT visits so far. Still significant pain, numbness and weakness limiting activity. Continue Tramadol and PT.
- Day 284**      **Follow-up w surgeon.** Definitely improving. Refer to physiatry and work conditioning.

# Work related back injury – Timeline

- Day 300**      **IME. Improving. Partially disabled. Could do light work. Continue work conditioning.**
- Day 320**      **No light duty available. Employee terminated.**
- Day 330**      **Sees physiatry. Still signs of radiculopathy. **Work conditioning extension requested.****
- Day 335/6**      **Video recording by private investigator. Doings ADLs.**
- Day 340**      **Work conditioning denied.**
- Day 358**      **Sees physiatry. Pain worse. Sedentary or light duty only. Requests more work conditioning. Unable to determine RTW date.**
- Day 365**      **IME arranged by attorney. Permanently disabled from regular duties.**

**Injured workers on Workers Compensation derive less benefit from spine surgery than the general population**

## **Work related back injury – Timeline**

**Dictated by:**

- **Workers Compensation system**
- **Attorney involvement**

**No better at 365 days. Permanently disabled. Seeking compensation.**

**Injured workers on Workers Compensation derive less benefit from spine surgery than the general population**



**Attorney  
Involvement**

**Poorer outcomes  
Secondary gain**

**Injured workers on Workers Compensation derive less benefit from spine surgery than the general population**

**Numerous studies have demonstrated that  
the financial incentives and adversarial nature of the  
workers' compensation and liability insurance  
systems  
account for worse outcomes and delayed or no RTW.**

Asher, AL, Devin CJ, Archer KR, et al. An analysis from the quality outcomes data base, part 2. Predictive model for return to work after elective surgery for lumbar degenerative disease. J Neurosurg Spine 2017;27:370-381.

**Injured workers on Workers Compensation derive less benefit from spine surgery than the general population**

## **4. Surgical factors**

### **General population and WC population**

- **Surgery is technically identical**
- **Surgery should be evidence based for both**
- **Minimally invasive best for both groups**

**Injured workers on Workers Compensation derive less benefit from spine surgery than the general population**

## **Surgical factors**

### **General population and WC population**

- **May have different physical pathology by time of surgery**

### **Workers Compensation**

**Longer duration of nerve root compression**

**Higher risk of incomplete recovery**



**Injured workers on Workers Compensation derive less benefit from spine surgery than the general population**

## **Surgical factors**

### **General population and WC population**

- **Frequently have different psychopathology by time of surgery**

### **Workers Compensation**

**Higher levels of stress, anxiety, depression**

**Aggravated by process and at employer**

**Guided by attorney**

**Injured workers on Workers Compensation derive less benefit from spine surgery than the general population**

## **Surgical factors**

### **General population and WC population**

- **Frequently different psychopathology  
depression, anxiety, fear avoidance  
behavior**

**A technically great operation that relieves  
the compression of the nerve(s) may not  
make the patient better**

# **Spine Surgery for Occupational Injuries: Should we do more or less?**

**The answer is complex**

**Sometimes we should do more  
Sometimes we should do less**



**Workers Compensation can be  
Disruptive Destructive  
But does not have to be**

## **Spine Surgery for Occupational Injuries: Should we do more or less?**

**30 y/o male firefighter/EMT**

**11/22/2017 Chest/shoulder pain while lifting 400 pound plus patient. Presented to ED**

**11/29 Evaluated by my PA – left pectoralis atrophy, weakness triceps. MRI scan ordered.**

**11/30 Cervical MRI completed.**

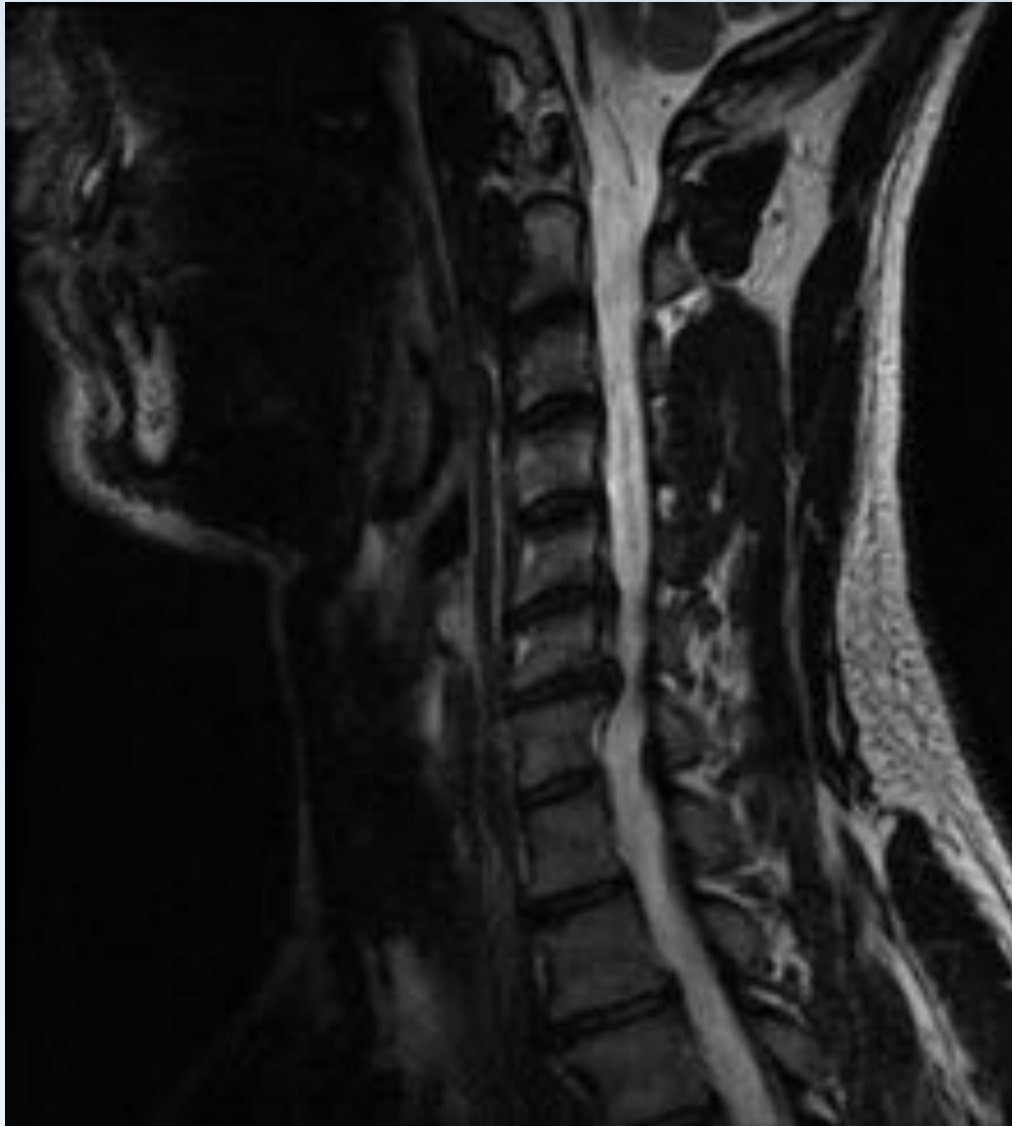
## **Spine Surgery for Occupational Injuries: Should we do more or less?**

**30 y/o male firefighter/EMT**

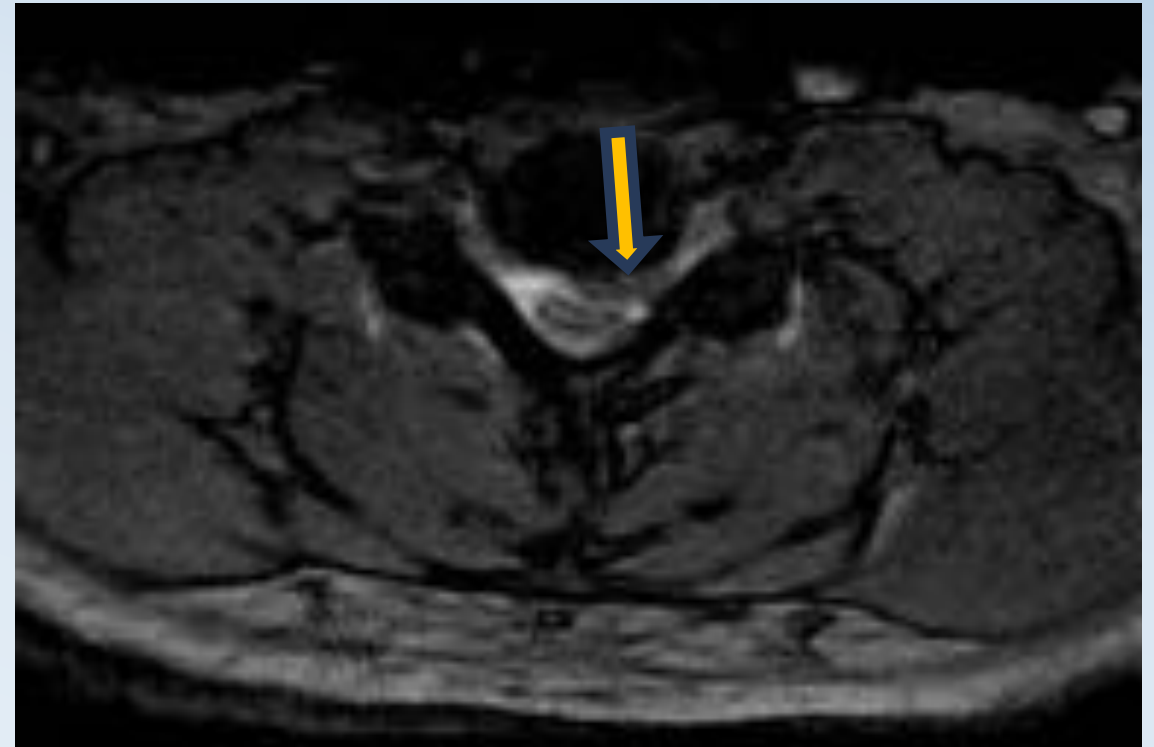
**12/04            I evaluated. Atrophy & weakness left pectoralis, triceps. Absent triceps reflex. MRI degraded by motion. Reordered.**

**12/04            MRI completed. Large left C6-7 disc herniation**

## Spine Surgery for Occupational Injuries: Should we do more or less?



**Left C6-7 disc herniation**



## **Spine Surgery for Occupational Injuries: Should we do more or less?**

**30 y/o male firefighter/EMT**

**12/07/17      Pre operative History & Physical**

**12/13/17      Surgery C6-7 discectomy and arthroplasty**

**PT, work conditioning, gym & home exercises**

**04/23/18      Residual atrophy left pectoralis and triceps  
5/5 strength**

**Returned to work, regular duties**



**Spine Surgery for Occupational Injuries: Should we do more or less?**

**C6-7 arthroplasty 10/24/2018**



## **Spine Surgery for Occupational Injuries: Should we do more or less?**

**The literature consistently demonstrates that patients receiving workers compensation improve after spine surgery...**

**but do not improve as much as the general population**

## **Spine Surgery for Occupational Injuries: Should we do more or less?**

**Atlas, SJ, Tosteson TD, Blood EA, Skinner JS, Pransky GS, Weinstein JN.  
The impact of workers' compensation on outcomes of  
surgical and nonoperative therapy for patients with a lumbar  
disc herniation: SPORT. Spine 2010;35:89-97.**

**Mayer TG, Gatchel RJ, Brede E, et al.  
Lumbar surgery in work related chronic low back pain: Can a  
continuum of care enhance outcomes?  
Spine J 2014;14:263-273.**

# Spine Surgery for Occupational Injuries: Should we do more or less?



The Spine Journal 18 (2014) 1694–1714



Review Article

## Return to work following surgery for lumbar radiculopathy: a systematic review

Eva Huysmans, MSc<sup>abcd</sup>, Lisa Goudman, MSc<sup>bd</sup>, Griet Van Belleghem, MSc<sup>ac</sup>,  
Mats De Jaeger, MSc<sup>f</sup>, Maarten Moens, PhD<sup>ab</sup>, Jo Nijs, PhD<sup>bc</sup>, Kelly Ickmans, PhD<sup>bd</sup>,  
Ronald Buyt, PhD<sup>g</sup>, Christophe Vanroelen, PhD<sup>h</sup>, Koen Putman, PhD<sup>ac</sup>

# **Spine Surgery for Occupational Injuries: Should we do more or less?**

Return to work following surgery for lumbar radiculopathy:  
a systematic review

## **More likely to return to work**

- **Short duration of preoperative symptoms**
- **Lower disability score preoperatively**
- **Shorter duration of preoperative sick leave**

# **Spine Surgery for Occupational Injuries: Should we do more or less?**

Return to work following surgery for lumbar radiculopathy:  
a systematic review

## **Take longer to return to work**

- **Higher level of preoperative pain/disability**
- **Depression**
- **Occupational mental stress**
- **Strenuous work**
- **Workers Compensation**

# **Spine Surgery for Occupational Injuries: Should we do more or less?**

**In my opinion we should do  
More - earlier - surgery in some patients**

**Radiculopathy with neurological deficit**

## **Spine Surgery for Occupational Injuries: Should we do more or less?**

### **Advantages of **early surgery in appropriate patients****

- 1. Lower level of preoperative pain and disability  
= improved surgical outcome**
- 2. Reduce development of chronic pain**
- 3. Reduce narcotic use/abuse and street drug abuse**
- 4. Reduce neurological deficit**



## **Spine Surgery for Occupational Injuries: Should we do more or less?**

### **Advantages of **early surgery in appropriate patients****

- 5. Reduce patient resentment, stress, depression**
- 6. Less subject to peer pressure**
- 7. Less reliance on attorneys**

## **Spine Surgery for Occupational Injuries: Should we do more or less?**

### **Advantages of **early surgery in appropriate patients****

#### **8. Reduce costs, because of less:**

- Tests, Treatments (medications, therapies, interventions)**
- Medical fees, IMEs, private investigators, administrative**
- Lost work hours, cost of settled claims**

# Spine Surgery for Occupational Injuries: Should we do more or less?

## Advantages of **early surgery in appropriate patients**

### 9. Improve:

**Worker's family/community/work life**

**Worker's life expectancy**

**Physician job satisfaction**

## **Spine Surgery for Occupational Injuries: Should we do more or less?**

**In my opinion we should do more**

- **Early surgery in appropriate patients**

**Requires**

- **enlightened adjusters and case managers**
- **overhaul of Workers Compensation System**

**Need: to evaluate and treat the injured worker according to evidence based guidelines, irrespective of claim**

# **Spine Surgery for Occupational Injuries: Should we do more or less?**

## **Low back pain**

- **25% of WC claims in US**
- **33% of total compensation costs**
- **40% of work absences**

## **Management is challenging**

- **MRI scans always report degenerative changes**
- **MRI scans never show pain or necessarily identify pain generator**

## **Spine Surgery for Occupational Injuries: Should we do more or less?**

**When medical management fails surgery is frequently advocated - Lumbar fusion**

- **To prevent worsening**
- **To improve pain and function**
- **Reduce need for medications**
- **“Get you on with your life”**

## Spine Surgery for Occupational Injuries: Should we do more or less?



**60 year old male**  
**Lifting injury at work 2015**  
**Back > thigh pain**  
**OOW**  
**PT: 30 visits**  
**Injections: 5**  
**Meds: Norco BID**  
**O/E**  
**-Ve SLR, Neuro intact**

**Dx: “Back pain secondary to L4-5  
spondylolisthesis and stenosis”**

# Spine Surgery for Occupational Injuries: Should we do more or less?

## L4-5 Laminectomy and Fusion 2017





# Spine Surgery for Occupational Injuries: Should we do more or less?

## 2017 L4-5 Laminectomy and Fusion



**2018 Back/thigh pain unchanged**



## **Spine Surgery for Occupational Injuries: Should we do more or less?**



**62 year old male**

**Slip and fall on ice Feb 2017**

**Low back pain**

**No leg symptoms**

**PT, chiro, injections x3**

**Tramadol, Flexeril daily**

**Dx: Back pain secondary to  
disc protrusions and stenosis**

**Proposed Rx: L3-S1 fusion**

## **Spine Surgery for Occupational Injuries: Should we do more or less?**

### **Spinal fusion for axial pain**

- **Comorbidities not recognized/addressed**
- **Lack of full disclosure**
- **Lack of shared decision making**
- **Financial incentives for patient**
- **Financial incentives for attorney**
- **Financial incentives for surgeon**

## **Spine Surgery for Occupational Injuries: Should we do more or less?**

### **Workers' Compensation & Chronic Low Back Pain**

#### **2 years after surgery**

- **26% had returned to work**
- **27% had undergone another operation**
- **36% had experienced complications**
- **41% had increased their daily opioid use**
- **11% on permanent disability**

**Spine Surgery for Occupational Injuries:  
Should we do more or less?**

**Depression is a strong predictor of poor outcome  
in WC patients undergoing lumbar fusion**

**Primary outcome RTW within 2 years of fusion &  
stayed at work for > 6 months**

**Not depressed - 33%**

**Clinical depression - 10.6%**

## **Spine Surgery for Occupational Injuries: Should we do more or less?**

**Preoperative symptoms of anxiety and depression occur in 33% patients with chronic back pain that undergo surgery**

- **Less likely to return to work**
- **Took longer to return to work**
- **Took more sick days**
- **Less likely to remain in work**
- **Higher risk of suicide**

## **Spine Surgery for Occupational Injuries: Should we do more or less?**

### **Depression & Anxiety in Chronic Low Back Pain**

- **Frequently patients not formally screened**
- **Real incidence?**
  - **Major Depressive Disorder: 43-59%**
  - **Anxiety Disorder: 5-10%**
- **Preoperative depression directly correlates with patient satisfaction with surgery**

**Should be screening patients - complete PROMs**

## **Spine Surgery for Occupational Injuries: Should we do more or less?**

### **Chronic Opioid Therapy**

**11% return to work**

**28% undergo additional surgery**

**Post injury opioid dependency is one of the most  
robust risk factors for poorer outcome**



# **Spine Surgery for Occupational Injuries: Should we do more or less?**

## **Official Disability Guidelines**

**Length of disability is one of the most critical risk factors for poor outcomes**

## **Spine Surgery for Occupational Injuries: Should we do more or less?**

### **Multidisciplinary Functional Restoration Program**

- **Physical and psychosocial evaluation**
- **Structured exercise program**
- **Cognitive behavioral therapy – pain management**
- **Biofeedback, relaxation training - stress**
- **Vocational reintegration,**
- **Education, health and fitness maintenance**

## **Spine Surgery for Occupational Injuries: Should we do more or less?**

### **Multidisciplinary Functional Restoration Program**

- **Medication management**  
**include psychotropics & opioid taper**
- **Limit interventions**

**Can significantly improve outcomes after surgery  
in Workers' Compensation population**

## **Spine Surgery for Occupational Injuries: Should we do more or less?**

**Work related chronic low back pain treated nonoperatively with multidisciplinary functional restoration program did better than surgery**

**At 1 year**

- **85% had returned to work, 81% remained at work**
- **1.9% reported new injury**
- **1.2% underwent surgery**

## Spine Surgery for Occupational Injuries: Should we do more or less?

**In my opinion we should do  
Less, much less, fusions for axial low back  
and neck pain**



**Spine Surgery for Occupational Injuries:  
Should we do more or less?**

**Thank you for your attention**

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