JS885D

The Journal of

Spinal Cord Medicine

Spring 2000
Volume 23
Supplement 1

A publication of the American Paraplegia Society

American Spinal Injury Association Twenty-Sixth Annual Meeting
April 14–16, 2000, Chicago, IL, USA

2 **General Session Abstracts**

2 Basic Science

5 GU

9 Psychosocial

12 Medical

15 Prevention

19 Nursing

22 International

24 Spine

27 Outcomes/Cost

30 Mixed Topics

34 **Poster Presentations**

34 SCI Nursing and Rehabilitation Therapies

38 Spine Topics

42 Urology/Fertility/Gynecology

47 Medical and Neurological Topics

55 Psychosocial Topics

60 SCI Outcomes/Costs/Administration

motor FIM scores at discharge, 1 week PD and 6 months PI for subjects classified as AIS A were 28.7, 27.0 and 30.3 respectively; for subjects classified as B were 32.1, 30.9 and 37.2; and for subjects classified as AIS C were 53.1, 54.1 and 62.1. The improvements from 1 week PD to 6 months PI were significant for all AIS grades, while those from discharge to 6 months PI were significant only for AIS grade C. Functional gains continue after discharge from rehabilitation in individuals with tetraplegia. The improvement is best detected by serial assessments in the post discharge environment.

#6 PREDICTORS OF PERSONAL CARE ASSISTANCE FOR SPINAL CORD INJURY SURVIVORS

David A. Weitzenkamp, BA; Gale G. Whiteneck, PhD; Daniel P. Lammertse, MD

Craig Hospital, Englewood, CO

Many spinal cord injury survivors require personal care assistance to help them complete personal care tasks. To understand the predictors of assistance utilization, data from the National Spinal Cord Injury Database were analyzed to determine what factors beyond merely severity of disability are associated with the need for paid and unpaid personal assistance to SCI survivors. Using ANOVA techniques and data from 4210 subjects who were 1, 2, 5, 10, 15, and 20 years post injury and had valid reports of assistance, 17 variables were screened for their association with hours of paid assistance, unpaid assistance, and total hours of assistance. Potential predictors included demographic variables, the Functional Independence Measure (FIM) motor score, system of care, payer, days of initial rehabilitation and rehospitalization, age, and years since injury. Variables with a significant relationship were entered into a stepwise process to produce three final models. The models explained 37.5%, 25.2%, and 49.8% of the variance in the hours of paid, unpaid, and total assistance. In all three models, FIM motor score and system of care explained the greatest share of the outcome differences. Days in initial rehab and living alone were the only other variables to account for more than 1% of the variance in any model. While this research suggests that the FIM motor score is a good predictor of assistance utilization, the variation in hours of care among rehabilitation centers is worthy of further investigation. The potential of differing state-specific reimbursement policies to explain center differences will be presented.

General Session 10: Mixed Topics

#1 THE ROLE OF OSTEOPHYTE FORMATION IN THE STABILITY OF THE AGING SPINE: A BIOMECHANICAL ANALYSIS

Steven A. Caruso, MSII; Brian Chalkin, DO; Franco Cerabona, MD; Andrew A. Merola, MD; Frank Liporace, MD; Christopher Bono, MD; Francis Camillo, MD; Richard Zipnick, MD; Thomas Haher, MD; Babak Litkouhi, MD

Saint Vincent's Hospital and Medical Center, New York, NY

By the year 2000, approximately 20% of all Americans will be older than 65 and 12% will be older than 85. With age, patients often develop degenerative disc disease that alters the normal physiologic mechanical behavior of the spine. Degenerative changes cause recurrent microtrauma to the discs, prompting vertebral remodeling and osteophytes formation in response to instability as the body tries to stabilize damaged motion segment(s). The biomechanical and structural need for instrumentation in this patient population has not been reported. The goal of this project was to study the biomechanical and structural effects of osteophytes on the aging human spine to establish whether post-laminectomy spinal instrumentation is needed to obtain acceptable stability. Eight whole human osteophytic cadaveric spines, ages 65–92 (mean 73), were harvested and stored in double sealed plastic bags at -25°C. Immediately prior to testing, each specimen was defrosted and stripped of all extraneous muscle and soft tissue, leaving only osseous-discoligamentous structures intact. A—P and lateral X-rays were obtained pre- and post-assay to qualify the presence of the

osteophytes. Each specimen was subjected to multi-plane loading in the following testing scenarios intact, post-laminectomy (with and without a two level Moss-Miami posterior screw-rod construct), and post-laminectomy with osteotomy (with and without instrumentation). All data were collected using a MTS (Eden Prairie, MN) bi-axial, servo-hydraulic materials testing apparatus using TestWare SX and TestStar 11 software, and downloaded to Microsoft® Excel for statistical and graphical analysis. The following table indicates the percent change in stiffness compared to the intact spine:

Loading Modality	Lam.	Lam. with Instr.	Lam. with Osteo.	Lam. with Instr. and Osteo.
Torsion	-4%	4%	-6%	-2%
Extension	-57%	8%	-67%	-17%
Compression	-30%	29%	-70%	31%

Lam=Laminectomy, Instr=Instrumentation, Osteo=Osteotomy

Laminectomy decreases stiffness in all loading modalities. Stiffness is greatest when laminectomies are stabilized by instrumentation and lowest when laminectomies are followed by osteotomies. The decrease in stability following laminectomy is greater than the increase in stability due to osteophytes. Accordingly, the presence of osteophytes does not preclude the use of stabilizing instrumentation in a decompressive laminectomy.

#2 ONE AND TWO LEVEL ANTERIOR CERVICAL DISKECTOMY AND FUSION WITH AND WITHOUT PLATE FIXATION: A PROSPECTIVE STUDY

Michael J. Bolesta, MD[1]; Glenn R. Rechtine, II, MD[1]; AnnMarie Chrin, ARNP[2]

[1]Department of Orthopaedic Surgery, The University of Texas Southwestern Medical Center, Dallas, TX; [2]Florida Orthopaedic Institute, Tampa, FL

We prospectively studied 41 patients who underwent modified Smith-Robinson procedures at 1 or 2 operative levels, examining the effect that unicortical anterior plate fixation has on the results.

Twenty-eight female and 13 males, with an average age of 44 years (range 25 to 82), were followed for an average of 51 months (range 24 to 85). All had an anterior diskectomy, burring of the endplates, placement of an autogenous tricortical iliac crest graft at 1 (21 patients) or 2 (20 patients) levels. Twenty-three had application of a Synthes Cervical Spine Locking Plate.

Of the 18 unplated patients, 17 were single level, 1 two level. Seven had a nonunion, including the single two level procedure. Eight had persistent pain, progressive in 2. Ten were free of symptoms. Five had posterior fusion.

Of the 23 plated patients, 4 were single level, 19 two level. Six had a nonunion, including 2 of the single level procedures. Eleven had persistent pain, progressive in 1. Twelve were symptom free. Six had posterior fusion.

The role of plating in one level fusions is unclear from the literature, as it is perceived that these patients do well. Two level fusions do not fare as well, but better than three or more level operations. Our series would seem to imply that plating may improve the union rate and clinical results of two level fusions to equal that of unplated single level anterior fusion. With our small numbers, we could not demonstrate any advantage in plating one level procedures.