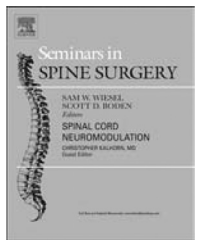
Available online at www.sciencedirect.com
ScienceDirect
www.elsevier.com/locate/semss



Spinescope

Ten-Year Outcomes of Selective Fusions for Adolescent Idiopathic Scoliosis

Scott D. Boden, MD

Emory University School of Medicine, Atlanta, GA

1. Ten-year outcomes of selective fusions for adolescent idiopathic scoliosis

Selective fusions of the structural curve remain a common treatment strategy for adolescent idiopathic scoliosis. Long term outcomes are not well understood. Louer et al. performed a study to report 10-year prospective radiographic and patient-related outcomes of selective fusions of the main thoracic or thoracolumbar/lumbar curve, with particular attention to the behavior of the uninstrumented compensatory curve.

A prospectively collected multicenter database was used to identify patients who had been followed regularly for at least 10 years after a selective main thoracic or thoracolumbar/lumbar fusion for adolescent idiopathic scoliosis. Interval radiographs were evaluated for coronal and sagittal Cobb angles as well as overall coronal balance. Scores on the Scoliosis Research Society Questionnaire (SRS-24) were catalogued and evaluated. Radiographic outcomes and SRS-24 scores were compared between preoperative and postoperative time points using repeated-measures analysis of variance. Individual patient records were screened for recent curve progression of >5°, and these cases were methodically evaluated.

Fifty-one patients with selective fusions for adolescent idiopathic scoliosis who had been followed for at least 10 years were identified. The instrumented main thoracic or thoracolumbar/lumbar curves were corrected by an average of 51% and 60%, respectively, at 10 years. The uninstrumented compensatory curves had gradual spontaneous correction that approached the magnitude of the fused curve at 5 years postoperatively, with the correction maintained at 10 years. This led to excellent coronal balance. A subgroup of patients had recent progression of the primary curve adjacent to the prior fusion or within the instrumented segments, resulting in a compensatory progression of the uninstrumented curve. On the whole, SRS scores did not decrease during follow-up, and no patient had secondary operations.

On the basis of these data, the authors conclude that selective fusion of a primary main thoracic or main lumbar curve in properly selected patients with adolescent idiopathic scoliosis will result in spontaneous correction of the uninstrumented primary curve. The data also shows that this approach shows a durable result for at least 10 years.

Craig Louer Jr., MD, Burt Yaszay, MD, Madeline Cross, MPH, Carrie E. Bartley, MA, Tracey P. Bastrom, MA, Suken A. Shah, MD, Baron Lonner, MD, Patrick J. Cahill, MD, Amer Samdani, MD, Vidyadhar V. Upasani, MD and Peter O. Newton, MD, The Journal of Bone and Joint Surgery Am. 2019; 101:761–70

2. Prolonged pain reducing effect of sodium hyaluronate-carboxymethyl cellulose solution in the selective nerve root block (SNRB) of lumbar radiculopathy: a prospective, double-blind, randomized controlled clinical trial

The pattern of linear graph schematized by visual analogue scale (VAS) score displaying pain worsening between 2 days and 2 weeks after selective nerve root block is called rebound pain. Ko et al. performed a study to determine if sodium hyaluronate and carboxymethyl cellulose solution injection could reduce the occurrence of rebound pain to 3 days to 2 weeks after selective nerve root block in patients with radiculopathy compared with injection with corticosteroids and local anesthetics alone.

The authors performed a double-blinded, randomized controlled clinical trial involving a total of 44 patients who finished the follow-up session at 12 weeks. Patients were asked to write down their average VAS pain scores daily for 12 weeks. Functional outcomes were assessed by Oswestry Disability Index, Roland Morris Disability Questionnaire, and Short Form-36. A cocktail of corticosteroids, 1% lidocaine, 0.5% Bupivacaine, and 1 mL of normal saline was used for the control group whereas a cocktail of corticosteroids, 1% lidocaine, 0.5% Bupivacaine,

https://doi.org/10.1053/j.semss.2019.06.001

and 1 mL of sodium hyaluronate and carboxymethyl cellulose solution was used for the experimental group. Study participants were randomized into one of the two treatment regimens and followed for 3 months.

The VAS scores at 2 weeks after the procedure was 4.2 in the control group, which was significantly higher than that in the experimental group, 2.4. VAS score at 6 weeks after the procedure was 4.0 in the control group and 3.2 in the experimental group, showing no significant difference between the two groups ($p = 0.08$). There were no significant differences in the functional outcomes at 6 or 12 weeks after the procedure.

On the basis of these data the authors conclude that compared with conventional cocktail used for selective nerve root block addition of the hyaluronate-carboxymethyl cellulose solution showed effective control of rebound pain at 3 days to 2 weeks after the procedure. There was still some trend towards improved VAS score in the experimental group at 6 weeks but given the study sample size this difference did not quite reach statistical significance.

Sangbong Ko, MD, Seungbum Chae, MD, Wonkee Choi, MD, Jaibum Kwon, MD, The Spine Journal 19 (2019), 578–586

3. Long-term costs of maximum nonoperative treatments in patients with symptomatic lumbar stenosis or spondylolisthesis that ultimately required surgery

The costs and utilization of long-term maximal nonoperative therapy can be substantial, and in the current era of bundled payments, the duration of conservative therapy trials should be reassessed. The authors performed a retrospective cohort study to characterize the utilization and costs of maximal nonoperative therapy prior to spinal fusion surgery in patients with symptomatic lumbar stenosis and/or spondylolisthesis.

A large insurance database was queried for patients with symptomatic lumbar stenosis or spondylolisthesis undergoing index lumbar decompression and fusion procedures between 2007 and 2016. The database consists of 20.9 million covered lives and includes private/commercially insured and Medicare Advantage beneficiaries. Only patients with lumbar stenosis or spondylolisthesis and those continuously active within the insurance system for at least 5 years prior to the index operation were eligible.

A total of 4133 out of 497,822 (0.8%) eligible patients underwent 1, 2, or 3-level posterior lumbar instrumented fusion. 20.8% of patients were smokers, 44.5% had type II diabetes, and 38.2% were obese defined as a body mass index >30. Patient maximal nonoperative therapy utilization was as follows: 66.7% used nonsteroidal anti-inflammatory drugs, 84.4% used opioids, 58.6% used muscle relaxants, 65.5% received lumbar epidural steroid injections, 21.1% presented to the emergency department, and 24.9% received chiropractor treatments. The total direct cost associated with all maximum nonoperative treatment prior to index spinal fusion was over $9 million. Lumbar epidural steroid injection comprised the largest portion of the total costs ($4 million) followed by nonsteroidal anti-inflammatory drugs ($1.6 million) and opioid costs ($1.3 million). At the patient level when normalized per patient utilizing therapy, an average of $4010 was spent on nonoperative treatments prior to index lumbar spine surgery.

On the basis of these data the authors conclude assuming minimal improvement in pain and functional disability after maximum nonoperative therapies, the incremental cost-effective ratio (ICER) for maximum nonoperative therapies could be highly unfavorable. Assuming the treatment effect of 5% the calculated ICER is over $80,000. And likely higher considering that the authors cost estimates significantly under estimated the total costs of maximal nonoperative treatment.

Owoicho Adogwa, MD, MPH, Mark A. Davison, BS, Victoria D. Vuong, MS, BS, Syed Khalid, MD, Daniel T. Lilly, BA, Shyam A. Desai, BA, Jessica Moreno, MS, BS, Joseph Cheng, MD, MS, and Carlos Bagley, MD, MBA, SPINE Volume 44, Number 6, pp 424–430

4. Effect of a prototype lumbar spinal stenosis belt versus a lumbar support on walking capacity in lumbar spinal stenosis: a randomized controlled trial

Lumbar spinal stenosis can impair blood flow to the spinal nerves giving rise to neurogenic claudication and limited walking ability. Reducing lumbar lordosis can increase the volume of the spinal canal and reduce neuroischemia. Ammendolia et al. performed a two-armed double-blinded randomized control trial to assess the short-term effectiveness of a prototype lumbar spinal stenosis belt compared to a lumbar support in improving walking ability in patients with degenerative lumbar spinal stenosis. The authors recruited 104 participants aged 50 years or older with neurogenic claudication and imaging confirmed degenerative lumbar spinal stenosis, and limited walking ability.

Within one week of baseline self-paced walking tests, participants randomized to the prototype lumbar spinal stenosis belt group ($n = 52$) or the lumbar support group ($n = 52$). The primary measure was the walking distance and the primary outcome was the difference in proportions among participants in both groups who achieved at least a 30% improvement in walking distance from baseline using relative risk with 95% confidence intervals.

Both groups showed significant improvement in walking distance, but there was no significant difference between the two groups. The mean group difference in walking distance was −74 m. In total, 62% of participants wearing the prototype lumbar spinal stenosis belt and 82% of participants wearing the lumbar support achieved at least 30% improvement in walking distance.

On the basis of these data the authors conclude that a prototype lumbar spinal stenosis belt demonstrated significant improvement in walking ability in patients with degenerative lumbar spinal stenosis, but was no better than an ordinary lumbar support.

Carlo Ammendolia, DC, PhD, Y. Raja Rampersaud, MD, Danielle Southerst, DC, Aksa Ahmed, DC, Michael Schneider, DC, PhD, Gillian Hawker, MD, Claire Bombardier, MD, Pierre Côté, DC, PhD, The Spine Journal 19 (2019) 386–394

5. Cost-effectiveness of circumferential fusion for lumbar spondylolisthesis: propensity-matched comparison of transforaminal lumbar interbody fusion with anterior-posterior fusion

Transforaminal lumbar interbody fusion (TLIF) and dual-approach anteroposterior (AP) are common techniques to achieve circumferential fusion for lumbar spondylolisthesis. It is unclear which approach is more cost-effective. Jazini et al. performed a propensity-matched cost-effectiveness comparison to determine the incremental cost-effectiveness ratio (ICER) by calculating the cost per quality-adjusted life year (QALY) for each approach.

Patients with lumbar spondylolisthesis undergoing single-level AP fusion or TLIF and enrolled in a prospective observational surgical database were included in this study. The outcome measures in this study were the Oswestry Disability Index (ODI) and the Short Form-6D (SF-6D). From a prospective surgical database, patients with lumbar spondylolisthesis undergoing single-level AP fusion were propensity matched to a TLIF cohort based on age, gender, body mass index, smoking status, workers compensation status, preoperative ODI, and back and leg pain numeric scores. Quality-adjusted life years gained were determined using baseline and 1- and 2-year postoperative SF-6D scores. Cost was calculated from actual, direct hospital costs and included subsequent postsurgical costs (epidural steroid injections, spine-related emergency department visits, readmissions, and revision surgery).

On the basis of these data the authors conclude that thirty-one cases of AP fusions were identified and propensity matched to 31 TLIF patients. Patients undergoing TLIF had a shorter mean operative time (270 vs. 328 min) but no difference in estimated blood loss (526 vs. 548 cc) or hospital length of stay (4.5 vs. 6.1 days, $p = 0.15$). Quality-adjusted life years gained at 2 years were also similar (0.14 vs. 0.13). The mean index surgery and the total 2-year costs were lower for TLIF compared with AP by approximately $2000. As overall costs were lower and QALYs gained were similar for TLIF compared with AP fusion, TLIF was the dominant intervention with an ICER of $116,327.

On the bases of these data the authors conclude that under their study parameters surgical treatment of lumbar spondylolisthesis with TLIF was more cost-effective compared with AP fusion. Due to the short-term follow-up the longevity of these results need to be confirmed in a longer study.

Ehsan Jazini, MD, Jeffrey L. Gum, MD, Steven D. Glassman, MD, Charles H. Crawford, III, MD, Mladen Djurasovic, MD, Roge Kirk Owens, II, MD, John R. Dimar, II, MD, Katlyn E. McGraw, MPH, Leah Y. Carreon, MD, MSc, The Spine Journal 18 (2018) 1969–1973

6. Chronic preoperative opioid use is a risk factor for increased complications, resource use, and costs after cervical fusion

As health-care transitions to value-based models, there has been an increased focus on patient factors that can influence peri- and postoperative adverse events, resource utilization, and costs. Many studies have reported risk factors for systemic complications after cervical fusion, but none have studied chronic opioid therapy as a risk factor. Jain et al. performed this study to determine the patient profile associated with preoperative chronic opioid therapy, whether preoperative chronic opioid therapy is a risk factor for 90 days systemic complications, and readmissions, and to determine the risk factors related to long term postoperative opioid use.

The authors performed a retrospective review of Humana commercial insurance data (2007–2015). The patient sample included 29,101 patients undergoing primary cervical fusion for degenerative pathology. Patients and procedures of interest were included using International Classification of Diseases (ICD) coding. Patients with opioid prescriptions for >6 months before surgery were considered as having preoperative chronic opioid therapy. Patients with continued opioid use until 1-year after surgery were considered as long-term users. Multiple-variable logistic regression analyses adjusting for approach, number of levels of surgery, discharge disposition, and comorbidities were done to answer the first three study questions.

Of the entire cohort, 6643 (22.8%) had preoperative chronic opioid therapy. Preoperative chronic opioid therapy was associated with a higher risk of 90-day wound complications, all-cause 90-day emergency department visits, and pain-related emergency department visits. Patients who had preoperative chronic opioid therapy were more likely to receive epidural or facet joint injections within 1 year after surgery. These patients were also more likely to undergo a repeat cervical fusion within a year than patients who did not have preoperative chronic opioid therapy. Preoperative chronic opioid therapy had a higher likelihood of longer-term use after surgery. Long-term opioid therapy use after surgery was associated with a higher risk of new-onset constipation. The risk of complications and adverse events was not found to be significant inpatients with <3 months of preoperative opioid use or those who stopped opioids for a least 6 weeks before surgery. The cost of additional resource use for medications, emergency department visits, constipation, injections, and revision fusion ranged from $623 to $27,360 per patient.

Preoperative opioid use among patients who underwent cervical fusion increased complication rates, postoperative opioid usage, health-care resource use, and overall costs. On the basis of these data the authors conclude that these risks may be reduced by restricting the duration of preoperative opioid use or weaning off before surgery. Better understanding and management of pain in the preoperative period with judicious use of opioids is critical to enhance outcomes after cervical fusion surgery.

Nikhil Jain, MD, John L. Brock, BA, Frank M. Phillips, MD, Tristan Weaver, MD, Safdar N. Khan, MD, The Spine Journal 18 (2018) 1989–1998

7. Annular closure in lumbar microdiscectomy for prevention of reherniation: a randomized clinical trial

Patients with large annular defects after lumbar discectomy for disc herniation are at higher risk of symptomatic

recurrence and reoperation. Thomé performed a multi-centered, randomized superiority study to determine whether a bone-anchored annular closure device, in addition to lumbar microdiscectomy, resulted in lower reherniation and reoperation rates while increasing overall success compared with lumbar microdiscectomy alone without annular closure.

Patients with symptoms of lumbar disc herniation for at least 6 weeks with a large annular defect (6–10 mm width) after lumbar microdiscectomy were included in the study. Patients received lumbar microdiscectomy with additional bone-anchored annular closure device ($n = 276$) or lumbar microdiscectomy alone ($n = 278$) in the control group.

Among 554 randomized participants, 550 were included in the modified intent-to-treat efficacy analysis and the as-treated safety analysis. Both co-primary end points of the study were met, with recurrent herniation (50% vs. 70%, $P < 0.001$) and composite end point success (27% vs. 18%, $P = 0.02$) favoring annular closure device. The frequency of symptomatic reherniation was lower with annular closure device (12% vs. 25%, $P < 0.001$). There were 29 reoperations in 24 patients in the annular closure device and 61 reoperations in 45 control patients. The frequency of reoperations to address recurrent disc herniation was 5% with annular closure device and 13% in controls. End plate changes were more prevalent in the annular closure device group. Scores for back pain, leg pain, Oswestry Disability Index, and health-related quality of life at regular visits were comparable between groups over 2-year follow-up.

On the basis of these data the authors conclude that in patients at high risk of herniation recurrence after lumbar microdiscectomy, annular closure with a bone-anchored implant lowers the risk of symptomatic recurrence and reoperation. Additional study to determine outcomes beyond 2 years with a bone anchored annular closure device is warranted.

Claudius Thomé, MD, Peter Douglas Klassen, MD, Gerrit Joan Bouma, MD, Adisa Kuršumović, MD, Javier Fandino, MD, Martin Barth, MD, Mark Arts, MD, Wimar van den Brink, MD, Richard Bostelmann, MD, Aldemar Hegewald, MD, Volkmar Heidecke, MD, Peter Vajkoczy, MD, Susanne Fröhlich, MD, Jasper Wolfs, MD, Richard Assaker, MD, Erik Van de Kelft, MD, Hans-Peter Köhler, MD Senol Jadik, MD, Sandro Eustacchio, MD, Robert Hes, MD, Frederic Martens, MD on behalf of the Annular Closure RCT Study Group, The Spine Journal 18 (2018) 2278–2287

8. In-hospital complication rate following microendoscopic versus open lumbar laminectomy: a propensity score-matched analysis

The incidence of postoperative complications after microendoscopic laminectomy has not been compared with that after open laminectomy in a large study. Oichi performed a retrospective cohort study with propensity score-matched analysis to compare postoperative morbidity and mortality following lumbar laminectomy between patients treated with microendoscopic laminectomy and with traditional open laminectomy.

Data from patients who underwent elective spinal surgery between July 2010 and March 2013 were extracted from the Diagnosis Procedure Combination database, a nationwide inpatient database in Japan. Propensity score matching was performed to adjust for measured confounding factors, including patient age, sex, Charlson Comorbidity Index, body mass index, smoking status, blood transfusion, duration of anesthesia, number of operated disc levels, and type of hospital and hospital volumes. The clinical outcomes of one-to-one propensity-matched pairs of the microendoscopic laminectomy and the open laminectomy groups were compared.

Of 23,317 patients identified in the database, 1536 underwent microendoscopic laminectomy (6.6%). By one-to-one propensity score matching, 1, 536 pairs were selected. The distributions of patient backgrounds were closely balanced between the microendoscopic laminectomy and the open laminectomy groups. An analysis of these pairs revealed that there was a significantly lower incidence of major postoperative complications in those who underwent microendoscopic laminectomy (1.0% vs. 2.8%, respectively). The incidence of surgical site infection was also less (0.5% vs. 1.6%, respectively). The length of hospital stay was significantly shorter in those treated with microendoscopic laminectomy (12 days vs. 16 days, respectively). There was no significant difference with in-hospital mortality between the groups.

On the basis of these data the authors conclude that patients who underwent microendoscopic laminectomy were significantly less likely to experience major postoperative complications and were less likely to develop surgical site infection and postoperative delirium than those who underwent open laminectomy. It is not clear given the relatively long length of stay in both groups whether these differences would be observed in a healthcare system that has substantially shorter lengths of stay as would be the current situation in other countries.

Takeshi Oichi, MD, Yasushi Oshima, MD, PhD, Hirotaka Chikuda, MD, PhD, Junichi Ohya, MD, Hiroki Matsui, MPH, Kiyohide Fushimi, MD, PhD, Sakae Tanaka, MD, PhD, Hideo Yasunaga, MD, PhD, The Spine Journal 18 (2018) 1815–1821

9. IN BRIEF female sex and longer fusion constructs significantly increase the risk of total hip arthroplasty following spinal fusion

Previous studies have noted the progression of arthritis due to increased forces in articular structures adjacent to a fused joint. It is unknown whether spinal fusion generates increased forces at the hip joint causing progression of arthritis and leading to total hip arthroplasty. The authors examined a large patient discharge dataset to determine if there was a relationship between spinal fusion and total hip arthroplasty. A total of 101,206 patients who underwent spinal fusion and 2803 (2.77%) subsequently underwent total hip arthroplasty. In a bivariate analysis comparing 1 to 2 levels versus >2 levels fused, males had a 17% increased relative risk of undergoing subsequent total hip arthroplasty and female patients had a 35% increased relative risk when the fusion involved >2 levels. For females, the relative risk increased by 119% when >7 levels were fused compared with 1–7 levels. Using multivariate random-effects analysis,

significant risk factors for total hip arthroplasty after spinal fusion included female sex, and spinal fusion of >7 levels. On the basis of these data the authors conclude that patients with longer spinal fusion constructs, especially female patients, had a significantly increased risk of undergoing a subsequent total hip arthroplasty. Patients should be warned about the potential for progression of hip osteoarthritis following longer level spinal fusion.

Zachary C. Lum, DO, Eric O. Klineberg, MD, Beate Danielsen, PhD, Mauro Giordani, MD and John P. Meehan, MD, The Journal of Bone and Joint Surgery Am 2019; 101: 675–81

10. Immediate *versus* delayed surgical treatment of lumbar disc herniation for acute motor deficits

Motor deficits are a frequent symptom of lumbar disc herniation although surgery within 48 h has been recommended for cauda-equina syndrome, the best timing of surgery for acute motor deficits continues to be debated. The effect of early surgery has been proposed but remains unproven. Petr et al. performed a retrospective cohort study to assess the impact of time to surgery in patients with motor deficits on their functional outcome. A total of 330 patients with acute paresis caused by lumbar disc herniation acutely referred to their department and surgically treated using microsurgical discectomy from January 2013 to December 2015 were included in the study. The group of patients that had paresis <48 h showed significantly faster recovery of moderate/severe paresis at discharge and 6 weeks/3 months follow-up, whereas there were no significant differences in recovery for mild paresis. Sensory deficits also recovered substantially faster in the group that was operated on in <48 h. Body mass index, preoperative medical research council grade, and duration of motor deficits were identified as significant predictors for recovery of paresis at all follow ups. On the basis of these data the authors conclude that given the superior rates of neurological recovery of acute moderate/severe motor deficits, immediate surgery should be the primary option. This conclusion contradicts many studies that have shown that motor deficits recover even in non-operative situations about 50% of the time and that surgery does not necessarily increase the ultimate likelihood of recovery. This conclusion would need to be validated in a prospective, randomized clinical trial to confirm the superiority of urgent surgery before declaring this a standard of care.

Ondra Petr, MD, PhD, Bernhard Glodny, MD, Konstantin Brawanski, MD, Johannes Kerschbaumer, MD, Christian Freyschlag, MD, Daniel Pinggera, MD, Rafael Rehwald, MD, Sebastian Hartmann, MD, PhD, Martin Ortler, MD, Claudius Thomé, MD, SPINE Volume 44, Number 7, pp. 454–463

11. Cages in ACDF are associated with a higher nonunion rate than allograft

Existing literature consist primarily of single-center studies with inconsistent findings regarding the rate of nonunion in patients treated with structural allograft or intervertebral cages as part of the anterior cervical discectomy and fusion operations. The authors performed a retrospective analysis of 6130 patients registered in the PearlDiver national database from 2007 to 2016. All ACDF patients with anterior plating who were active in the database for at least 1 year were included in the study. Four thousand sixty-three patients were included in the allograft group, while 2067 were included in the cage group. Overall nonunion rates were significantly higher in the cage group (5.32%) than in the allograft group (1.97%) ($P < 0.01$). When controlling for confounders, increased rates of nonunion were consistently observed in the cage group, achieving statistical significance in 25 of the 26 analyses. On the basis of these data the authors conclude that there is an increased rate of nonunion associated with intervertebral cages which may suggest the superiority of allograft over cages in ACDF.

Sean Pirkle, BA, Samuel Kaskovich, BSA, David J. Cook, BA BEng, Alisha Ho, BA, Lewis L. Shi, MD, and Michael J. Lee, MD, SPINE Volume 44, Number 6, pp 384–388

12. Long-term outcome after spinal fusion for isthmic spondylolisthesis in adults

Data on the long-term outcome after fusion for isthmic spondylolisthesis are scarce. Endler performed a prospective study including a cross-sectional control group to look at patient-reported outcomes and adjacent segment degeneration after fusion for isthmic spondylolisthesis. Patients with isthmic spondylolisthesis underwent posterior lumbar interbody fusion ($n = 86$) or posterolateral fusion ($n = 77$). Patient-reported outcomes data were available for 73 patients in the PLIF group and 71 in the PLF group at a mean of 11 (range 5–16) years after baseline. There were no significant patient-reported outcome differences between the PLIF group and the PLF group. The prevalence of adjacent segment degeneration was 42% in the PLIF group and 26% in the PLF group. The patient-reported outcome data indicated lower physical function and more pain in individuals with surgically treated isthmic spondylolisthesis compared to the controls. On the basis of these data the authors conclude that PLIF and PFL groups had similar long-term patient-reported and radiologic outcomes. Individuals with isthmic spondylolisthesis have lower physical function and more pain several years after surgery when compared to the general population.

P. Endler, MD, DC, P. Ekman, MD, PhD, H. Ljungqvist, MD, T. B. Brismar, MD, PhD, P. Gerdhem, MD, PhD, H. Möller, MD, PhD, The Spine Journal 19 (2019), 501–508

13. Discharge to inpatient facilities after lumbar fusion surgery is associated with increased postoperative venous thromboembolism and readmissions

Post discharge care is a significant source of cost variability after posterior lumbar fusion surgery. Khormaee performed a retrospective review of all 1- to 3-level primary posterior lumbar fusion cases in the 2010–2014 National Surgical Quality Improvement Program registry to determine the association

between post hospital discharge to inpatient care facilities and postoperative complications. A total of 18,652 posterior lumbar fusion cases were identified, 15,234 (82%) were discharged home, and 3418 (18%) were discharged to continued inpatient care. Multivariable propensity-adjusted analysis demonstrated that being discharged to inpatient facilities was independently associated with higher risk of thromboembolic complications, urinary complications, and unplanned readmissions. On the basis of these data the authors conclude that discharge to continued inpatient care versus home after primary posterior lumbar fusion is independently associated with higher odds of certain major complications.

Sariah Khormaee, MD, PhD, Andre M. Samuel, MD, William W. Schairer, MD, Peter B. Derman, MD, MBA, Alexander S. McLawhorn, MD, MBA, Michael C. Fu, MD MHS, Todd J. Albert, MD, The Spine Journal 19 (2019) 430–436

14. Does systemic administration of parathyroid hormone after noninstrumented spinal fusion surgery improve fusion rates and fusion mass in elderly patients compared to placebo in patients with degenerative lumbar spondylolisthesis

Few studies have investigated the effects of parathyroid hormone (PTH) on fusion in patients undergoing spinal arthrodesis. Early studies showed a more robust fusion mass with PTH after spinal fusion surgery but the efficacy of PTH on noninstrumented spinal fusion surgery remains unclear. Jespersen et al. performed a prospective, randomized, double-blinded, placebo-controlled trial to evaluate whether 90-day subcutaneous injections with 20 μg teriparatide increased the volume and quality of the fusion mass compared to placebo based on 12-month postoperative fine cut computed tomographic scans. Patients with degenerative spondylolisthesis scheduled for noninstrumented posterolateral fusion were randomized to receive teriparatide or placebo. The two groups were comparable in terms of age, sex, and numbers of levels operated. PTH treatment was well tolerated but provided no additional benefit versus placebo. Fusion rates, mean volume, and robustness of the fusion mass were similar between the PTH and placebo groups. On the basis of these data the authors conclude that 90-day subcutaneous administration of 20 μg teriparatide did not increase fusion volume or improve the quality of the fusion mass in elderly patients compared to placebo after noninstrumented spinal fusion surgery for degenerative spondylolisthesis.

Annette Bennedsgaard Jespersen, MD, PhD, Andreas Duch Kiilerich Andresen, MD, Michael Kjœr Jacobsen, MD, Mikkel Ø. Andersen, MD, and Leah Y. Carreon, MD, MSc, SPINE Volume 44, Number 3, pp 157–162