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The 6th Annual Meeting

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

***February 7-11, 1990
South Seas Plantation
Captiva Island, Florida***

The 6th Annual Meeting

Joint Section on Disorders of the Spine and Peripheral Nerves

**South Seas Plantation
Captiva Island, Florida
February 7 - 11, 1990**

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This program has been approved by the Joint Committee on Education of the American Association of Neurological Surgeons and Congress of Neurological Surgeons for a maximum of 20 hours of Category I credit towards the Continuing Education Award in Neurosurgery.

Officers

Chairman: Edward S. Connolly, M.D.
 Chairman-Elect: Carole A. Miller, M.D.
 Secretary: Volker K.H. Sonntag, M.D.
 Treasurer: Russell L. Travis, M.D.

Immediate Past Chairman: Stewart B. Dunsker, M.D.

Members-at-Large: Arnold H. Menezes, M.D.
 Donald J. Prolo, M.D.

Ex-Officio: Melville P. Roberts, M.D.

1990 Annual Meeting Committee

Scientific Program Chairman: Edward Tarlov, M.D.
 Burlington, Massachusetts

Meeting Chairman: Carole A. Miller, M.D.
 Columbus, Ohio

Exhibit Chairman: Mark N. Hadley, M.D.
 California

Scientific Program Committee: Bennett Blumenkopf, M.D.
 Nashville, Tennessee
 Paul D. Dernbach, M.D.
 Burlington, Massachusetts
 Nancy Epstein, M.D.
 New Hyde Park, New York

Past Officers

1988

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

1987

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

1986

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

1985

Russell W. Hardy, M.D. - CHAIRMAN
 Henry H. Schmidek, M.D. - SECRETARY
 Edward S. Connolly, M.D. - TREASURER
 George W. Sybert, M.D. - MEMBER-AT-LARGE

Previous Meetings

1985 - Greenlefe, Florida
 1986 - San Diego, California
 1987 - Boca Raton, Florida
 1988 - Phoenix, Arizona
 1989 - Cancun, Mexico

Past Program Committees

- | | | | |
|------|---|------|--|
| 1985 | Barth A. Green, M.D.
George W. Sybert, M.D. | 1988 | Melville P. Roberts, M.D.
Volker Sonntag, M.D.
Russell Travis, M.D.
Harold A. Wilkinson, M.D.
Richard Saunders, M.D. |
| 1986 | Randall W. Smith, M.D.
Philip R. Weinstein, M.D.
John F. Howe, M.D.
Stanley J. Goodman, M.D.
Barth A. Green, M.D.
Volker K.H. Sonntag, M.D.
Hector E. James, M.D. | 1989 | Arnold H. Menezes, M.D.
Carole A. Miller, M.D.
Russell Travis, M.D.
John C. Godersky, M.D.
Patrick W. Hitchon, M.D. |
| 1987 | Volker K.H. Sonntag, M.D.
Robert S. Hood, M.D.
Joel N. Abromovitz, M.D.
Timothy Harrington, M.D. | | |

Mayfield Award

- | | | | |
|------|------------------------------------|------|--|
| 1984 | Mark N. Hadley
Phoenix, AZ | 1988 | No Award Presented |
| 1985 | Ab Guha
Toronto, Ontario | 1989 | Richard K. Simpson, Jr.
Houston, TX |
| 1986 | No Award Presented | 1990 | John Hurlbert
Toronto, Ontario |
| 1987 | John A. Feldenzer
Ann Arbor, MI | | |

Distinguished Service Award

"You can always tell a pioneer. He's the one with all the arrows in his back." That's how Dr. Ralph Cloward, describes his long career as a pioneer in the field of neurosurgery.

A resident of Hawaii, Dr. Cloward was the only neurosurgeon stationed in the South Pacific after the end of World War II. During this time in the late 1940s, he developed his ideas for surgical instruments for use in two of his ground-breaking procedures. Like many contributions to medicine, the instruments were developed as a wartime necessity.



Ralph B. Cloward, MD

The posterior lumbar interbody fusion technique, commonly known as PLIF, involves removing damaged disk and replacing it with bone dowels that later fuse to give the spine stability. A similar procedure, anterior cervical disk fusion, is still considered the "bread and butter operation" for neurosurgeons world wide.

Dr. Cloward's reasons for developing the anterior approach to the cervical spine were: (a) to find a new route into the spinal canal for removal of pathology anterior to the spinal cord and nerve roots; (b) to develop a technique for fusion of the

vertebral bodies. The latter was prompted by the success obtained in relieving low back pain due to degenerated lumbar intervertebral discs by a posterior lumbar interbody fusion, an operation which he had developed and successfully performed for nearly fifteen years.

Dr. Cloward has been asked to teach at universities across the globe, from Africa to North America. "Talking to him is like reading a great novel about history, life and people," Mr. Boemer says.

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 6th Annual Meeting:

Ace Medical Company - Los Angeles, CA
Aesculap Instrument Company - Burlingame, CA
Anspach - Lake Park, FL
Baxter - Niles, IL
BFW - Lexington, KY
Cappai Medical Incorporated - Atlanta, GA
Cedar Surgical Incorporated - Minnetonka, MN
Codman & Shurtleff, Inc. - Randolph, MA
Cordis Corporation - Miami, FL
Infusaid, Incorporated - Norwood, MA
Medtronic, Inc. - Minneapolis, MN
Midas Rex - Fort Worth, TX
Neuromed Incorporated - Fort Lauderdale, FL
Ortho Mold - Brookline, MA
PMT Corporation - Chanhassen, MN
Surgical Dynamics, Inc. - San Leandro, CA
Valleylab - Stanford, CT

The 6th Annual Meeting Program

**Captiva Island, Florida
February 7 - 11, 1990**

WEDNESDAY, FEBRUARY 7, 1990

12:00 p.m. - 7:00 p.m.
Registration Desk

12:00 p.m. -
Exhibits Set Up

7:00 p.m. - 10:00 p.m.
Welcoming Cocktail Buffet

THURSDAY, FEBRUARY 8, 1990

7:00 a.m. - 7:30 a.m.
Continental Breakfast

7:30 a.m. - 7:35 a.m.
Joint Section Chairman's Welcome and Presentation of
Distinguished Service Award to Ralph Cloward, MD
Edward S. Connolly, MD

7:35 a.m. - 7:40 a.m.
Meeting Chairman's Welcome
Edward Tarlov, MD

7:40 a.m. - 9:30 a.m.
SESSION I:

**COMPLICATIONS SYMPOSIUM I: GENERAL
COMPLICATIONS OF SPINE SURGERY**

Moderators:

Edward Tarlov, M.D.
Edward Connolly, M.D.

7:40 a.m. - 7:50 a.m.

Legal Complications
Charles Fager, M.D.
Burlington, Massachusetts

7:50 a.m. - 8:00 a.m.

Complications of Positioning
Melville Roberts, M.D.
Hartford, Connecticut

8:00 a.m. - 8:10 a.m.

Complications Related to Implants
Sandford Larson, M.D.
Milwaukee, Wisconsin

8:10 a.m. - 8:20 a.m.

Major Arterial Injury
Edward Tarlov, M.D.
Burlington, Massachusetts

8:20 a.m. - 8:30 a.m.

Septic Complications
George Sybert, M.D.
Fort Myers, Florida

8:30 a.m. - 8:40 a.m.

Complications Related to Bone Grafts
Dennis Maiman, M.D.
Milwaukee, Wisconsin

8:40 a.m. - 8:50 a.m.

Complications Related to Wound Healing
Ulrich Batzdorf, M.D.
Los Angeles, California

8:50 a.m. - 9:30 a.m.

Panel Discussion

9:30 a.m. - 10:00 a.m.

COFFEE BREAK - VIEW EXHIBITS/POSTERS

10:00 a.m. - 12:30 p.m.

SESSION II:

CONTRIBUTED PAPERS

Moderator:

Paul D. Dernbach, M.D.

10:00 a.m. - 10:15 a.m.

1. "Complications in the Operative Treatment of Syringomyelia", N. Huwel, M.D., A. Perneczky, M.D., Mainz, West Germany

10:15 a.m. - 10:30 a.m.

2. "Prevention of Complications after Radical Sacrectomy", Hugh D. O'Donnell, Thomas B. Ducker, Donlin M. Long, Paul C. McAfee, Baltimore, MD

10:30 a.m. - 10:45 a.m.

3. "Management and Complications of Cervical Spine Surgery", Craig Kemper, M.D., Manuel Pinto, M.D., Dan Spengler, M.D., Bennett Blumenkopf, M.D., Nashville, TN

10:45 a.m. - 11:00 a.m.

4. "Complications of Cervical Corpectomy", R. L. Saunders, M.D., P. Bernini, M.D., T. Shirreffs, M.D., Hanover, NH

11:00 a.m. - 11:15 a.m.

5. "Incidence of Disc Herniation in the Presence of Symptomatic Spondylotic Lumbar Stenosis", Paul D. Dernbach, M.D., Pamela McColl, PAC, Burlington, MA

11:15 a.m. - 11:30 a.m.

6. "Bowel Perforation Following Lumbar Disc Excision", Edward B. Smith, M.D., John P. Henderson, M.D., William Hanigan, M.D., Peoria, IL

11:30 a.m. - 11:45 a.m.

7. "Surgical Treatment of the Spontaneous Spinal Epidural Abscess", Gary L. Rea, M.D., Carole A. Miller, M.D., John M. McGregor, M.D., Columbus, OH

11:45 a.m. - 12:00 p.m.

8. "Spinal Epidural Abscess", Michael L. Griffith, M.D., Glenn W. Kindt, M.D., Denver, CO

12:00 p.m. - 12:15 p.m.

9. "Wound Dehiscence in Spine Tumor Surgery - Causal Factors in Management", Perry Holzweil, M.D., N. Sundaresan, M.D., George V. DiGiacinto, M.D., New York, NY

12:15 p.m. - 12:30 p.m.

10. "Magnetic Resonance Imaging and Nonsurgical Treatment of Spinal Epidural Abscess", N. G. Asner, M.D., John P. Henderson, M.D., Patrick W. Elwood, M.D., William C. Hanigan, M.D., Peoria, IL

12:30 p.m.

ANNUAL BUSINESS MEETING

LUNCH: ON YOUR OWN

FRIDAY, FEBRUARY 9, 1990

7:00 a.m. - 7:30 a.m.

Continental Breakfast

7:30 a.m. - 9:00 a.m.

SESSION III:

COMPLICATIONS SYMPOSIUM II

Moderator:

Carole Miller, M.D.

7:30 a.m. - 7:40 a.m.

Complications of Surgery for Cancer Involving the Spine
Narayan Sundaresan, M.D.
New York, NY

7:40 a.m. - 7:50 a.m.

Complications of Surgery for Arteriovenous Malformations
Ayub Ommaya, M.D.
Bethesda, MD

7:50 a.m. - 8:00 a.m.

Complications of Surgery at Craniovertebral Junction
Arnold Menezes, M.D.
Iowa City, IA

8:00 a.m. - 8:10 a.m.

Complications of Anterior Cervical Surgery
Russell Hardy, M.D.
Cleveland, OH

8:10 a.m. - 8:20 a.m.

Complications of Cervical Fusion
Richard Perrin, M.D.

8:20 a.m. - 8:30 a.m.

Complications of Surgery for OPLL
Hiroshi Abe, M.D.

8:30 a.m. - 9:30 a.m.

Panel Discussion

9:30 a.m. - 10:00 a.m.

COFFEE BREAK - VIEW EXHIBITS/POSTERS

10:00 a.m. - 1:30 p.m.

SESSION IV:

CONTRIBUTED PAPERS

Moderator:

Nancy Epstein, M.D.

10:00 a.m. - 10:15 a.m.

11. "Post-Operative Spinal Epidural Hematomas: A 10-Year Experience from the Cleveland Clinic", P. K. Pillay, M.D., J. R. Little, M.D., I. Awad, M.D., Cleveland, OH

10:15 a.m. - 10:30 a.m.

12. "Spinal Epidural Hematomas: Clinical Manifestations and Postoperative Outcome", Curtis A. Dickman, M.D., Volker K. H. Sonntag, M.D., Robert F. Spetzler, M.D., L. Philip Carter, M.D., Phoenix, AZ

10:30 a.m. - 10:45 a.m.

13. "Catastrophic Football Spine Injuries: 1977-1988", Robert C. Cantu, M.D., Concord, MA

10:45 a.m. - 11:00 a.m.

14. "Cervical Spine Injuries: Factors Contributing to Respiratory Complications", VanBuren Ross Lemons, M.D., Scott T. Dull, M.D., Franklin C. Wagner, Jr., M.D., Pasquale X. Montesano, M.D., Sacramento, CA

11:00 a.m. - 11:15 a.m.

15. "Occipitoatlantal Dislocation Injuries: Diagnosis, Management, and Outcome", Curtis A. Dickman, M.D., Richard Douglas, M.D., Volker K.H. Sonntag, M.D., Robert F. Spetzler, M.D., Stephen Papadapolous, M.D., Phoenix, AZ

11:15 a.m. - 11:30 a.m.

16. "Spinal Cord Injury: A 20-Year Morbidity and Mortality Study", Berkley L. Rish, M.D., Joseph F. Dilustro, M.D., Norfolk, VA

11:30 a.m. - 11:45 a.m.

17. "Management of Hyperflexion Fractures of the Thoracolumbar Spine", Thomas A. Kopitnik, Jr., M.D., Eric Jones, M.D., Howard H. Kaufman, M.D., Crystal Willison, M.D., Morgantown, WV

11:45 a.m. - 12:00 p.m.

18. "Arthroscopically-Guided Transpedicular Decompression of Thoracolumbar Burst Fractures--A New Technique", O. Del Curling Jr., M.D., Charles L. Branch, Jr., M.D., Joseph F. Nicastro, M.D., Winston-Salem, NC

12:00 p.m. - 12:15 p.m.

19. "The Diagnosis and Management of Occipital Condyle Fractures", Clarence B. Watridge, M.D., William R. Boydston, M.D., Robbie Lowery, R.N., Memphis, TN

12:15 p.m. - 12:30 p.m.

20. "CT Myelography in Acute Cervical Spine Injury: Is It Necessary?", John Ragheb, M.D., J. Michael Randle, M.D., Aizik L. Wolf, M.D., Stuart Mirvis, M.D., Walker L. Robinson, M.D., Baltimore, MD

12:30 p.m. - 12:45 p.m.

21. "MRI as a Prognostic Indicator of Motor Outcome in Cervical Spine Injury", Dale M. Schaefer, M.D., Jewell L. Osterholm, M.D., Bruce E. Northrup, M.D., Adam E. Flanders, M.D., Philadelphia, PA

12:45 p.m. - 1:00 p.m.

22. "Diagnosis and Microsurgical Approach to Far Lateral Disc Herniation in the Lumbar Spine", Joseph C. Maroon, M.D., Thomas A. Kopitnik, M.D., Lary A. Schulhof, M.D., Pittsburgh, PA

1:00 p.m. - 1:15 p.m.

23. "Complications and Pitfalls of Posterior Interbody Fusion", Paul M. Lin, M.D., Rydal, PA

1:15 p.m. - 1:30 p.m.

24. "Factors Predicting Radicular and Non-Radicular Failure in Lumbar Disc Surgery", Joel N. Abramovitz, M.D., Samuel R. Neff, M.D., Boston, MA

LUNCH ON YOUR OWN

SATURDAY, FEBRUARY 10, 1990

7:00 a.m. - 7:30 a.m.

Continental Breakfast

7:30 a.m. - 9:30 a.m.

SESSION V:

COMPLICATIONS SYMPOSIUM III

Moderator:

Bennett Blumenkopf, M.D.

7:30 a.m. - 7:40 a.m.

Complications of Peripheral Nerve Surgery

Alan Hudson, M.D.

Toronto, Ontario

7:40 a.m. - 7:50 a.m.

Complications of Lumbar Laminectomy

Lincoln Ramirez, M.D.

Madison, WI

7:50 a.m. - 8:00 a.m.

Recurrence of Lumbar Disc Rupture

Stephen R. Freidberg, M.D.

Burlington, MA

8:00 a.m. - 8:10 a.m.

Complications of Percutaneous Lumbar Discectomy

H. M. Meyer, M.D.

8:10 a.m. - 9:30 a.m.

Panel Discussion

9:30 a.m. - 10:00 a.m.

COFFEE BREAK - VIEW EXHIBITS/POSTERS

10:00 a.m. - 1:00 p.m.

SESSION VI:

CONTRIBUTED PAPERS

Moderator:

Volker Sonntag, M.D.

10:00 a.m. - 10:15 a.m.

25. "A Comparison of Chemonucleolysis and Laminectomy in the Treatment of Sciatica", Manucher J. Javid, M.D., Madison, WI

10:15 a.m. - 10:30 a.m.

26. "Failed Back Surgery Syndrome: Treatment Alternatives", Richard B. North, M.D., James N. Campbell, M.D., Donlin M. Long, M.D., Baltimore, MD

10:30 a.m. - 10:45 a.m.

27. "Lumbar Disc Herniation: CT Criteria for Surgical Intervention", Hirohisa Ono, M.D., Francisco Soldevilla, M.D., E. Frank, M.D., T. Ogasawara, M.D., R. Takeda, M.D., Clackamas, OR

10:45 a.m. - 11:00 a.m.

28. "Intradural Spinal Arachnoid Cysts: Experience with 14 Cases", Richard K. Osenbach, M.D., John C. Godersky, M.D., Iowa City, IA

11:00 a.m. - 11:15 a.m.

29. "Epidural Spinal Lipomatosis", Souheil F. Haddad, M.D., Patrick W. Hitchon, M.D., John C. Godersky, M.D., Iowa City, IA

11:15 a.m. - 11:30 a.m.

30. "Epidural Lipomatosis in Steroid Treated Patients", Richard G. Fessler, M.D., Douglas L. Johnson, M.D., Frederick D. Brown, M.D., Robert K. Erickson, M.D., Steven A. Reid, M.D., Gainesville, FL

11:30 a.m. - 11:45 a.m.

31. "Failure of Recognition of Ossification of the Posterior Longitudinal Ligament by MRI", Gerald T. McGillicuddy, M.D., James C. Metcalf, M.D., Portsmouth, VA

11:45 a.m. - 12:00 p.m.

32. "Atlantoaxial Stabilization in Rheumatoid Arthritis", Stephen M. Papadopoulos, M.D., Curtis Dickman, M.D., Volker Sonntag, M.D., Ann Arbor, MI

12:00 p.m. - 12:15 p.m.

33. "CSF Leakage in Anterior Cervical Discectomy",
Hugh O'Donnell, M.D., Thomas B. Ducker, M.D.,
Baltimore, MD

12:15 p.m. - 12:30 p.m.

34. "Somatosensory Evoked Potential Monitoring in
Anterior and Posterior Cervical Spine Surgery", Nancy
E. Epstein, M.D., Joseph A. Epstein, M.D., New Hyde
Park, NY

12:30 p.m. - 12:45 p.m.

35. "A Novel Technique of Restoring Spinal Canal
Diameter in Thoracolumbar Burst Fractures", Lawrence
F. Borges, M.D., Frederick Mansfield, M.D., Boston, MA

12:45 p.m. - 1:00 p.m.

36. "Spinal Cord Monitoring by Cerebellar Evoked
Potentials", John Hurlbert, M.D., Toronto, Canada

1:00 p.m. - 1:15 p.m.

MAYFIELD AWARD PAPER

Spinal Cord Monitoring by Cerebellar Evoked Potentials
John Hurlbert
Toronto, Ontario

Evening

ANNUAL BANQUET

SUNDAY, FEBRUARY 11, 1990

7:30 a.m. - 8:00 a.m.

Continental Breakfast

8:00 a.m. - 9:00 a.m.

SESSION VII: POSTERS

Authors of Posters will be at Posters for Discussion

9:00 a.m. - 1:00 p.m.

SESSION VII:

CONTRIBUTED PAPERS

Moderator:

Russell Travis, M.D.

9:00 a.m. - 9:15 a.m.

37. "Isolated Axillary Nerve Injuries: Results of
Exploration", John E. McGillicuddy, M.D., Ann Arbor, MI

9:15 a.m. - 9:30 a.m.

38. "Factors Affecting Recovery in Autologous Nerve
Grafts", Donald L. Erickson, M.D., Minneapolis, MN

9:30 a.m. - 9:45 a.m.

39. "Focal Spondylotic Cervical Spinal Cord
Compression Manifested in Distal Segmental
Symptoms and Signs", Dr. Bothwell G. Lee, M.D.,
Louisville, KY

9:45 a.m. - 10:00 a.m.

40. "A Novel Plate and Prong System for
Reconstruction and Stabilization of the Spine After
Vertebral Body Resection for Spinal Metastases", Ehud
Arbit, M.D., Joseph H. Galicich, M.D., New York, NY

10:00 a.m. - 10:15 a.m.

41. "Extended Maxillotomy or Subtotal Maxillectomy for
Skull Base and Cervical Spine Exposure", Jon H.
Robertson, M.D., Edwin W. Cocke, M.D., Memphis, TN

10:15 a.m. - 10:30 a.m.

42. "Transcervical Approach to the Craniovertebral
Junction", Dennis E. McDonnell, M.D., Augusta, GA

11:00 a.m. - 11:15 a.m.

43. "The Role of Enhanced MRI Imaging in the
Perioperative Management of Spinal Tumors", James
M. Herman, M.D., Curtis A. Dickman, M.D., Volker K.H.
Sonntag, M.D., Burton Drayer, M.D. (Phoenix, AZ)

11:15 a.m. - 11:30 a.m.

44. "Treatment of Hydromyelia in Children with Scoliosis", Mary Elizabeth Dunn, M.D., Walter L. Bailey, M.D., Edward L. Seljeskog, M.D., St. Paul, MN

11:30 a.m. - 11:45 a.m.

45. "Surgical Management and Outcome for Hemangioblastoma of the Spinal Cord", John C. Godersky, M.D., Kelly R. Danks, M.D., John C. Vangilder, M.D., Arnold H. Menezes, M.D., Iowa City, IA

11:45 a.m. - 12:00 p.m.

46. "Fusions at the Craniovertebral Junction", Arnold H. Menezes, M.D., Iowa City, IA

12:00 p.m. - 12:15 p.m.

47. "Pitfalls in the Diagnosis of Spinal Arteriovenous Malformations by MRI", Joseph T. Alexander, M.D., W. Jost Michelsen, M.D., Kalmon D. Post, M.D., Bennett M. Stein, M.D., New York, NY

12:15 p.m. - 12:30 p.m.

48. "An Extreme Lateral Approach to Ventral Intradural Lesions of the Craniocervical Junction and Upper Cervical Spine", Chandra Nath Sen, M.D., Laligam N. Sekhar, M.D., Pittsburgh, PA

12:30 p.m. - 12:45 p.m.

49. "Autotomy I: Evidence Supporting Its Being a Behavioral Response to Nociceptive Afference", Bennett Blumenkopf, M.D., Jonathan Lipman, Ph.D., Nashville, TN

12:45 p.m. - 1:00 p.m.

50. "Autotomy II: Evidence Supporting the Existence of a Transportable Autotomy Inhibitory Mediator (TAIM)", Bennett Blumenkopf, M.D., Jonathan Lipman, Ph.D., Nashville, TN

10:30 a.m. - 11:00 a.m.

COFFEE BREAK - VIEW EXHIBITS/POSTERS

POSTERS

1. "Spinal Cord Compression by Metastatic Tumor", Robert B. Snow, M.D., Howard Weiner, M.D., New York, NY
2. "Post-Traumatic Anterior Cervical Osteophyte--Surgical Report and Literature Review", Phillip Kissel, M.D., Julian R. Youmans, M.D., San Luis Obispo, CA
3. "Magnetic Resonance Imaging of Vertebral Osteomyelitis", Richard K. Osenbach, M.D., Patrick W. Hitchon, M.D., Iowa City, IA
4. "Micromotions Following Posterior Occipito-Cervical Fusion", Stefan Zygmunt, M.D., Hans Saveland, M.D., Bengt Ljunggren, M.D., Goran Selvik, M.D., Hakan Brattstrom, M.D., Lund, Sweden
5. "Anterior Cervical Vertebrectomy and Interbody Fusion for Ossification of the Posterior Longitudinal Ligament", Tadashi Kojima, M.D., Shiro Waga, M.D., Yoshichika Kubo, M.D., Toshio Matsubara, M.D., Tsu, Mie Japan
6. "Infarction of the Conus Medullaris: Presentation of Two Cases and Literature Review", Brian T. Andrews, M.D., San Francisco, CA
7. "Electrophysiological Peripheral Nerve, Spinal Cord & Optic Nerve Changes Associated with the Graded Levels of Ultrasonic Aspiration", Ronald E. Leppanen, Ph.D., A. B. Kliefoth, III, M.D., Robert Selcer, D.V.M., Micky Sims, Ph.D., Knoxville, TN

8. "Spinal Nerves as Potential CSF Drainage Pathways in Rabbits", Antonio V. Lorenzo, Ph.D., Peter McL. Black, M.D., Ph.D., Lorraine Foley, BS, Clare S. Kerr, Boston, MA
9. "Spinal Cord Arteriovenous Malformation with an Associated Lymphatic Anomaly", Gary E. Kraus, M.D., Richard D. Bucholz, M.D., St. Louis, MO
10. "Spinal Cord Plasticity: Application of Mammalian Studies to Human Spinal Cord Reorganization", Emily D. Friedman, M.D., Philadelphia, PA
11. "MRI Evaluation of Post-Operative Myelomeningocele Repair Tethering in Pediatric Age Group", F. Reed Murtagh, M.D., John A. Arrington, M.D., Marc Griffey, M.D., Lucy C. Love, M.D., Tampa, FL
12. "Instrumentation for Anterior Cervical Microdiscectomy", L. Philip Carter, M.D., Tucson, AZ
13. "Do Corticospinal Neurons of the Somatomotor Cortex Survive After Pyramidotomy?", Edward von der Schmidt, III, M.D., Jerald J. Bernstein, Ph.D., William J. Goldberg, Ph.D., Washington, DC
14. "The Operative Management of Basilar Impression in Osteogenesis Imperfecta", H. Louis Harkey, M.D., H. Alan Crockard, FRCS, John M. Stevens, MRACR, FRCR, Roger Smith, M.D., Ph.D., FRCP, A. O. Ransford, FRCS, Jackson, MS
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