

Joint Section on Disorders of the Spine
and Peripheral Nerves
AANS/CNS

10TH ANNUAL MEETING

February 9-12, 1994
Bonaventure Resort & Spa
Ft. Lauderdale, Florida



The 10th Annual Meeting

Joint Section on Disorders of the Spine and Peripheral Nerves

**February 9-12, 1994
Bonaventure Resort & Spa
Fort Lauderdale, Florida**

PROGRAM SUMMARY

Officers	5
1994 Annual Meeting Committee.....	5
Past Officers.....	6
Previous Meetings.....	7
Future Meetings	7
Past Program Committees.....	8
Lifetime Achievement Award	9
Mayfield Award	10
Joint Section Fellowship Award	10
Exhibitors.....	11
Scientific Program.....	15
Scientific Abstracts	39
Scientific Posters.....	105
Section Membership Roster.....	199

The Joint Committee on Education of the American Association of Neurological Surgeons and the Congress of Neurological Surgeons designates this continuing medical activity for 24 credit hours in Category I toward the Continuing Education Award in Neurosurgery and the Physician's Recognition Award of the American Medical Association. The Joint Committee on Education of the American Association of Neurological Surgeons and the Congress of Neurological Surgeons is accredited by the Accreditation Council for Continuing Medical Education to sponsor continuing medical education for physicians.

OFFICERS

Chairman:	Edward C. Tarlov, MD
Chairman-Elect:	Russell L. Travis, MD
Secretary:	Arnold H. Menezes, MD
Treasurer:	Russell L. Travis, MD
Immediate Past Chairman:	Volker K.H. Sonntag, MD
Members-at-Large:	Edward Benzel, MD Gary Rea, MD

1994 ANNUAL MEETING COMMITTEE

Annual Meeting Chairman:	Stephen Papadopoulos, MD Ann Arbor, Michigan
Scientific Program Chairman:	Richard G. Fessler, MD, PhD Gainesville, Florida
Exhibit Chairman:	Mark N. Hadley, MD Birmingham, Alabama
Scientific Program Committee:	David Cahill, MD Tampa, Florida Curtis Dickman, MD Phoenix, Arizona Peter Gianaris, MD Eau Claire, Wisconsin Louis Harkey Jackson, Mississippi Paul McCormick MD New York, New York Russ Nockels, MD San Francisco, California Moris Senegor, MD Stockton, California Vincent Traynelis, MD Iowa City, Iowa

MAYFIELD AWARD

- | | |
|--|--|
| 1984 Mark N. Hadley, MD
Phoenix, AZ | 1991 Peter Gianaris, MD
Eau Claire, WI |
| 1985 Ab Guha, MD
Toronto, Ontario | 1992 Rajiv Midha, MD
Toronto, Ontario |
| 1986 No Award Presented | 1993 Clinical Science
Gerald F. Tuite, MD
Ann Arbor, MI
Basic Science
Allan D.O. Levi, MD
Miami, FL |
| 1987 John A. Feldenzer, MD
Ann Arbor, MI | |
| 1988 No Award Presented | 1994 Timothy C. Ryken, MD
Iowa City, IA |
| 1989 Richard K. Simpson Jr., MD
Houston, TX | |
| 1990 John Hurlbert, MD
Toronto, Ontario | |

JOINT SECTION ON DISORDERS OF THE SPINE AND PERIPHERAL NERVES FELLOWSHIP AWARD

- 1993 AME Fellowship Award
Ziya L. Gokaslan, MD
Houston, TX
- 1994 Christopher Shaffrey, MD
Charlottesville, VA

EXHIBITORS

The officers and membership of the Joint Section on Disorders of the Spine and Peripheral Nerves of the American Association of Neurological Surgeons and the Congress of Neurological Surgeons appreciate the support of the following exhibitors for the 10th Annual Meeting:

AcroMed Corporation
3303 Carnegie Avenue
Cleveland, OH 44115
(216) 431-9900

Booths 13 and 14

Aesculap
1000 Gateway Blvd.
South San Francisco, CA 94080
(415) 876-7000

Booth 19

AME, Inc.
250 E. Arapaho Road
Richardson, TX 75081
(214) 918-8459

Booth 33

American Silk Sutures, Inc.
82 Sanderson Avenue
Lynn, MA 01902
(617) 592-7200

Booth 26

The Anspach Effort, Inc.
4500 Riverside Drive
Palm Beach Gardens, FL 33410
(407) 627-1080

Booth 10

BFW
155 West Tiverton Way
Lexington, KY 40503
(606) 273-8411

Booth 11

Boots Pharmaceuticals
300 Tri-State International Center
Suite 200
Lincolnshire, IL 60069
(708) 405-7440

Booth 32

PAST OFFICERS

1992

Volker K.H. Sonntag, MD - CHAIRMAN
Edward Tarlov, MD - CHAIRMAN-ELECT
Arnold H. Menezes, MD - SECRETARY
Russell L. Travis, MD - TREASURER
Donald J. Prolo, MD - MEMBER-AT-LARGE
Melville P. Roberts, MD - MEMBER-AT-LARGE

1991

Carole A. Miller, MD - CHAIRMAN
Volker K.H. Sonntag, MD - CHAIRMAN-ELECT
Arnold H. Menezes, MD - SECRETARY
Russell L. Travis, MD - TREASURER
Donald J. Prolo, MD - MEMBER-AT-LARGE
Melville P. Roberts, MD - MEMBER-AT-LARGE

1990

Edward S. Connolly, MD - CHAIRMAN
Carole A. Miller, MD - CHAIRMAN-ELECT
Volker K.H. Sonntag, MD - SECRETARY
Russell L. Travis, MD - TREASURER
Arnold H. Menezes, MD - MEMBER-AT-LARGE
Donald J. Prolo, MD - MEMBER-AT-LARGE

1989

Edward S. Connolly, MD - CHAIRMAN
Carole A. Miller, MD - CHAIRMAN-ELECT
Volker K.H. Sonntag, MD - SECRETARY
Russell L. Travis, MD - TREASURER
Arnold H. Menezes, MD - MEMBER-AT-LARGE
Donald J. Prolo, MD - MEMBER-AT-LARGE

1988

Stewart B. Dunsker, MD - CHAIRMAN
Carole A. Miller, MD - SECRETARY
Edward Tarlov, MD - TREASURER
Phanor L. Perot, Jr., MD - MEMBER-AT-LARGE
Volker K.H. Sonntag, MD - MEMBER-AT-LARGE

1987

Stewart B. Dunsker, MD - CHAIRMAN
Carole A. Miller, MD - SECRETARY
Edward Tarlov, MD - TREASURER
Phanor L. Perot, Jr., MD - MEMBER-AT-LARGE
Volker K.H. Sonntag, MD - MEMBER-AT-LARGE

1986

George W. Syper, MD - CHAIRMAN
Henry H. Schmidek, MD - SECRETARY
Edward S. Connolly, MD - TREASURER
Carole A. Miller, MD - MEMBER-AT-LARGE

1985

Russell W. Hardy, MD - CHAIRMAN
Henry H. Schmidek, MD - SECRETARY
Edward S. Connolly, MD - TREASURER
George W. Syper, MD - MEMBER-AT-LARGE

PREVIOUS MEETINGS

1985 - Greenlefe, Florida
1986 - San Diego, California
1987 - Boca Raton, Florida
1988 - Phoenix, Arizona
1989 - Cancun, Mexico
1990 - Captiva Island, Florida
1991 - Rancho Mirage, California
1992 - Miami, Florida
1993 - Tucson, Arizona

FUTURE MEETINGS

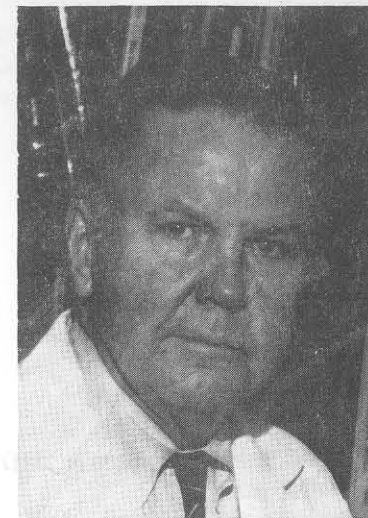
1995 - Phoenix, Arizona
1996 - Orlando, Florida
1997 - Newport Beach, California
1998 - Rancho Mirage, California

PAST PROGRAM COMMITTEES

- | | |
|--|--|
| 1985 Barth A. Green, MD
George W. Sybert, MD | 1990 Edward Tarlov, MD
Bennett Blumenkopf, MD
Paul D. Dermbach, MD
Nancy Epstein, MD |
| 1986 Randall W. Smith, MD
Philip R. Weinstein, MD
John F. Howe, MD
Stanley J. Goodman, MD
Barth A. Green, MD
Volker K.H. Sonntag, MD
Hector E. James, MD | 1991 Nancy Epstein, MD
Joy Arpin, MD
Lawrence Borges, MD
Emily Friedman, MD
Ben Benner, MD |
| 1987 Volker K.H. Sonntag, MD
Robert S. Hood, MD
Joel N. Abromovitz, MD
Timothy Harrington, MD | 1992 Gary Rea, MD
Bennett Blumenkopf, MD
Charles Branch, Jr., MD
David Cahill, MD
Richard Fessler, MD
Stephen Papadopoulos, MD |
| 1988 Melville P. Roberts, MD
Volker K.H. Sonntag, MD
Russell Travis, MD
Harold A. Wilkinson, MD
Richard Saunders, MD | 1993 Stephen Papadopoulos, MD
Charles Branch, Jr., MD
David Cahill, MD
Curtis Dickman, MD
Richard Fessler, MD
Regis Haid, MD
Robert J. Martin, MD
Gary Rea, MD
Moris Senegor, MD
John E. McGillicuddy, MD
Noel Perin, MD |
| 1989 Arnold H. Menezes, MD
Carole A. Miller, MD
Russell Travis, MD
John C. Godersky, MD
Patrick W. Hitchon, MD | |

LIFETIME ACHIEVEMENT AWARD

Sanford J. Larson was born in Chicago, Illinois on April 9, 1929. He received the B.A. degree from Wheaton College, Wheaton, Illinois, in 1950 and both the M.D. and Ph.D. degrees from Northwestern University, Evanston, Illinois, in 1954 and 1962, respectively.



After serving as an intern at Passavant Memorial Hospital, Chicago, Illinois, from 1954 to 1955, he took his residency in the Northwestern University Neurosurgical Residency Program from 1955 to 1957, and from 1959 to 1961, a period interrupted by two years of service in the Air Force. In 1961, he was awarded a Postdoctoral Research Fellowship and also served as Clinical Assistant in Surgery at the Northwestern University School of Medicine. In 1962, he was appointed Director of Neurosurgical Education at Cook County Hospital, Chicago, Illinois. In 1963, he was appointed Associate Professor and Chairman of the Department of Neurosurgery, Marquette School of Medicine (now Medical College of Wisconsin), Milwaukee, and is currently Professor and Chairman of that Department.

Since 1964, he has continuously received funding from the federal agencies for research in neurophysiology and spinal injury. He has written over 125 original papers and 32 books and chapters.

Bremer Medical, Inc.
4801 Dawin Road
Jacksonville, FL 32207
(904) 730-9373

Booth 12

Codman & Shurtleff, Inc.
41 Pacella Park Drive
Randolph, MA 02368
(617) 986-3311

Booths 15 and 16

Danek Medical, Inc.
3092 Directors Row
Memphis, TN 38131
(901) 396-3133

Booths 29 and 30

DePuy Motech
P.O. Box 988
Warsaw, IN 46581-0988
(219) 372-7147

Booth 2

GICD/USA, Inc.
387 Shuman Blvd.
Suite 300 West
Naperville, IL 60563-8453

Booth 34

Hall Surgical
1170 Mark Avenue
Carpinteria, CA 93013
(805) 684-0456

Booth 31

Hospital Research Associates
383 Route 46 West
Fairfield, NJ 07004
(201) 575-3650

Booth 18

J.B. Lippincott
22131 Martella
Boca Raton, FL 33433
(407) 483-4704

Booth 24

MCW (Mosby, Churchill, Waverly)
9027 NW 21 Ct.
Coral Springs, FL 33071
(305) 345-4338

Booth 21

Midas Rex Instruments
3000 Race Street
Fort Worth, TX 76111
(800) 433-7639

Booth 25

**Musculoskeletal Transplant
Foundation**
960 Holmdel Road, Bldg. 1
Holmdel, NJ 07733
(908) 946-1222

Booth 3

**Neuro Navigational
Corporation**
3180 Pullman St.
Costa Mesa, CA 92626
(800) 638-7654

Booth 1

Neuromed, Inc.
5000 Oakes Road
Ft. Lauderdale, FL 33314
(305) 584-3600

Booth 4

**OMI/Trademark Surgical
Products**
3924 Virginia Avenue
Cincinnati, OH 45227
(513) 561-2241

Booth 20

Omni-Tract Surgical
403 County Road E2 West
St. Paul, MN 55112
(612) 633-8448

Booth 23

OSI
1897 National Avenue
Hayward, CA 94545
(510) 785-1020

Booth 7

PMT Corporation
1500 Park Road
Chanhassen, MN 55317
(800) MANKIND

Booth 28

Quality Medical Publishing
P.O. Box 1569
Windermere, FL 34786

Booth 9

Smith & Nephew Spine
1450 Brooks Road
Memphis, TN 38116
(901) 396-2121

Booths 5 and 6

Spinal Science Advancement Foundation
2602 Corporate Avenue, Suite 1
Memphis, TN 38132
(901) 332-3598

Booth 34

Stuart Spine Group
A Div. of National Medical Specialty, Inc.
Buncher Commerce Park
Ave. B, Building 203
Youngwood, PA 15697
(800) 547-7463

Booth 8

Surgical Dynamics, Inc.
2575 Stanwell Drive
Concord, CA 94520
(510) 687-2192

Booth 22

THINK FIRST Foundation
22 South Washington Street
Park Ridge, IL 60068
(708) 692-9500

Booths 38 and 39

W.B. Saunders
P.O. Box 6580
Hollywood, FL 33081
(800) 475-6410

Booth 27

Wild Microscopes,
Division of Leica, Inc.
24 Link Drive
Rockleigh, NJ 07647
(800) 526-0355

Booth 17

Spine Meeting Agenda

Wednesday, February 9, 1994

7:00 am - 8:30 pm
Registration

8:00 am - 12:00 noon
Anterior Cervical Spine Stabilization Course -
Key West Room/Key Largo Theater
Director: Peter Klara, MD
Faculty: Curtis Dickman, MD, Fred Geisler, MD, Mark Hadley, MD, Regis Haid, MD

1:00 pm - 5:00 pm
Posterior Cervical Spine Stabilization Course -
Key West Room/Key Largo Theater
Director: Curtis Dickman, MD
Faculty: Ronald I. Apfelbaum, MD, Perry Ball, MD, Edward Benzel, MD, Charles Branch, MD, Richard Fessler, MD, PhD, Regis Haid, MD, Louis Harkey, MD, James Hollowell, MD, Iain Kalfas, MD, Peter M. Klara, MD, Jack Knightly, MD, Robert Martin, MD, Stephen Papadopoulos, MD, Noel Perin, MD, John Ronderos, MD, Charles Stillerman, MD, Richard M. Toselli, MD, Vincent Traynelis, MD, Arnold Vardiman, MD, Dennis G. Vollmer, MD, Eric Woodward, MD, Kenneth Yonemura, MD

6:30 pm
Opening Reception - Poolside

Thursday, February 10, 1994

6:30 am - 7:00 pm
Exhibits and Posters - Grand Ballroom

6:30 am - 7:30 am
Continental Breakfast - Grand Ballroom

8:00 am - 11:00 am
Hospitality Suite - Coral Springs/Plantation Rooms

SCIENTIFIC SESSION - Global Ballroom

7:30 am - 7:40 am

Joint Section Chairman's Welcome

Edward Tarlov, MD

7:40 am - 7:50 am

Scientific Program Chairman's Welcome

Richard Fessler, MD, PhD

7:50 am - 8:00 am

Introduction to Chairman's Address

Charles Fager, MD

8:00 am - 8:30 am

Chairman's Address

Edward Tarlov, MD

8:30 am - 10:15 am

General Session I

Controversy I: Techniques of Percutaneous Discectomy

Moderators: Richard Fessler, MD, PhD, Lewis Harkey, MD

8:30 am - 8:45 am

Percutaneous Laser Discectomy

J. Davis, MD

8:45 am - 9:00 am

Automated Percutaneous Discectomy

Joseph Maroon, MD

9:00 am - 9:15 am

Endoscopic Manual Discectomy

Hal Matthews, MD*

9:15 am - 9:30 am

Chymopapain Nucleotomy

Manucher Javid, MD

*Supported by Educational Grants from American Medical Electronics, Inc., Codman & Shurtleff, Inc., Danek Medical Inc., Stuart Medical, Inc., Smith & Nephew, Inc.

9:30 am - 9:45 am

Percutaneous Techniques Have No Role in Discectomy

David Cahill, MD

9:45 am - 10:15 am

Discussion

10:15 am - 10:45 am

Break - Grand Ballroom

10:45 am - 10:50 am

Think First Program Update

Volker K.H. Sonntag, MD

10:50 am - 12:00 noon

Contributed Papers

Moderators: Curtis Dickman, MD, Peter Gianaris, MD

10:50 am - 10:56 am

1. Percutaneous Lumbosacral Fusion and Fixation

Richard G. Fessler, MD, PhD, Michael MacMillan, MD

10:56 am - 11:02 am

2. Segmental Stabilization of Lumbar Motion Segments: Comparison of Subcutaneous and Deep Conventional Plate Placement:

Jonathon L. Schaffer, MD, Parviz Kambin, MD

11:02 am - 11:08 am

3. Lumbar and Cervical Hemilaminectomy Performed as Outpatient Surgery

Thomas K. Stonecipher, MD, Sanford J. Wright, MD

11:08 am - 11:22 am

Discussion: Papers 1-3

11:22 am - 11:28 am

4. Percutaneous Automated Discectomy in 58 Patients

Scott A. Shapiro, MD, John Mealey, MD

11:28 am - 11:34 am

5. Laparoscopic Lumbar Discectomy

Sherman C. Stein, MD, Gus J. Slotman, MD

11:34 am - 11:40 am
6. Minimally Invasive Lumbar Discectomy: A Prospective Outcome Analysis of 200 Posterolateral Discectomies
 Jonathan L. Schaffer, MD, Parviz Kambin, MD

11:40 - 11:46 am
7. A Prospective Single Institution Study of Microdiscectomy
 Matthew R. Quigley, MD, Jeffrey Bost, PA-C, Joseph C. Maroon, MD, Amr Elrifai, MD, Matthew Panahandeh

11:46 - 12:00 noon
Discussion: Papers 4-7

12:00 noon - 1:00 pm
Lunch - Grand Ballroom
Provided for all registrants, spouses, children, and exhibitors

1:00 pm - 2:30 pm
General Session II - Global Ballroom
Controversy II: Treatment of Spinal Cord Injury
 Moderators: Jack Wilberger, MD, Stephen Papadopoulos, MD

1:00 pm - 1:15 pm
Pharmacologic Strategies of Treatment
 Charles Tator, MD

1:15 pm - 1:30 pm
Critique of NASCIS
 Thomas Ducker, MD

1:30 pm - 1:45 pm
Early Surgical Intervention
 Volker K.H. Sonntag, MD

1:45 pm - 2:00 pm
Late Surgical Intervention
 Dennis Maiman, MD, PhD

2:00 pm - 2:25 pm
Discussion

2:25 pm - 2:30 pm
Presentation of Lifetime Achievement Award
 Edward Tarlov, MD

2:30 pm - 2:40 pm
Comments by Award Recipient
 Sanford Larson, MD, PhD

2:40 pm - 3:00 pm
Break - Grand Ballroom

3:00 pm - 5:00 pm
Contributed Papers
 Moderators: Vincent Traynelis, MD, Eugene Rossitch, MD

3:00 pm - 3:06 pm
8. Neurotrophic Activity of Sera from Spinal Cord Injured Patients
 Christopher Shields, MD, Fred J. Roisen, MD, R. Dean Linden, PhD, Cheng L. Lu, PhD, Glee Yorke, Yi Ping Zhang, MD, John R. Johnson, MD

3:06 pm - 3:12 pm
9. Human Schwann Cell Function Studied in the SCID Mouse: A Comparison of Cells Prepared in Tissue Culture with Schwann Cells Presented Within Xenografts
 Allan D.O. Levi, MD, Richard P. Bunge, MD

3:12 pm - 3:18 pm
10. ADCON™ L-Inhibits Epidural Fibrosis in a Rabbit Laminectomy Model
 E. Palatinsky, MD, S. Ahmad, MD, K. Maier, MD, M. Hingson, MD, D. Touhalisky, MD, G. Coker, MD

3:18 pm - 3:30 pm
Discussion: Papers 8-10

3:30 pm - 3:36 pm
11. Ten-Year Analysis of Delayed Decompression Procedure in Spinal Cord Injury Patients
 Jose Arias, MD, John Klose, PhD, Belinda Needham-Shropshire, OTR/L, Sherri Patchen, RN, MSN

3:36 pm - 3:42 pm

12. **The Correlation of Spinal Deformity to Signs of Instability on Flexion-Extension Radiographs in the Postoperative Spine**
G.F. Tuite, MD, S.M. Papadopoulos, MD, J. Stern, MD, S. Doran, MD, J. Fodero, MD, S. Brube, MD, C.A. Lundquist, MD, J.E. McGillicuddy, MD

3:42 pm - 3:48 pm

13. **Management of Spinal Epidural Hematomas**
Randall Porter, MD, Michael T. Lawton, MD, Volker K.H. Sonntag, MD, Curtis A. Dickman, MD

3:48 pm - 4:00 pm

Discussion: Papers 11-13

4:00 pm - 4:06 pm

14. **Odontoid Fractures Associated with Transverse Ligament Disruption**
Karl A. Greene, MD, PhD, Curtis A. Dickman, MD, Volker K.H. Sonntag, MD

4:06 pm - 4:12 pm

15. **Vertical C2 Body Fractures**
Edward C. Benzel, MD, FACS, Blaine L. Hart, MD, Perry A. Ball, MD, Nevan G. Baldwin, MD, William W. Orrison, MD, Mary Espinosa, RN

4:12 pm - 4:18 pm

16. **Morphology and Kinematics of the Baboon Upper Cervical Spine: A Model of the Atlantoaxial Complex**
Curtis A. Dickman, MD, Neil Crawford, MS, Anna Brantley, MS, Volker K.H. Sonntag, MD, T. Tominaga, MD

4:18 pm - 4:30 pm

Discussion: Papers 14-16

4:30 pm - 4:36 pm

17. **Prevention of Vertebral Artery Injuries in C1-2 Posterior Screw Fixation**
Ronald I. Apfelbaum, MD

4:36 pm - 4:42 pm

18. **Unilateral Posterior Atlantoaxial Facet Screw Fixation**
John J. Knightly, MD, Curtis A. Dickman, MD, John Ronderos, MD, Arnold Vardiman, MD, Dean Karahalios, MD, Neil Crawford, MS, ENG, Volker K.H. Sonntag, MD

4:42 pm - 4:48 pm

19. **A Prospective Evaluation of the Cerebellar Evoked Potential for Monitoring of the Ventral Tracts of the Spinal Cord**
Michael G. Fehlings, MD, F. Gentili, MD, M. Moncada, MD, J. Hurlbert, MD, P. Manninen, MD

4:48 pm - 5:00 pm

Discussion: Papers 17-19

5:00 pm - 7:00 pm

**Poster Session - Grand Ballroom
Wine and Cheese Reception**

Friday, February 11, 1994

6:30 am - 1:00 pm

Exhibits and Posters - Grand Ballroom

6:30 am - 7:30 am

Continental Breakfast - Grand Ballroom

8:00 am - 11:00 am

Hospitality Suite - Coral Springs/Plantation Rooms

SCIENTIFIC SESSION - Global Ballroom

7:30 am - 9:00 am

General Session III

Controversy III: Treatment of Cervical Spondylosis
Moderators: Richard Saunders, MD, Russell Nockels, MD

7:30 am - 7:45 am

Laminectomy
Gary Rea, MD

7:45 am - 8:00 am

Anterior Decompression

Peter Klara, MD, PhD

8:00 am - 8:15 am

Non-Surgical Therapy

Louis Rowland, MD *

8:15 am - 8:30 am

Laminoplasty

Dennis Vollmer, MD

8:30 am - 9:00 am

Discussion

9:00 am - 9:05 am

Mayfield Award Presentation

Mark Hadley, MD

9:05 am - 9:20 am

Mayfield Award Winner's Presentation

Timothy C. Ryken, MD

**Analysis of Bone Mineral Density, Insertion Technique,
Screw Torque and Holding Strength of Anterior
Cervical Plate Screws**

Timothy C. Ryken, MD, John Clausen, MD,
Vijay Goel, MD, Vincent Traynelis, MD

9:20 am - 9:50 am

Break - Grand Ballroom

9:50 am - 12:30 pm

Contributed Papers

Moderators: David Cahill, MD, Gary Rea, MD

9:50 am - 9:56 am

**20. Late Outcome in the Treatment of Cervical Spondylotic
Myelopathy**

Michael J. Ebersold, MD, Michel C. Pare, MD, MSc,
FRCS(C), Lynn M. Quast, RN, BSN

9:56 am - 10:02 am

21. Cervical Corpectomy: A Review of 204 Cases

John C. Steck, MD, Mark A. Giovanini, MD, Richard G.
Fessler, MD, PhD

10:02 am - 10:10 am

Discussion: Papers 20-21

10:10 am - 10:16 am

**22. Anterior Cervical Fusion for Vertebrectomy Without
Instrumentation**

J. Patrick Johnson, MD, Ulrich Batzdorf, MD

10:16 am - 10:22 am

**23. Biomechanical Comparison of Two Anterior Cervical
Locking Plate Systems in a Dynamic Cadaveric Model**

Vincent C. Traynelis, MD, Timothy Ryken, MD,
John Clausen, MD, Vijay Goel, MD

10:22 am - 10:28 am

**24. The A-O Cervical Locking Plate in Anterior Cervical
Fusions**

Scott A. Shapiro, MD, Thomas C. Witt, MD, James
Callahan, MD, Thomas Scully, MD

10:28 am - 10:40 am

Discussion: Papers 22-24

10:40 am - 10:46 am

**25. Intraoperative Ultrasound for Immediate Evaluation of
Anterior Cervical Decompression and Discectomy**

Richard B. Raynor, MD

10:46 am - 10:52 am

**26. A Sensory Evoked Potential for Selective Monitoring of
the Ventral Human Spinal Cord**

R. John Hurlbert, MD, PhD, M. Moncada, BSc, REPT,
M.G. Fehlings, MD, PhD, FRCS(C)

10:52 am - 11:00 am

Discussion: Papers 25-26

11:00 am - 11:06 am

**27. Tumors of the Axis: Implications and Surgical
Management**

John G. Piper, MD, Arnold Menezes, MD

11:06 am - 11:12 am

28. Biomechanical Effects of Transoral Odontoidectomy

Curtis A. Dickman, MD, Neil Crawford, MS, ENG,
Anna Brantly, MS, ENG, Volker K.H. Sonntag, MD

11:12 am - 11:18 am

- 29. Cervical Spine Stabilization in Rheumatoid Arthritis**
John F. Ronderos, MD, John J. Knightly, MD,
Arnold A. Vardiman, MD, Volker K.H. Sonntag, MD,
Curtis A. Dickman, MD

11:18 am - 11:30 am

Discussion: Papers 27-29

11:30 am - 11:36 am

- 30. Contiguous Multilevel Spondylectomy with Circumferential Reconstruction for Isolated Malignant Tumors of the Spine**
David W. Cahill, MD, FACS

11:36 am - 11:42 am

- 31. Symptomatic Aneurysmal Bone Cysts of the Spine in Childhood**
Shah N. Siddiqi, BSc, MD, James Rutka, MD, FRCS(C),
Harold J. Hoffman, MD, FRCS(C)

11:42 am - 11:48 am

- 32. Tuberculous Spinal Arachnoid Cysts: Diagnosis and Management**
J. Patrick Johnson, MD, Ulrich Batzdorf, MD

11:48 am - 12:00 noon

Discussion: Papers 30-32

12:00 noon - 12:06 pm

- 33. Occipitocervical Fusion Using Plate and Screw Techniques**
David W. Cahill, MD, D.A. Smith, MD, L.C. Love, MD

12:06 pm - 12:12 pm

- 34. Occipital-Cervical Arthrodesis Using Contoured Plate Fixation and Early Report on a Versatile Fixation Technique**
Michael D. Smith, MD, Paul Anderson, MD,
M. Sean Grady, MD

12:12 pm - 12:18 pm

- 35. Autograft Bone is Superior Substrate for Cervical Interbody Fusion**
Randolph C. Bishop, MD, Karen Moore, RN,
Mark N. Hadley, MD

12:18 pm - 12:30 pm

Discussion: Papers 33-35

12:30 pm - 1:00 pm

Business Meeting

1:00 pm - 5:00 pm

Lunch at Consultants Corner - Global Ballroom D

Director: Stewart Dunsker, MD

Faculty:

Larry Borges, MD

Peter Klara, MD

Barth Green, MD

George Sybert, MD

Keith Bridwell, MD

6:30 pm - 11:00 pm

Annual Banquet

6:30 pm - 7:30 pm

Reception - Global Foyer

7:30 pm - 11:00 pm

Dinner and Dance - Global Ballroom

Saturday, February 12, 1994

6:30 am - 6:00 pm

Exhibits and Posters - Grand Ballroom

6:30 am - 7:30 am

Continental Breakfast - Grand Ballroom

8:00 am - 11:00 am

Hospitality Suite - Coral Springs/Plantation Rooms

SCIENTIFIC SESSION - Global Ballroom

7:30 am - 9:30 am

General Session IV

Controversy IV: Diagnostic Procedures and Operative vs. Non-Operative Care of Low Back Pain

Moderators: Paul McCormick, MD, Moris Senegor, MD

7:30 am - 7:45 am

Value of Discography, and Diagnostic Facet and Nerve Blocks: Positive Viewpoint
Chris Shields, MD

7:45 am - 8:00 am

Value of Discography, and Diagnostic Facet and Nerve Blocks: Negative Viewpoint
Richard North, MD

8:00 am - 8:15 am

Operative Care of Low Back Pain
John Collis, MD

8:15 am - 8:30 am

Non-Operative Care of Low Back Pain
Clark Watts, MD

8:30 am - 9:00 am

Trends in Monitoring Outcome from the Patients Point of View: Implications for Surgical Practice
John Ware, PhD*

9:00 am - 9:30 am

Discussion

9:30 am - 9:35 am

Joint Section on Disorders of the Spine and Peripheral Nerves Fellowship Award Presentation**
Mark Hadley, MD

Recipient: Christopher I. Shaffrey, MD

9:35 am - 10:05 am

Initiatives in Spine Research
Steve Gordon, PhD*

10:05 am - 10:30 am

Break - Grand Ballroom

10:30 am - 1:10 pm

Contributed Papers
Moderators: Emily Friedman, MD, Kevin Foley, MD

**Supported by American Medical Electronics, Inc.

10:30 am - 10:36 am

36. Incidence and Management of Discogenic Low Back Pain
Nagy Elwany, MD, Khalid Zohir, MD, Ahmed Marei, MD

10:36 am - 10:42 am

37. Reconstructive Surgery for Low Back Pain: Diagnostic Proposal
F. Todd Wetzell, MD, Russell Poole, RPT, Rosemary Robbins, PhD, Ronald G. Donelson, MD

10:42 am - 10:48 am

38. Diagnostic Signs of Painful Lumbar Discs on MRI and Discography
Manabu Ito, MD, Kristine Incorvaia, MS, Shiwei F. Yu, MD, Bruce E. Fredrickson, MD, Hansen A. Yuan, MD, Arthur E. Rosenbaum, MD

10:48 am - 11:00 am

Discussion: Papers 36-38

11:00 am - 11:06 am

39. Multilevel Lumbar Decompressive Surgery for Lumbar Neurogenic Claudication: A Long-Term Retrospective Review
Michael H. Lavyne, MD, Kevin M. Cockcroft, MD

11:06 am - 11:12 am

40. Lumbar 360 Fusion for Disabling Low Back Pain and Lower Extremity Pain
Robert J. Hacker, MD, Patrick F. Golden, MD

11:12 am - 11:20 am

Discussion: Papers 39-40

11:20 am - 11:26 am

41. Electromyographic Monitoring During Lumbar Spine Surgery: Pedicle Screw Stimulation
Christopher B. Shields, MD, R. Dean Linden, PhD, John R. Dimar, MD, Steven D. Glassman, MD, Rolando M. Puno, MD, John R. Johnson, MD

11:26 am - 11:32 am

42. The Effects of Thread Shape on Stress Magnitudes in Spinal Transpedicular Screws
H.A. Serhan, PhD, G.J. Bennett, MD, C.L. Bloebaum, PhD

11:32 am - 11:38 am

43. **Does Pedicle Screw Fixation Decrease the Incidence of Complications of Posterior Lumbar Interbody Fusion?**
Scott L. Blumenthal, MD, Kevin Gill, MD

11:38 am - 11:50 am

Discussion: Papers 41-43

11:50 am - 11:56 am

44. **Fate of Residual Retropulsed Bone Fragments in Surgically Managed Thoracolumbar Burst Fractures**
Marc J. Levine, MD, Sheldon S. Lin, MD, William Charlton, Joseph Lombardi, Richard A. Balderston, MD, Jerome M. Cotler, MD

11:56 am - 12:02 pm

45. **Non-Operative Treatment of Thoracolumbar Fractures**
Mark Hartman, MD, Ann Marie Chrin, ARNP, Glenn R. Rechtine, MD

12:02 pm - 12:08 pm

46. **Late Complications of Thoracolumbar Fractures**
Jean-Pierre C. Farcy, MD, Paul C. McCormick, MD

12:08 pm - 12:20 pm

Discussion: Papers 44-46

12:20 pm - 12:26 pm

47. **Crossed-Screw Fixation of the Unstable Thoracic and Lumbar Spine**
Edward C. Benzel, MD, FACS, Nevan G. Baldwin, MD

12:26 pm - 12:32 pm

48. **Anterior Thoracolumbar Instrumentation**
David W. Cahill, MD, FACS

12:32 pm - 12:38 pm

49. **Post-Traumatic Kyphosis Associated with Pedicle Fixation of Thoracolumbar Junction Fractures**
Allen Cari, MD, John T. Whalen, MD, Douglas J. Roger, MD

12:38 am - 12:50

Discussion: Papers 47-49

12:50 pm - 12:56 pm

50. **Surgical Management of Thoracolumbar Chordomas**
Paul M. Arnold, MD, P.N. Baek, S.J. Larson, D.J. Maiman, MD, PhD

12:56 pm - 1:02 pm

51. **Spinal Epidural Hematomas After Spine Surgery**
Michael T. Lawton, MD, Randall Porter, MD, Volker K.H. Sonntag, MD, Curtis A. Dickman, MD

1:02 pm - 1:10 pm

Discussion: Papers 50-51

2:00 pm - 6:00 pm

Anterior Thoracolumbar Spine Stabilization Course - Global Ballroom D

Director: David Cahill, MD

Faculty: Narayan Sundaresan, MD, Robert Ho, MD, Iain Kalfas, MD

Sunday, February 13, 1994

8:00 am - 10:00 am

Hospitality Suite (open to all registrants) - Coral Springs/Plantation Rooms

Poster Session

1. **Cervical Spine Injuries in Remote Units:**
Bengt Ljunggren, MD, Mohammed al Refai, MD, Santosh K. Sharma, MD
2. **Roller Coaster Induced Hyperflexion Injury: The Domino Effect After Treatment of an Upper Cervical Kyphosis:**
John J. Knightly, MD, Curtis Dickman, MD, Arnold Vardiman, MD, John Roderos, MD, Volker K.H. Sonntag, MD
3. **Treatment Preferences for Type II Odontoid Fractures:**
John J. Knightly, MD, Curtis Dickman, MD, Arnold Vardiman, MD, John Roderos, MD, Volker K.H. Sonntag, MD
4. **Rigidity Enhancement in Occipitoaxial Fusion Using Transarticular C1-2 Screws:**
Nevan Baldwin, MD, John Anson, MD, Edward Benzel, MD, FACS
5. **Anterior Cervical Instrumentation: Indications, Techniques, and Caveats:**
Andrew Zelby, MD, T.C. O'rigitano, MD, PhD, John Shea, MD
6. **Anterior Cervical Discectomy with and Without Fusion: Results, Complications, and Long-Term Follow-Up:**
Robert Levinthal, MD, William Watters, III, MD
7. **Radical Microsurgical Anterior Cervical Discectomy Without Bone Grafting: Surgical Technique and Experience with 221 Levels:**
W. Michael Vise, MD
8. **Caspar Plating as Additional Surgical Option in the Treatment of Cervical Degenerative Disease:**
Luca Papavero, MD, Andreas Suadcani, MD, Samir Al-Hami, MD, Louis Harkey, MD
9. **360 Degrees Fusion for Cervical Kyphotic Deformities with Anterior and Posterior Plates:**
Robert Martin, MD
10. **Anterior Cervical Osteosynthesis with the Divergent Orion Fixation System: Early Results:**
Gary Lowery, MD, PhD

11. **A Review of Experience With the A-O Plating System in Traumatic Cervical Instability Utilizing Allograft and Autograft:**
Nachshon Knoller, MD, Jamshid Saleh, FRCS, Aizik Wolf, MD, Thomas Rapachi, MD, Daniele Rigamonti, MD
12. **Comparison of Caspar and Synthes Anterior Cervical Plate Fusions in Patients with Long-term Follow-Up:**
W. Bruce Cherny, MD, William Zerick, MD, Volker K.H. Sonntag, MD
13. **Single Stage Anterior/Posterior Decompression and Fusion for Traumatic Cervical Spine Instability:**
Paul Arnold, MD, Dennis Maiman, MD, PhD
14. **Caspar Anterior Cervical Plating: Indications, Complications, and Long-Term Follow-Up:**
J. Michael Alvis, MD, Maria Elaina Sumas, MD, Bayard Campbell, MD, James Dillon, MD, John Donnal, MD, Peter Klara, MD, PhD, Frank Schinco, MD
15. **MRI Characterization of Spinal Decompression and Enhancement Patterns Following Anterior Cervical Fusion:**
Brent Greenwald, MD, Wayne Kubal, MD, William Broaddus, MD, Harold Young, MD
16. **Pull-Out Strength of Tapped Versus Untapped Cortical Screws in the Cervical Spine:**
Juan Ronderos, MD, John Knightly, MD, Arnold Vardiman, MD, Curtis Dickman, MD, Volker K.H. Sonntag, MD
17. **Traumatic Cervical Disc Herniation:**
Edward Benzel, MD, FACS, Blaine Hart, MD, Nevan Baldwin, MD, John Anson, MD, William Orrison, MD, Mary Espinosa, RN
18. **Degenerative Cervical Spondylolisthesis: Diagnosis and Management:**
Alan Boulos, BS, Thomas Lovely, MD
19. **Microsurgical Uncovertebrectomy or Anterior Foraminotomy for Cervical Radiculopathy:**
Hae-Dong Jho, MD, PhD
20. **Lateral Approach of the Cervical Spine:**
Hae-Dong Jho, MD, PhD

21. **Cervical OPLL: Natural History and Treatment Strategy:**
Bernard Robinson, MD, Jon Graham, MD
22. **Cervical Discography: Postoperative Surgical Review:**
Gary Lowery, MD, PhD, O. Richard Singer, DO, Richard Kinard, MD, Donald Jackson, MD
23. **Surgical Anatomy of the Anterior Cervical Spine: The Disc Space, Vertebral Artery, and Associated Bony Structures:**
T. Glenn Pait, MD, James Killefer, MD, Howard Kaufman, MD
24. **Anatomy of the Foramen Transversarium of the Cervical Spine:**
T. Glenn Pait, MD, Britt Borden, MD, Phillip McAllister, MD, Howard Kaufman, MD, R.C. Wiggins, PhD, Shahin Rahimian
25. **Lasso Cabling Technique to Achieve C1-2 Posterior Fusion in Absence of C1 Posterior Arch:**
Ronald Apfelbaum, MD
26. **Microsurgical Anatomy of the Lower Cervical Spine and Cord:**
Yoshichika Kubo, MD, Shiro Waga, MD, Tadashi Kijima, MD, Toshio Matsubara, MD, Yutaka Nakagawa, MD
27. **Clinically Significant Vascular Injury Associated with Transverse Foramen Fractures:**
Eric Gabriel, MD, Sarah Gaskill, MD, Allan Friedman, MD
28. **Management and Outcome of Isolated Cervical Unilateral Locked Facet:**
Nachshon Knoller, MD, Massimo Fiandaca, MD, Arthur Dipatri, Jr., MD, Leon Liem, MD, Daniele Rigamonti, MD
29. **Familial Syringomyelia:**
Ahmad Zakeri, MD, Franz Glasauer, MD, James Egnatchik, MD
30. **A Multimodality Model for Assessment of Electrophysiological Function After Traumatic Spinal Cord Injury:**
Michael G. Fehlings, MD, D. Anthes, E. Theriault, PhD, C. Tator, MD
31. **Evaluation of the Potassium Channel Blocker 4-Aminopyridine After Experimental Spinal Cord Injury:**
Siavash Haghighi, DVM, PhD, Steven Pugh, BS

- 32. HIV-Associated Vacuolar Myelopathy in a Patient with AIDS: A Case Report and Review of the Literature:**
Juan F. Ronderos, MD, Farouk Aydin, MD, Nicholas Voss, BS, Dzung Dinh, MD
- 33. Diagnosis and Management of Thoracic Disc Herniations:**
Charles Hodge, MD, Robert Martin, MD, David Eng, MD
- 34. Unilateral Posterolateral Decompression Without Stabilization for Neurologic Palliation of Symptomatic Spinal Metastasis:**
Simcha J. Weller, MD, Eugene Rossitch, Jr., MD
- 35. Metastatic Spinal Cord Compression: Remarks on a Surgical Series of 28 Cases:**
Pasquale Ciapetta, MD, Maurizio Salvati, MD, Fabrizio Puzilli, MD, Pierpaolo Lunardi, MD, Antonino Raco, MD, Roberto Delfini, MD
- 36. Intramuscular Poly-ICLC in the Management of Malignant Glioma of the Spinal Cord:**
Fraser Henderson, MD, Morris Pulliam, MD, Joyce Olesen, MD, Andres Salazar, MD, Hilton Levy, MD
- 37. Large Benign Intradural Tumors of the Cauda Equina in Adults:**
Robert Snow, MD, PhD, Gary Zimmerman, MD
- 38. Spinal Cord Oligodendrogliomas: A Report of Two Cases and a Clinicopathologic Review of 61 Documented Cases:**
R.L. Patrick Rhoten, MD, Iain H. Kalfas, MD, Mary Beth Trimble, RN
- 39. Osteitis Fibrosa Cystica Causing Spinal Cord Compression: Report of Case and Review of Literature:**
Keith Kuhlengel, MD, Betsy Egler, MD, Ralph Lehman, MD
- 40. Management of Thoracic and Lumbar Burst Fractures:**
Patrick Hitchon, MD, James Torner, PhD
- 41. Long-Term Results of Neurosurgical Treatment of Thoracolumbar Fractures With Posterior Instrumentation:**
Erol Tasdemiroglu, MD, Phillip Tibbs, MD

- 42. Role of Spinal Arteriography in the Preoperative Management of Thoracolumbar Pathology:**
Paul Arnold, MD, Sandra Bates, MD, Leighton Mark, MD, James Hollowell, MD
- 43. Safety and Efficacy of Pedicle Screw Fixation in the Thoracic Spine:**
William Welch, MD, John Katona, MD, George Jacobs, MD
- 44. Clinical Results Comparing Variable Screw Placement Spinal Constructs with Bilateral Lateral Fusion Alone or Combined with Posterior Lumbar Interbody Fusion:**
William Welch, MD, John Katona, MD, George Jacobs, MD
- 45. Pedicle Screw Learning Curve Over Our First 717 Screws:**
Maurice Smith, MD, Harold Young, MD
- 46. Removal of Hardware After Instrumented Lumbar Fusion Improves Outcome:**
George Smith, MD, Diane Keaney, RN, James Reynolds, MD, Noel Goldthwaite, MD, Arhtur White, MD
- 47. Selection of Lumbar Spinal Instrumentation Based Upon the Three Column Concept Vertebral Stability:**
Jasbir Multani, MD, Robert Ho, MD
- 48. MOSS-Harms Basket for Vertebral Body Replacement:**
Jay More, MD, Narayan Sundaresan, MD, Andrew Casden, MD
- 49. Comparison of Three Devices for Thoracic and Lumbar Fixation:**
Patrick Hitchon, MD, James Torner, PhD
- 50. Transpedicular Fixation Without Fluoroscopy - A Safe and Effective Method of Pedicle Screw Insertion:**
Dzung Dinh, MD, Juan Rondros, MD, Bryant George, MD
- 51. Pitfalls in Microsurgical Removal of Herniated Lumbar Disc:**
Chun Kun Park, MD, PhD, Dong Sup Chung, MD, Joon Ki Kang, MD, Chang Rak Choi, MD
- 52. Posterolateral Approach for Far Lateral Disc Herniation:**
Hae-Dong Jho, MD, PhD

- 53. Outcome Following Hospitalized Nonsurgical Therapy for Sciatic Pain in Lumbar Disc Disease in Patients Without a Prior Lumbar Operation:**
Fred Geisler, MD, Leonard Cerullo, MD, James Grutsch, PhD, Roberto Segura, MD, Laurie Alderete, MD
- 54. Percutaneous Discectomy Over Age Sixty (Nucleotome With Laser Enhancement):**
David Ditsworth, MD
- 55. The Laminectomy: An Historic Perspective:**
T. Glenn Pait, MD, Edward Laws, Jr, MD, Leon Wiltse, MD, Howard Kaufman, MD
- 56. Back Strength Gains With Exercise Following Lumbar Laminectomy:**
John Margolis, MD, FACS, Stephen Barr, PhD, Raymond Poelstra, MD, FACS, Todd Vitaz, BS
- 57. Outcome Following Hospitalized Nonsurgical Therapy in Lumbar Stenotic Disease, Lumbar Stenosis, Nonsurgical Therapy, Follow-Up Study:**
Fred Geisler, MD, Leonard Cerullo, MD, James Grutsch, PhD, Roberto Segura, MD, Laurie Alderete, MD
- 58. Quantitative Single Photon Emission Computed Tomography (Q SPECT) Bone Scanning in the Diagnosis and Management of Low Back Pain in Young Athletes:**
Robert Licho, MD, Heath Stewart, MD, Peter Simkin, MD, Dudley Ferrari, MD, John Weaver, MD
- 59. Back and Leg Pain of Nonsurgical Origin:**
Jeffrey Kornblum, MD
- 60. Intrathecal Morphine Administration for Control of Pain of Benign Origin:**
Richard G. Fessler, MD, PhD, Pam Martin RN, Michael Robinson, PhD
- 61. Endoscopic Carpal Tunnel Release:**
Larry Carson, MD, Roger Mixter, MD
- 62. Microsurgical Carpal Tunnel Release:**
Scott Shapiro, MD, Joel Boaz, MD, Tom Witt, MD

- 63. Peroneal Palsy Due to Extraneural Ganglion Cyst with MRI Showing Denervation of Tibialis Anterior Muscle:**
Robert Snow, MD, PhD, Kevin Cockroft, MD
- 64. Entrapment Sciatic Neuropathy and the Piriformis Syndrome:**
Denis Ladouceur, Hans McLelland
- 65. Anterior Tibial Compartment Syndrome as a Positioning Complication of the Andrews (Knee-Chest Position) Operating Table:**
Fred Geisler, MD, Dan Laich, MD, Mitchell Goldflies, MD, Alan Shepard, MD
- 66. Load Sharing Dynamized Anterior Cotrel-Dubousset Instrumentation Fusion and Decompression for Thoracolumbar and Lumbar Spine Burst Fractures:**
Allen Carl, MD, James Van Horne, MD, Douglas Roger, MD, James Bono, MD
- 67. Posterior Tension Band Wiring for Unstable Cervical Spine Injuries:**
Allen Carl, MD, Leonard Goldstock, MD
- 68. Facet and Pars Interarticularis Blocks as Predictors of Surgical Outcome:**
Allen Carl, MD, Paul Khanuja, BA
- 69. Hyperhidrosis as Presenting Symptom of Post-Traumatic Syringomyelia:**
Franz Glasauer, MD, James Czynny, MD
- 70. Surgical Treatment and Results of Lumbar Postlaminectomy Instability:**
Dzung Dinh, MD, Bryant George, MD
- 71. The BAK Lumbar Interbody Fusion System:**
Stephen Kuslich, MD, Thomas Oxland, PhD, Douglas Kohrs, George Bagby, MD
- 72. Use of Hydroxyapatite Spacer for Anterior Cervical Fusion:**
Mark Foster, MD, PhD
- 73. Caspar Anterior Cervical Fusion:**
Amos Stoll, MD, Richard McKenzie, MD