Abstracts

1. **Lieberman IH, Bogoch ER, Grynpas MD:** Morphology and mineralization of bone in the femoral heads of rheumatoid arthritis patients. Canadian Orthopaedic Research Society, Ottawa, Ontario. Proceedings of the Canadian Orthopaedic Research Society, 1988. **PA**

2. **Lieberman IH, Hastings D, Bogoch ER:** Heterotopic ossification after primary cemented and noncemented total hip arthroplasty in patients with osteoarthritis and rheumatoid arthritis. American Orthopaedic Residents Association, Ann Arbour, Michigan. Journal of Bone and Joint Surgery, Orthopaedic Transactions 1992: 16(2): pp 329. **PA**

3. **Lieberman IH, Beaton D, Richards RR:** Functional outcome after posterior shoulder repair. American Academy of Orthopaedic Surgeons, New Orleans, Louisiana. Journal of Bone and Joint Surgery, Orthopaedic Transactions 1994. **PA**

4. **Cole AA, Kerslake D, Calthorpe I, Lieberman IH, O'Dowd J, Webb JK:** A long term evaluation of the intervertebral discs below Zielke VDS in patients with adolescent idiopathic scoliosis. British Scoliosis Society, Windermere, United Kingdom. Journal of Bone and Joint Surgery, Orthopaedic Transactions 1995: 77-B: pp 258. **C**

5. **Lieberman IH, Webb JK:** Cervical spine injuries in the elderly. American Academy of Orthopaedic Surgeons, Orlando, Florida. Journal of Bone and Joint Surgery, Orthopaedic Transactions 1995. **PA**

6. **O'Dowd J, Cole AA, Kerslake RW, Calthorpe D, Lieberman IH, Webb JK:** A long term evaluation of clinical outcome following Zielke VDS in patients with adolescent idiopathic scoliosis. British Scoliosis Society, Windermere, United Kingdom. Journal of Bone and Joint Surgery, Orthopaedic Transactions 1995: 77-B: pp 258. **C**

7. **Lieberman IH, Salo PT, Litwin D:** Endoscopic anterior lumbar fusion for degenerative disc disease. Technique & preliminary results. Canadian Orthopaedic Association, Halifax, Nova Scotia. Journal Bone Joint Surgery, Orthopaedic Transactions 1995: 77-B: pp 308. **PA**

8. **Lieberman IH, Webb JK:** Occipito-cervical fusion using posterior titanium plates. Canadian Orthopaedic Association, Halifax, Nova Scotia. Journal Bone Joint Surgery, Orthopaedic Transactions 1995: 77-B: pp 309. **PA**

9. **Lieberman IH, Salo PT, Deber R, Kraetschmer N:** Shared decision making in patients with back pain. Canadian Orthopaedic Association, Halifax, Nova Scotia. Journal of Bone and Joint Surgery, Orthopaedic Transactions 1995: 77-B: pp 308. **PA**

10. **Lieberman IH, Asante DK, Salo PT, Kraetschmer BG:** A prospective study to determine the outcome of surgery in the treatment of spinal stenosis using the Oswestry Disability Index and the SF-36 Health Survey. Canadian Orthopaedic Association, Quebec City, Quebec. Journal of Bone and Joint Surgery, Orthopaedic Transactions 1996. **SRI**

11. **Lieberman IH, Litwin DE, Salo PT, Kraetschmer BG:** Anterior interbody fusion using the BAK device: Pitfalls and complications. Canadian Orthopaedic Association, Quebec City, Quebec. Journal of Bone and Joint Surgery, Orthopaedic Transactions 1996. **PA**

12. **Lieberman IH, Salo PT:** Endoscopic transthoracic release and bone grafting with simultaneous posterior instrumentation and correction for spinal deformity. Canadian Orthopaedic Association, Quebec City, Quebec. Journal of Bone and Joint Surgery, Orthopaedic Transactions 1996. **PA**

13. **Lieberman IH, Woodside T:** Anterior Vertebral body screw testing: Comparison of Zielke, Kaneda, USS, and USS with pull out resistant washer. Canadian Orthopaedic Research Society, Quebec City, Quebec. Journal of Bone and Joint Surgery, Orthopaedic Transactions 1996. **PA**

14. **Backstein D, Hutchison CR, Lieberman IH:** An Evaluation of a Course in Spinal Endoscopy. Canadian Orthopaedic Research Society, Hamilton. Journal Bone Joint Surgery British, Orthopaedic Transactions 1997. **C**

15. **Kiriakopoulos ET, Mikulis DJ, Lieberman IH:** Dynamic 3D MRI of the Lumbar Spine,. Canadian Orthopaedic Research Society, Hamilton. Journal of Bone and Joint Surgery, Orthopaedic Transactions 1997. **CPA**

16. **Lewis S, Woodside T, Asante D, Lieberman IH:** The effect of Transpedicular Vertebral Body Cementing on Vertebral Body Strength. Canadian Orthopaedic Research Society, Hamilton, Ontario. Journal Bone Joint Surgery British, Orthopaedic Transactions 1997. **SRI**

17. **Lieberman IH, Orr RD, Salo PT, Kraetschmer BG:** The results of Simultaneous Endoscopic Anterior Release and Posterior Instrumentation for Spinal Deformity. Canadian Orthopaedic Association, Hamilton, Ontario. Journal Bone Joint Surgery, Orth Transactions Vol 80-B 1998. **PA**

18. **Lieberman IH, Salo PT, Kraetschmer BG:** Multiple Level Endoscopic Transperitoneal Lumbar Interbody Fusion. Canadian Orthopaedic Association, Hamilton, Ontario. Journal Bone Joint Surgery, Orthopaedic Transactions Vol 80-B 1998. **PA**

19. **Lieberman IH, Bauer T, Salo PT, Kraetschmer BG:** Histology of a Retrieved Interbody Fusion Cage. NASS. San Francisco. 1998. **CPA**

20. **Lieberman IH, Willsher PT, Salo PT, Litwin D:** Transperitoneal Laparoscopic Exposure for lumbar Interbody Fusion. NASS. San Francisco. 1998. **CPA**

21. **Lieberman IH, Dudeney S, Phillips F:** Inflatable Bone Tamp Kyphoplasty in the Treatment of Osteoporotic Compression Fractures. Presented at Eurospine 2000. European Spine Journal, Vol 9, No 4, pp 287, 2000. **CPA**

22. **Harrop J, Reinhardt MK, Lieberman IH, Prpa B:** Steroid induced osteoporosis: relationship to subsequent compression fractures after kyphoplasty. Proceedings of NASS 17th Annual Meeting. The Spine Journal, Vol 2, No 5S, 95S, 2002.

23. **Harrop J, Reinhardt MK, Lieberman IH, Prpa B:** Incidence of remote and adjacent fractures after Kyphoplasty. Proceedings of NASS 17th Annual Meeting. The Spine Journal, Vol 2, No 5, 122S, 2002.

24. **Coumans JV, Lieberman IH, Reinhardt MK:** A Prospective Kyphoplasty Study. Proceedings of 70th AAOS Annual Meeting. New Orleans, Feb 2003.

25. **Kovacic J, Lieberman IH, Togawa D, Bauer T, Brodke D, Reinhardt MK:** The gross & histologic behavior of PMMA in the primate vertebral column after kyphoplsty and vertebroplasty. Eur Spine J(2003) 12(Suppl.1):S1

26. **Lieberman IH, Reinhardt MK, Hussein M:** Clinical outcome of vertebral augmentation for osteolytic collapse. Eur Spine J 2003)12(Suppl.1):S2

27. **Togawa D, Bauer T, Lieberman IH, Reinhardt MK:** Occult osteomalacia and myeloma in patients with osteoporotic vertebral compression fractures. Eur Spine J (2003) 12 (Suppl. 1): S1

28. **Kayanja M, Ferrara L, Lieberman IH:** Distribution of anterior cortical strain in a simulated osteoporotic vertebral compression fracture. The Spine Journal, Vol 3, No 5S, pp 137, 2003

29. **Lieberman IH, Reinhardt MK, Hussein M:** Clinical outcome of vertebral augmentation for osteolytic collapse. The Spine Journal,Vol 3, No 5S, pp 146, 2003

30. **Dalcanto R, Ferrara L, Inceoglu S, Kayanja M, Lieberman IH:** Biomechanical comparison of transarticular facet screws to lateral mass plates in two level fusions of the cervical spine. The Spine Journal, Vol 3, No 5S, pp 168, 2003

31. **Youssef J, Brodke D, Haynesworth S, Lauryssen C, Lieberman IH, Wang J, Patel T:** Selective cell retention technology in spinal fusion. The Spine Journal, Vol 3, No 5S, pp 114, 2003

32. **Kovacic J, Lieberman IH, Togawa D, Bauer T, Brodke D, Reinhardt MK:** The gross & histologic behavior of PMMA in the primate vertebral column after kyphoplasty and vertebroplasty. The Spine Journal, Vol 3, No 5S, pp 79, 2003

33. **Togawa D, Bauer T, Lieberman IH, Sakai H, Reinhardt MK:** Unsuspected myeloma and low grade osteomalacia in patients with vertebral compression fractures. Proceedings AAOS 71st annual meeting, pp544, 2004.

34. **Lieberman IH, Reinhardt MK, Hussein M:** Clinical outcome of vertebral augmentation for osteolytic collapse. Proceedings AAOS 71st annual meeting, pp545, 2004.

35. **Kovacic J, Lieberman IH, Togawa D, Bauer T, Brodke D, Reinhardt MK:** The gross & histologic behavior of PMMA during kyphoplasty and vertebroplasty. Proceedings AAOS 71st annual meeting, pp545, 2004.

PRESENTATIONS

Invited lectures Hospitals/Universities/National & International Meetings Etc.

1. European Travelling Surgeons Visit, Harlow Wood Hospital, Nottingham, United Kingdom, Apr 1993. History of scoliosis surgery.

2. AO/ASIF Spine Course, Nottingham, United Kingdom, Jul 1993. Pedicle screws: indications and techniques.

3. AO/ASIF Operating Room Personal Course, Nottingham, United Kingdom, Jul 1993. Spinal anatomy and instrumentation.

4. Orthopaedic Nurses Association Meeting, Nottingham, United Kingdom, Sep 1993. Spine surgery: from Hippocrates to Queen's.

5. Ciurgia Da Coluna, Oporto, Portugal, Oct 1993. (1) Anterior odontoid screw fixation, (2) Management of metastatic spine disease.

6. AO/ASIF Spine Workshop, Oporto, Portugal, Oct 1993. Lecture and Workshop: Universal spine system for fractures, deformity and degenerative spine disease.

7. AO/ASIF Spine Course, Montreal, Quebec, Jul 1994. (1) Biomechanics of cervical spine fixation, (2) Biomechanics of thoraco-lumbar spine fixation for fractures.

8. Sports Medicine Symposium, Rhone Poulanc and Sports Medicine Specialists, Toronto, Ontario, Jul 1994. Back pain in the athlete.

9. AO/ASIF Spine Course, Davos, Switzerland, Dec 7, 1994. Table demonstrator: Spinal instrumentation.

10. AO/ASIF Course for Operating Room Personnel, Toronto, Ontario, Apr 9, 1995. The universal spinal system: Indications and techniques for use.

11. Canadian Orthopaedic Association, Instructional Course Lecture, Halifax, Nova Scotia, Jun 1995. Classification of thoracolumbar spine fractures.

12. Hotel-Dieu Grace Hospital Surgical Society, Windsor, Ontario, Sep 21, 1995. Endoscopic spinal surgery.

13. AO/ASIF Advanced Spinal Techniques Course, Southampton, Bermuda, Oct 6, 1995 - Oct 8, 1995. (1) Anterior odontoid screw fixation for dens fractures, (2) Surgical management of ankylosing spondylitis.

14. North York Branson Hospital's Clinical Day, Toronto, Ontario, Oct 25, 1995. Whats new in backs.

15. Deaconess Hospital, Eindhoven, Amsterdam, The Netherlands, Nov 24, 1995. Technique and preliminary results of endoscopic spinal fusion using the BAK interbody cage.

16. Smith & Nephew Richards, BAK Symposium, Atlanta, Georgia, Feb 23, 1996. Endoscopic BAK spinal fusion.

17. AO/ASIF Spine Course, Vancouver, British Columbia, Apr 11-14, 1996. (1) Principles of internal fixation, (2) Ankylosing spondylitis, (3) Biomechanical considerations of the lumbar spine, (4) Workshop: Universal spine system, (5) Scoliosis: Concepts, etiology and management.

18. Endo Ethicon Endoscopic Surgery Symposium, Hamburg, Germany, Jul 1996. (1) Endoscopic transthoracic spinal surgery, (2) Experience with BAK endoscopic spinal fusions.

19. Atlantic Provinces Orthopaedic Society, St. John, New Brunswick, Sep 1996. (1) Endoscopic transthoracic spinal surgery, (2) Experience with BAK endoscopic spinal fusions.

20. New Horizons in Spinal Surgery, Allegheny University, Philadelphia, Pennsylvania, Nov 1996. (1) Endoscopic transthoracic spinal surgery, (2) Cadaver lab practical session.

21. Trauma and Basic Spine Course, AO/ASIF International, Davos, Switzerland, Dec 1996. (1) Indications and techniques of pedicular systems in low back surgery, (2) Fusion with and without rigid fixation, (3) Minimal invasive spinal surgery overview, (4) Fireside discussion: Non-traumatic spine.

22. Minimal Invasive Spine Surgery Symposium, AO/ASIF International, Davos, Switzerland, Dec 1996. Transperitoneal ALIF with gas: Results and complications.

23. AO/ASIF Advanced Spinal Techniques Course, Banff, Alberta, Mar 1997. 1) Metastatic Epidural Compression, 2) Anterior Lumbar Interbody Fusion; Laparoscopic or Open Techniques, 3) Session Moderator-Degenerative Lumbar Disc Disease, 4) Session Moderator Fireside Discussion.

24. Instituto Ortopedico Rizzoli, Bologna, Italy, Apr 1997. 1) Treatment Options for Degenerative Disc disease; The Role for Interbody Fusion 2) The Role of Endoscopy in Spinal Deformity Correction.

25. Canadian Orthopaedic Nurses Association Conference, Toronto, Ontario, Apr 20, 1997. Scoping Out the Spine.

26. Canadian Orthopaedic Association, Instructional Course Lecture, Hamilton, Ontario, Jun 3, 1997. New and Innovative Spinal Surgical Techniques.

27. Spinetech Workshop, BAK Laparoscopic training, Ethicon Endo Surgery Institute, New Jersey, Oct 26 1997.

28. AAOS, Practical Strategies in Spine Surgery: Current Applications & Techniques, Orthopaedic Learning Centre, Rosemont Illinois, Nov 7-9 1997, 1) BAK technique, live video demonstration 2) Indications and Techniques for Thoracoscopic Surgery.

29. Trauma and Basic Spine Course, AO/ASIF International, Davos, Switzerland, Dec 1997. (1)Late surgery affects neurological outcome (2) Failed construction, why and what now? (3) Surgical challenges rheumatoid arthritis (4) Surgical complications rheumatoid arthritis (5) Fireside discussion: Non-traumatic spine. (6) Fireside discussion: Deformity (7) Surgical concepts and complications in congenital scoliosis (8) Multiply-operated lower back contra-indication for surgery

30. Minimal Invasive Spine Surgery Symposium, AO/ASIF International, Davos, Switzerland, Dec 1997. Stand alone anterior cages technique.

31. UMASS Endoscopic Spine Workshop, Worcester Mass. Mar 1998. Endoscopic Lumbar Spine Fusions.

32. AAOS, Debating Complex Issues in Spine Surgery. Chicago, Illinois, Apr. 1998. 1) Thoracoscopic technique for DDD, video demonstration 2) Laparoscopic technique; Limitations of Anatomy, Equipment and Complications 3)Panel Discussions

33. Simposio International De Orthopaedia Traumatologia. Lisbon Portugal, May 1998. 1) Anterior approaches in lumbar instabilities 2)Anterior approaches in revision surgery 3) Indications for thoracoscopy in spinal surgery

34. UMASS Endoscopic Spine Workshop, Worcester Mass. Jun. 1998. 1)Endoscopic Lumbar Spine Fusions.

35. Akron General Hospital, Department of Orthopaedic Surgery. Akron Ohio, August 1998. 1)Role of anterior lumbar fusions in symptomatic degenerative disc disease 2)Treatment of ankylosing spondylitis of the spine.

36. AO/ASIF Spine Course for Operating Room Personnel. Savannah Georgia, October 1998. 1)Surgical approaches to the spine 2)Operative management of spinal deformity.

37. AAOS, Practical Strategies in Spine Surgery: Current Applications & Techniques, Orthopaedic Learning Center, Rosemont Illinois, November 1998. 1)Indications biomechanics and complications of lumbar interbody fusion cages 2) Indications and Techniques for Thoracoscopic Surgery.

38. Synthes Spine National Meeting. Ponte Verda Beach Florida. November 1998. 1)The pathology and treatment options for scoliosis 2)Anterior scoliosis surgery.

39. GICD-USA, The Management of Vertebral Intercorporeal Disorders. Chicago Illinois, December 1998. Thoracoscopic spine surgery, indications and results.

40. University of South Florida, Ski with the Spine Center. Whistler B.C. January 1999. 1)Cervical spine iatrogenic instability, literature review and surgical options 2)USS deformity workshop.

41. AAOS, Contemporary Issues in Spine Surgery. Sarasota Florida, March 1999. 1) Can Cages Cure Stenosis 2) Fusion with cages; Limitations of Anatomy, Equipment and Complications 3)Video surgical demonstration 4)Panel Discussions.

42. AO/ASIF Comprehensive Spine Course. Cancun Mexico, April 1999. 1)Thoracolumbar trauma implant insertion techniques and pitfalls 2)Laparoscopy for spine surgery.

43. Sulzer Spine-Tech National Meeting. Tucson Arizona, April 1999. Laparoscopic lumbar fusions.

44. Sulzer Spine-Tech Advanced Education Course. Annapolis Maryland, May 1999. 1)Laparoscopic lumbar fusions 2)Complex case discussions.

45. UMASS Endoscopic Spine Workshop, Worcester Mass. May 1999. Endoscopic Lumbar Spine Fusions.

46. AAOS, Practical Strategies in Spine Surgery: Current Applications & Techniques, Orthopaedic Learning Center, Rosemont Illinois, August 1999. 1)Indications biomechanics and complications of lumbar interbody fusion cages 2) Indications and Techniques for Thoracoscopic Surgery

47. Meridia South Pointe Hospital, Orthopaedic RPAC. August 1999. State of the Art Minimally Invasive Spinal Surgery.

48. Quebec Orthopaedic Association, Annual Symposium. MontSainte-Anne, Quebec. September 1999. 1)Laparoscopic Surgery in the Lumbar Spine 2)The Future Role of Mini Invasive Surgery of the Spine.

49. UMASS Endoscopic Spine Workshop, Worcester Mass. October 1999. Endoscopic Lumbar Spine Fusions.

50. Research Institute International, Anterior Column Support Course. Paradise Island, Bahamas. November 1999. 1)Spinal Imaging 2)Treatment Principles and Results for Spinal Metastases 3) Treatment Options in Spinal Stenosis 4)Translaminar Screws.

51. Cleveland State University. PT & OT student lectures. December 1999. Spinal Trauma & Injury.

52. University of South Florida, Ski with the Spine Center. Whistler B.C. January 2000. 1)Video assisted deformity surgery 2)USS deformity workshop.

53. AAOS, Minimally Invasive Spine Surgery: Academy Skills Course, PAWS Facility, St Louis Missouri, July 2000. 1)Kyphoplasty for vertebral compression fractures, lecture & surgical demonstration 2) Kyphoplasty Indications and Results.

54. NASS, Spine Across the Sea 2000. Waikoloa Hawaii, July 2000, 1)moderator: "Imaging & Diagnostics" session.

55. NASS, Annual Meeting. New Orleans Louisianna, October 2000, 1)moderator: "cage & fusion" session 2)moderator: "endoscopic surgery" session 3)Revision Strategies for failed interbody fusion cages, presented during "cage symposium" 4)SIG discussion leader: cage usage.

56. AAOS, Contemporary Issues in Advanced Spinal Surgery: Current Applications & Techniques, Orthopaedic Learning Center, Rosemont Illinois, November 2000. 1)Anterior Interbody Fusions, Indications biomechanics and complications 2) Anterior Thoracoscopic Discectomy & Release for Spinal Deformity.

57. University of South Florida, Ski with the Spine Center. Whistler B.C. January 2001. 1)Kyphoplasty for the treatment of Vertebral compression fractures 2)USS deformity workshop.

58. Denver Spine Institute Annual Meeting. Breckenridge Colorado. February 2001. 1)Kyphoplasty for the treatment of Vertebral compression fractures 2)Revision Strategies for Failed Interbody Cages.

59. AAOS, Annual Meeting. San Francisco California, February 2001, 1)Minimally Invasive Spinal Surgery,,, has it changed outcome? presented at "Emerging Technology Symposium" 2)Failed Surgery for axial pain and failed interbody surgery, presented at instructional course lecture "Management of Failed Back Surgery Syndrome".

60. Federation of Spine Associations (FOSA) Specialty Day. San Francisco California, February 2001, 1) Revision Strategies for failed interbody fusion cages, presented during "cage symposium"

61. Pittsburgh Rheumatology Associaton Dinner. Pittsburgh Pensylvania. April 2001. 1) Kyphoplasty for the treatment of Vertebral compression fractures.

62. Hellenic Association of Orthopaedic Surgery & Traumatology, Spine Section 27th Annual Meeting. Athens Greece. April 2001. 1) Kyphoplasty for the treatment of Vertebral compression fractures 2)Laparoscopic Lumbar Fusion Cages, Techniques & Pitfalls 3)Transthoracic Endoscopic Deformity Surgery

63. Innovations, Challenges and Controversies in Spine Surgery. Jackson Wyoming. July 2001. 1)Cage complications and revision strategies 2)Osteoporotic vertebral fractures-treatment.

64. NASS, Annual Meeting. Seattle Washington, October 2001, 1)moderator: "cage & fusion" session 2)moderator: "endoscopic surgery" session 3)technique & results of kyphoplasty

65. Brussels International Spine Symposium, Vertebral osteoporotic Compression Fractures. Brussels Belgium. Nov 2001. 1)Kyphoplasty 2)Risks and complications of vertebroplasty

66. AANS/CNS Section on disorders of the Spine and peripheral nerves, 18th annual meeting. Orlando Florida. Feb 2002. 1) Kyphoplasty technique update.

67. Federation of Spine Associations (FOSA) Specialty Day. Dallas Texas. March 2002 1) Kyphoplasty technique update, NASS section 2) Indications and results of Kyphoplasty, SRS section.

68. Musculoskeletal Tumor Society Specialty Day. Dallas Texas. March 2002. 1) Metastatic Disease of the Spine and Vertebral Augmentation.

69. Cleveland Orthopaedic Society. Symposium-Vertebral Osteoporosis, A collaborative medical and surgical approach. Cleveland Ohio. March 2002. 1) Kyphoplasty in the treatment of Osteoporotic and Osteolytic compression fractures.

70. Osteobiologics Science Update. Depuy Osteobiologics. Vail Colorado. March 2002. 1) Osteoprogenitor cells for anterior lumbar interbody fusions, case presentations.

71. Cedar Sinai Medical Center. Current Concepts in Spinal Disorders. Palm Springs California. March 2002. 1)Prone position endoscopy for spinal deformity 2) Kyphoplasty and Vertebroplasty.

72. AAOS, Minimally Invasive Spine Surgery: Academy Skills Course, PAWS Facility, St Louis Missouri, Course Chairman, April 2002. 1)Kyphoplasty for vertebral compression fractures, lecture & surgical demonstration 2) Kyphoplasty Indications and Results.

73. SICOT Annual Meeting: San Diego California, August 2002. 1) Kyphoplasty in the treatment of Multiple Myeloma 2) Kyphoplasty for osteoporotic or osteolytic vertebral compression fractures.

74. AAOS, New Perspectives On The Aging Spine: Course Chairman, Chicago IL., October 2002. 1) Neurodiagnostic Studies: Why, When, How & When to Order? 2) Surgical Treatment of Degenerative Spondylothisthesis/ Scoliosis 3) Lumbar Spine Case Presentation 4) Epidemiology and Clinical Consequences of Osteoporotic Vertebral Compression Fractures.

75. Association of Bone and Joint Surgeons Workshop on Metastatic Bone Disease, Tampa Florida, November 2002. 1) Vertebral Augmentation for Osteolytic Tumors.

76. Brigham & Women's Hospital/Massachusetts General Hospital Visiting Professor, Boston Massachusetts, November 2002. 1) State of the Art in Minimally Invasive Spinal Surgery 2) Case Presentations with residents.

77. 3rd World Congress of Minimally Invasive Spinal Surgery & Surgery, Phoenix Arizona, Dec 2002. 1) Vertebral Augmentation for Osteoporotic compression fractures.

78. University of South Florida, Ski with the Spine Center. Whistler B.C. January 2003. 1)Spinal Implant Pricing, what we need to know 2)Economics of kyphoplasty 3) MTF Allograft workshop.

79. Orthopaedic Research Society, 49th Annual Meeting. New Orleans, February 2003. Symposium; Musculoskeletal Stem Cells: Basic Science to Clinical Practice. 1)Clinical Use of Bone Marrow Derived Osteoprogenitor Cells in Orthopaedic Surgery.

80. Cedars-Sinai Medical Center, Current Concepts in Spinal Disorders, Feb 2003, La Quinta. 1) Three dimensional spinal alignment. 2) Progress in VCF treatment; Kyphoplasty.

81. Denver Spine Institute Winter Conference, March 2003, Breckenridge. 1) Remote & Adjacent level fractures after vertebral augmentation.

82. Spine Education Summit, Exploring current concepts in spine surgery, March 2003, Vail. 1)Bone Marrow Aspirate and Osteoprogenitor Cell Concentration to Augment Interbody Fusion. 2) Revision Strategies for Interbody Fusion Cages. 3) Radiation Safety and Radiographic anatomy of the Spine. 4) OrthoBiologics Forum & panel discussion.

83. AAOS, Minimally Invasive Spine Surgery: Academy Skills Course, PAWS Facility, St Louis Missouri, Course Chairman, April 2003. 1)Translaminar screw fixation of the lumbar spine, lecture & surgical demonstration 2) Kyphoplasty Indications and Results.

84. Controversies_in Lumbar Spine Surgery, April 2003, Las Vegas. 1)Femoral Ring Allograft for ALIF 2) Percutaneous Access to the Lumbar and Thoracic Spine 3) Autologous Generated Fusion Enhancement 4) Translaminar screw fixation lab 5) Mini-ALIF lab.

85. Spine 2003, Pacific Spine Institute at Fountain Valley Hospital, April 2003, Newport CA. 1) Vertebral Augmentation for Osteoporotic & Osteolytic Fractures 2) Translaminar Screw Fixation 3) Cage Revision Strategies 4) Combined Endo-trans-thoracic Release and Posterior Instrumentation for Spinal Deformity.

86. IX International Workshop on Multiple Myeloma, Salamanca, Spain, May 2003. 1) Minimally invasive surgical management of spinal lesions.

87. University of Arkansas Cancer Research Center Grand Rounds, Little Rock Arkansas, June 2003. 1) Surgical treatment of the musculoskeletal manifestations of Multiple Myeloma.

88. IMAST 10th Annual Meeting, Rome Italy, July 2003. 1) Roundtable discussion, "Spondylolisthesis" 2) Instructional course Lecture, "Emerging Technology in Osteobiologics" 3) Instructional course Lecture, "Spinal-Pelvic Fixation Techniques".

89. AAOS, New Perspectives On The Aging Spine: Course Chairman, Washington DC., October 2003. 1) Epidural steroid injections, what, why & how? 2) Surgical Treatment of Degenerative Spondylothisthesis/ Scoliosis 3) Lumbar Spine Case Presentation 4) Epidemiology and Clinical Consequences of Osteoporotic Vertebral Compression Fractures.

90. North American Spine Society Annual Meeting, San Diego CA, Oct 2003. 1) Minimally Invasive Treatment of Vertebral Compression fractures 2) Adult Kyphosis 3) Bone Grafting Options 4) Cost Issues for Spine Surgery 5) Special Interest Group, Translaminar Screw Fixation 6) Session Moderator, Vertebral Augmentation.

91. Cleveland Clinic Foundation & Ege University, Aegean Spine Review, A comprehensive approach for neurosurgeons and orthopaedic surgeons. Izmir Turkey, Nov 2003. Course Co-Chairman. 1)Minimally Invasive Spine Surgery, State of the Art 2) Dorsal Cervical Fixation 3)Kyphoplasty and Vertebroplasty 4)Bone Graft Options 5) Biomechanics of Spinal Deformity 6) Dorsal and Dorsolateral Exposure of the spine 7) Kyphoplasty hands on workshop 8) Cadaver lab instructor.

92. University of South Florida, Ski with the Spine Center. Whistler B.C. January 2004. 1)Fraud & Abuse what we need to know 2)kyphoplasty workshop.

93. Spine Education Summit, Exploring current concepts in spine surgery, February 2004, Vail. 1) Selective Cell Retention for Lumbar Interbody Fusions 2) The Painful Lumbar Disc Forum & panel discussion.

94. American Society of Spine Radiology, Annual Symposium. Miami Florida, February 2004. 1) Kyphoplasty in the treatment of osteoporotic and osteolytic compression fractures.

95. Musculoskeletal Tumor Society Specialty Day. San Francisco. March 2004. 1) Kyphoplasty for Osteolytic vertebral collapse.

Peer Reviewed Papers Read at Scientific Meetings

1. **Lieberman IH, Bogoch ER, Grynpas MD:** Morphology and mineralization of bone in the femoral heads. Canadian Orthopaedic Association, Ottawa, Ontario, Jun 1988.

2. **Lieberman IH, Hastings D, Bogoch ER:** Heterotopic ossification after primary cemented and cementless total hip arthroplasty involving patients with rheumatoid arthritis and osteoarthritis. American Orthopaedics Residents Association, Ann Arbor, Michigan, Apr 1992.

3. **Lieberman IH, Hastings D, Bogoch ER:** Heterotopic ossification after primary cemented and cementless total hip arthroplasty involving patients with rheumatoid arthritis and osteoarthritis. Canadian Orthopaedics Residents Association, Montreal, Quebec, May 1992.

4. **Lieberman IH, Beaton D, Richards RR:** Functional outcome following posterior shoulder repair. Harlow Wood Hospital, Malkin Day Lectures, Division of Orthopaedics, Nottingham, United Kingdom, Apr 1993.

5. **Lieberman IH, Webb JK:** Occipito-cervical fusion using posterior titanium plates. British Cervical Spine Society, Glasgow, Scotland, Sep 1993.

6. **Lieberman IH, Beaton D, Richards RR:** Functional outcome following posterior shoulder repair. American Academy of Orthopaedic Surgeons, New Orleans, Louisiana, Feb 1994.

7. **Lieberman IH, Webb JK:** Cervical spine injuries in the elderly. American Academy of Orthopaedic Surgeons, Orlando, Florida, Feb 1995.

8. **Lieberman IH, Salo P, Litwin D:** Endoscopic anterior lumbar fusion for degenerative disc disease: Technique and preliminary results. Canadian Orthopaedic Association, Halifax, Nova Scotia, Jun 1995.

9. **Lieberman IH, Webb JK:** Occipito-cervical fusion using titanium plates: Indications techniques and examples. Canadian Orthopaedic Association, Halifax, Nova Scotia, Jun 1995.

10. **Lieberman IH, Salo PT, Deber R, Kraetschmer N:** Shared decision-making in patients with back pain. Canadian Orthopaedic Association, Halifax, Nova Scotia, Jun 1995.

11. **Asante DK, Lieberman IH, Salo PT, Kraetschmer BG:** A prospective study to determine the outcome of surgery in the treatment of spinal stenosis using the Oswestry Disability Index and the SF-36 Health Survey. Canadian Orthopaedic Association, Quebec City, Quebec, May 1996.

12. **Lieberman IH, Litwin DE, Salo PT, Kraetschmer BG:** Anterior interbody fusion using the BAK device: Pitfalls and complications. Canadian Orthopaedic Association, Quebec City, Quebec, May 1996.

13. **Lieberman IH, Woodside T:** Anterior vertebral body screw testing: Comparison of Zielke, Kaneda, USS, and USS with pull out resistant washer. Canadian Orthopaedic Research Society, Quebec City, Quebec, May 1996.

14. **Lieberman IH, Salo PT:** Endoscopic transthoracic release and bone grafting with simultaneous posterior instrumentation and correction for spinal deformity. Canadian Orthopaedic Association, Quebec City, Quebec, May 1996.

15. **Lieberman IH, Asante D, Kraetschmer BG:** A prospective outcome study using the Oswestry disability index and the SF-36 Health survey in the treatment of spinal stenosis. North American Spine Society, Vancouver, British Columbia, Oct 25, 1996.

16. **Lieberman IH, Salo PT, Kraetschmer BG:** Simultaneous endoscopic transthoracic release and posterior instrumentation for spinal deformity. North American Spine Society, Vancouver, British Columbia, Oct 25, 1996.

17. **Lieberman IH, Woodside T:** Anterior vertebral screw pull out testing: Comparison with a pull out resistant nut. North American Spine Society, Vancouver, British Columbia, Oct 26, 1996.

18. **Lieberman IH, Salo PT, Kraetschmer BG:** Multiple Level Endoscopic Transperitoneal Lumbar Interbody Fusion. Canadian Orthopaedic Association, Hamilton, Ontario, Jun 1997.

19. **Lieberman IH, Orr RD, Salo PT, Kraetschmer BG:** The results of Simultaneous Endoscopic Anterior Release and Posterior Instrumentation for Spinal Deformity. Canadian Orthopaedic Association, Hamilton, Ontario, Jun 1997.

20. **Lieberman IH, Orr RD, Salo PT, Kraetschmer BG:** The results of Simultaneous Endoscopic Anterior Release and Posterior Instrumentation for Spinal Deformity. Combined Meeting of English Speaking Orthopaedic Associations. Auckland New Zealand, Feb 1998.

21. **Lieberman IH, Davros W, Kuzhupilly RR:** Utility of 3-D CT Volume Rendering in Endoscopic Thoracoplasty. NASS Spine Across the Sea 2000, Kamuela Hawaii, July 2000.

22. **Lieberman IH, Kuzhupilly RR:** Initial Stability of FRA Spacers in ALIF with Integrated Crossed Anterior Screws, An In Vitro Analysis. NASS Spine Across the Sea 2000, Kamuela Hawaii, July 2000.

23. **Lieberman IH, Dudeney S, Reinhardt M-K:** Early Experience with Kyphoplasty in the Treatment of Painful Osteoporotic Vertebral Compression Fractures. NASS Spine Across the Sea 2000, Kamuela Hawaii, July 2000.

24. **Lieberman IH, Dudeney S, Phillips F:** Inflatable Bone Tamp Kyphoplasty in the Treatment of Osteoporotic Compression Fractures. Eurospine 2000, Antwerp Belgium, October 2000.

25. **Lieberman IH, Dudeney S, Phillips F, Reinhardt M-K, Bell G:** The Treatment of Kyphotic Deformity using Kyphoplasty for Vertebral Compression Fractures. SRS Annual meeting, Cairns Austrailia, October 2000.

26. **Lieberman IH, Dudeney S, Phillips F, Bell G:** Initial Clinical Outcome with Kyphoplasty for Osteoporotic Vertebral Compression Fractures. NASS Annual Meeting, New Orleans Louisiana, October 2000.

27. **Lieberman IH, Dudeney S:** Landmarks for extrapedicular cannulation of the vertebral body. NASS Annual Meeting, New Orleans Louisiana, October 2000.

28. **Lieberman IH, Dudeney S, Reinhardt MK, Bell G:** Initial Clinical Outcome and efficacy of Kyphoplasty in the treatment of Painful Osteoporotic Compression Fractures. AAOS Annual Meeting, San Francisco California, February 2000.

29. **Lieberman IH, Mitchell W, Dudeney S, Reinhardt MK:** Clinical Outcome with Kyphoplasty for Osteoporotic Vertebral Compression Fractures. NASS Annual Meeting, Seattle Washington, October 2001.

30. **Lieberman IH, Dudeney S, Hussein M, Reinhardt MK:** Kyphoplasty in the treatment of Vertebral Compression Fractures secondary to Multiple Myeloma. NASS Annual Meeting, Seattle Washington, October 2001.

31. **Lieberman IH, Mitchell W, Dudeney S, Reinhardt MK:** Clinical Outcome with Kyphoplasty for Osteoporotic Vertebral Compression Fractures. AAOS Annual Meeting, Dallas Texas, February 2002.

32. **Lieberman IH, Hussein H, Reinhardt MK:** Clinical Outcome of Vertebral Augmentation for Osteolytic Collapse. IMAST 10th Annual Meeting, Rome Italy, July 2003.

33. **Lieberman IH, Togawa D, Bauer TW, Reinhardt MK:** Unsuspected Myeloma and Low-Grade Osteomalacia Observed in Biopsies Obtained from Patients with Osteoporotic Compression Fractures During Kyphoplasty. IMAST 10th Annual Meeting, Rome Italy, July 2003.

34. **Lieberman IH, Fleming JE, Reinhardt MK, Richmond B, McLain R, Muschler GF:** Intraoperative Concentration of Human Bone Marrow Progenitors in Lumbar Interbody Fusion. IMAST 10th Annual Meeting, Rome Italy, July 2003.

35. **Lieberman IH, Reinhardt MK, Hussein M:** Clinical outcome of vertebral augmentation for osteolytic collapse. AAOS 71st annual meeting, San Francisco, March 2004.

Other Lectures or Papers Given

1. University of Toronto, Orthopaedic Residents' Research Day, Toronto, Ontario, Oct 1988. Morphology and mineralization of bone in the femoral heads of rheumatoid arthritis patients.

2. University of Toronto, Kennedy Day, Toronto, Ontario, May 1991. Heterotopic ossification after primary cemented and cementless total hip arthroplasty involving patients with rheumatoid arthritis and osteoarthritis.

3. University of Toronto, Kennedy Day, Toronto, Ontario, May 1992. Functional outcome following posterior shoulder repair.

4. North American Travelling Fellows, Wellesley Hospital, Toronto, Ontario, Oct 1994. Endoscopic spinal surgery: Indications and examples.

5. University of Toronto, Keith Visiting Professorship in Neurosurgery, Toronto, Ontario, Feb 1995. Endoscopic spinal surgery: Indications and examples.

6. Division of Orthopaedics, Residents Down Day Curriculum, Toronto, Ontario, Mar 1995. Classification of spinal fractures.

7. ASG Travelling Fellows, Hospital for Sick Children, Toronto, Canada, Mar 1995. Endoscopic spinal surgery: Indications and examples.

8. Gallie Day, University of Toronto, Toronto, Ontario, Apr 1995. Endoscopic spinal surgery: Indications and examples.

9. Department of Anaesthesia, The Toronto Hospital, Toronto, Ontario, Apr 1995. Prevention of blood loss in spinal surgery.

10. Kennedy Day, University of Toronto, Division of Orthopaedics, Toronto, Ontario, May 1995. Endoscopic spinal surgery: Indications and examples.

11. Division of Orthopaedics, Residents Down Day Curriculum, Toronto, Ontario, May 1995. Vertebral osteomyelitis and discitis.

12. University of Toronto, Department of Family Practice, Toronto, Ontario, Jun 1995. Management of back pain.

13. Division of Orthopaedics, Residents Down Day Curriculum, Toronto, Ontario, Jun 1995. The cervical spine in rheumatoid arthritis.

14. Toronto East General Hospital, Surgical Grand Rounds, Toronto, Ontario, Sep 6, 1995. Endoscopic spinal surgery.

15. Division of Orthopaedics, Residents Down Day Curriculum, Toronto, Ontario, Oct 16, 1995. Endoscopic spinal surgery for degenerative disease of the spine.

16. University of Toronto, Trauma Update 95, Toronto, Ontario, Oct 22, 1995. Diagnosis and management of thoracolumbar fractures.

17. Division of Orthopaedics, Resident's Down Day Curriculum, Toronto, Ontario, Oct 23, 1995. Complications in deformity surgery.

18. University of Toronto, Arthritis Day, Toronto, Ontario, Feb 8, 1996. Panel: The problem of back pain.

19. ASG Travelling Fellows, The Mount Sinai Hospital, Toronto, Ontario, Mar 22, 1996. Shared decision-making in patients with back pain.

20. Combined Arthritis Program Research Rounds, The Toronto Hospital, Toronto, Ontario, Mar 29, 1996. What we are doing in spines.

21. Kennedy Day, University of Toronto, Division of Orthopaedics, Toronto, Ontario, May 1996. Endoscopic transthoracic release for adult scoliosis.

22. Toronto Endoscopic Spine Surgery Symposium and Workshop, University of Toronto, Department of Surgery, Toronto, Ontario, May 17, 1996 - May 18, 1996. (1) Alternative approaches to endoscopic disc surgery, (2) BAK results and complications, (3) Endoscopic transthoracic approaches, (4) Workshop: Animal and cadaver lab.

23. Telemedicine Canada, (Satellite Teleconference), Toronto, Ontario, May 21, 1996. Current management of scoliosis and kyphosis.

24. Keith Visiting Professorship in Neurosurgery, University of Toronto, Toronto, Ontario, Feb 11, 1997. Endoscopy for Spinal Deformity Surgery.

25. ASG Travelling Fellows, Sunnybrook Hospital, Toronto, Ontario, Mar 1997. Endoscopic Transthoracic Release for Spinal Deformity.

26. Telemedicine Canada, (Satellite Teleconference), Toronto, Ontario, Apr 29, 1997. Endoscopic Spinal Fusions.

27. Kennedy Day, University of Toronto, Division of Orthopaedics, Toronto, Ontario, May 1, 1997. Endoscopic Transthoracic Release for Spinal Deformity.

28. Toronto Endoscopic Spine Surgery Symposium and Workshop, University of Toronto, Department of Surgery, Toronto, Ontario, May 16, 1997. 1) Overview of Minimally Invasive Spine Surgery, 2) Technique of Endoscopic BAK Lumbar Spinal Fusions, 3) Indications and Techniques of Endoscopic Transthoracic Discectomies, 4) Simultaneous Endoscopic Anterior and Open Posterior Spinal Surgery, 5) Workshop: sawbones and animal lab.

29. Advances in Endoscopic Spine Surgery. A symposium & workshop. The Cleveland Clinic Foundation, January 1998. 1) Overview of Minimally Invasive Spine Surgery, 2) Technique of Endoscopic BAK Lumbar Spinal Fusions, 3) Indications and Techniques of Endoscopic Transthoracic Discectomies, 4) Simultaneous Endoscopic Anterior and Open Posterior Spinal Surgery, 5) Workshop: sawbones and animal lab.

30. Advances in Endoscopic Spine Surgery. A symposium & workshop. The Cleveland Clinic Foundation, May 1998. 1) Overview of Minimally Invasive Spine Surgery 2) Complications of Endoscopic BAK Lumbar Spinal Fusions 3) Transthoracic Endoscopic Techniques for Spinal Deformity 4) Workshop: sawbones and animal lab.

31. Cleveland Clinic Foundation, Dept of Orthopaedics, Residents Teaching Conference, Rheumatoid Cervical Spine, Apr. 1998.

32. Cleveland Clinic Foundation, Dept of Orthopaedics, Grand Rounds, June 1998.

33. Cleveland Clinic Foundation, Chautauqua Institution Health Talks, July 1998. Surgical options for common spinal disorders.

34. Cleveland Clinic Foundation, Community Health Talks, August 1998. Surgical options for common spinal disorders.

35. Cleveland Clinic Foundation, Board of Trustees Meeting, August 1998. State of the Art in Minimally Invasive Spinal Surgery.

36. Cleveland Clinic Foundation, Dept of Medicine, Grand Rounds, August 1998. State of the Art in Minimally Invasive Spinal Surgery.

37. Cleveland Clinic Foundation, Contemporary Spine Care for the Primary Care Physician, November 1998. Minimally Invasive techniques in Spinal Surgery.

38. Cleveland Clinic Foundation, Dept of Orthopaedics, Grand Rounds, April 1999.

39. Cleveland Clinic Foundation, Taussig Cancer Center & Multiple Myeloma Program, April 1999. Skeletal Manifestations and Surgical Intervention for Multiple Myeloma.

40. Cleveland Clinic Foundation, Sports Medicine & Orthopaedic Rehab Symposium, May 1999. 1)The Unstable Spine 2)The Herniated Disc

41. Cleveland Clinic Foundation, Dept of Orthopaedics, Greenbriar Symposium, July 1999. 1)Clearing the Cervical Spine for Surgery & Athletic Participation 2)Anterior Spinal Fusion, Why, When & How.

42. Cleveland Clinic Foundation, Dept of Orthopaedics & The Minimally Invasive Surgery Center, Grand Rounds, November 1999. Kyphoplasty for Osteoporotic Compression Fractures.

43. Kyphoplasty, A Symposium & Hands On Workshop, The Cleveland Clinic Foundation, Dept of Orthopaedics & The Minimally Invasive Surgery Center. December 1999. 1)Historical Overview 2)Kyphoplasty technique 3)Initial Outcome & Results 4)Cadaver workshop.

44. Cleveland Clinic Foundation, Dept of Orthopaedics, Grand Rounds, February 2000.

45. Spine Care 2000, A Common Sense Approach, The Cleveland Clinic Foundation, (Fort Lauderdale, FLA), March 2000. 1)Case Presentations 2)Lumbar Disc Herniations 3)Surgical Treatment for Osteoporosis 4)Scoliosis Recognition & Management.

46. Kyphoplasty, A Symposium & Hands On Workshop, The Cleveland Clinic Foundation, Dept of Orthopaedics & The Minimally Invasive Surgery Center. January/February/April/June 2000. 1)Historical Overview 2)Kyphoplasty technique 3)Initial Outcome & Results 4)Cadaver workshop.

47. Plasma Cell Dyscrasia: Past Present & Future. The Cleveland Clinic Foundation, Taussig Cancer Center & Multiple Myeloma Program, April 2000. Skeletal Manifestations and Surgical Intervention for Multiple Myeloma.

48. Osteoporosis Management Symposium. The Cleveland Clinic Foundation, Dept of Orthopaedics & The Osteoporosis Clinic, April 2000. Kyphoplasty a New technique for the Management of Osteoporotic Compression Fractures.

49. Cleveland Clinic Foundation, Dept of Orthopaedics, ABC Travelling Fellows Visit, May 2000. Kyphoplasty a New technique for the Management of Osteoporotic Compression Fractures.

50. Cleveland Clinic Foundation, Spine Hands on Review Course. Depts of Neurosurgery & Orthopaedics. August 2000. 1)Minimally Invasive Spine Surgery, State of the Art 2) Operative Management of Spinal deformity 3)Kyphoplasty for Vertebral Compression Fractures

51. Cleveland Clinic Foundation, Innovative Spine Care: Essential Skills for the Nursing Team. Depts of Neurosurgery & Orthopaedics, & the Spine Center. October 2000. 1)Scoliosis Current Concepts 2) Interbody Cages Current Concepts

52. Cleveland Clinic Foundation, "Fantastic Voyage, the Operating Room of the Future". The Minimally Invasive Surgery Center. October 2000. 1)Minimally Invasive Spinal Surgery, State of the Art.

53. Kyphoplasty, A Symposium & Hands On Workshop, The Cleveland Clinic Foundation, Dept of Orthopaedics & The Minimally Invasive Surgery Center. September/November 2000, February/April/June 2001. 1)Historical Overview 2)Kyphoplasty technique 3)Initial Outcome & Results 4)Cadaver workshop.

54. Cleveland Clinic Foundation, Worldcare, "Dubai Healthcare Shopping festival" (teleconference). CCF International Center. March 2001. 1)Minimally Invasive Spinal Surgery, State of the Art.

55. Plasma Cell Dyscrasia: Past Present & Future. The Cleveland Clinic Foundation, Taussig Cancer Center & Multiple Myeloma Program, April 2001. Skeletal Manifestations and Surgical Intervention for Multiple Myeloma.

56. Cleveland Clinic Foundation, Spine Hands on Review Course. Depts of Neurosurgery & Orthopaedics. May 2001. 1)Minimally Invasive Spine Surgery, State of the Art

57. Cleveland Clinic Foundation, Innovative Spine Care: Essential Skills for the Nursing Team. Depts of Neurosurgery & Orthopaedics, & the Spine Center. August 2001. 1)Scoliosis Current Concepts 2) Interbody Cages Current Concepts.

58. Cuyahoga Community College. "Something for everyone" lecture series. October 2001. 1) New developments in spinal surgery.

59. Plasma Cell Dyscrasia: Past Present & Future. The Cleveland Clinic Foundation, Taussig Cancer Center & Multiple Myeloma Program, April 2002. Skeletal Manifestations and Surgical Intervention for Multiple Myeloma.

60. Kyphoplasty, A Symposium & Hands On Workshop, The Cleveland Clinic Foundation, Dept of Orthopaedics & The Minimally Invasive Surgery Center. September & November 2001, March & May 2002. 1)Historical Overview 2)Kyphoplasty technique 3)Initial Outcome & Results 4)Cadaver workshop.

61. Cleveland Clinic Foundation, Grand Rounds 2002; 1) Department of Orthopaedics 2) Department of Oncology 3) Dept of Neurosurgery 4) Department of Endocrinology.

62. Cleveland Clinic Foundation, Fourth Annual Pain Management Conference, November 2002; 1) Vertebral Compression Fractures.

63. Kyphoplasty, A Symposium & Hands On Workshop, The Cleveland Clinic Foundation, Dept of Orthopaedics & The Minimally Invasive Surgery Center. September & November 2002, February & May 2003 1)Historical Overview 2)Kyphoplasty technique 3)Initial Outcome & Results 4)Cadaver workshop.

64. Cleveland Clinic Foundation, 5th Annual Pain Management & Regional Anesthesia Symposium, Key West Florida, February 2003, 1) Anatomy & Radiology of the Spine, 2)Vertebral Augmentation for Osteoporotic and Osteolytic Compression Fractures, 3) Complications of Vertebroplasty and Kyphoplasty.

65. Cleveland Clinic Foundation, Internal Medicine Grand Rounds, April 2003. 1) Vertebral augmentation for Osteoporotic & osteolytic fractures

66. Cleveland Clinic Foundation, Department of Orthopaedics, Jefferson Lecture, March 2003. 1) Nepal & Everest, a contrast of extremes.

67. Cleveland Clinic Foundation, Speaking of Women's Health, May 2003. 1) Spinal Manifestations of Osteoporosis.

68. Cleveland Clinic Foundation, Orthopaedics Basic Science Lecture, May 2003. 1) Intervertebral Disc, Biology, Biomechanics & Disc Substitutes.

69. Cleveland Clinic Foundation, Orthopaedics Research Day. May 2003. 1) A Himalayan Approach to Clinical Research.

70. Cleveland Clinic Foundation, Spine Review Hands-On 2003 Course. Depts of Neurosurgery & Orthopaedics. August 2003. 1)Minimally Invasive Spine Surgery, State of the Art 2) Dorsal Cervical Fixation 3)Kyphoplasty for Vertebral Compression Fractures 4)Stem Cells for Spinal fusion.

71. Kyphoplasty, A Symposium & Hands On Workshop, The Cleveland Clinic Foundation, Dept of Orthopaedics & The Minimally Invasive Surgery Center. August & October 2003. 1)Historical Overview 2)Kyphoplasty technique 3)Initial Outcome & Results 4)Cadaver workshop.

72. Cleveland Clinic Foundation, Minimally Invasive Surgery Center, 2nd Annual Retreat, October 2003. 1)Update on Orthopaedic and Spinal MIS procedures.

Poster Presentations, Scientific Exhibits and Movie Presentations

1. **Lieberman IH:** Endoscopic L5-S1 BAK spinal fusion. (Live Surgical Demonstration) Deaconess Hospital, Amsterdam, The Netherlands, Nov 24, 1995.

2. **Lieberman IH:** Endoscopic L5-S1 BAK spinal fusion. (Live Surgical Demonstration) Toronto Endoscopic Spine Surgery Symposium and Workshop, University of Toronto, Toronto, Ontario, May 18, 1996.

3. **Lieberman IH:** Endoscopic L5-S1 BAK spinal Fusion. (Live Surgical Demonstration) Toronto Endoscopic Spine Surgery Symposium and Workshop, University of Toronto, Toronto, Ontario, May 17, 1997.

4. **Lieberman IH, Asante DK, Salo PT, Kraetschmer BG:** A prospective study to determine the outcome of surgery in the treatment of spinal stenosis using the Oswestry Disability Index and the SF-36 Health Survey. (Poster Presentation)Canadian Orthopaedic Association, Quebec City, Quebec. 1996.

5. **Lieberman IH, Woodside T:** Anterior Vertebral body screw testing: Comparison of Zielke, Kaneda, USS, and USS with pull out resistant washer. (Poster Presentation)Canadian Orthopaedic Research Society, Quebec City, Quebec. 1996.

6. **Lieberman IH, Litwin DE, Salo PT, Kraetschmer BG:** Anterior interbody fusion using the BAK device: Pitfalls and complications. (Poster Presentation)Canadian Orthopaedic Association, Quebec City, Quebec. 1996.

7. **Lieberman IH, Orr RD, Salo PT, Kraetschmer BG:** The results of Simultaneous Endoscopic Anterior Release and Posterior Instrumentation for Spinal Deformity. (Poster Presentation) North American Spine Society, New York, 1997.

8. **Lieberman IH:** Endoscopic L5-S1 BAK spinal fusion. (Live Surgical Demonstration) Advances in Endoscopic Spine Surgery, A Symposium and Workshop, The Cleveland Clinic, May 1998.

9. **Lieberman IH, Salo PT, Litwin D, Kraetschmer BG:** Two Level Anterior Endoscopic Transperitoneal BAK Lumbar Fusion. (Video Demonstration) American Academy of Orthopaedic Surgeons Annual Meeting, New Orleans, Mar 1998.

10. **Yee A, Lieberman IH, Salo PT, Bhatia C, Kraetschmer BG:** A Prospective analysis of Anterior Cervical Discectomy and Fusion using the Modified ODI and the SF-36 outcome instruments. (Poster Presentation) Combined Meeting of English Speaking Orthopaedic Associations. Auckland New Zealand, Feb 1998.

11. **Lieberman IH, Asante DK, Bhatia C, Salo PT, Kraetschmer BG:** A prospective study to determine the outcome of surgery in the treatment of spinal stenosis using the Oswestry Disability Index and the SF-36 Health Survey. (Poster Presentation). Combined Meeting of English Speaking Orthopaedic Associations. Auckland New Zealand, Feb 1998.

12. **Willshir PC, Lieberman IH, Salo PT, Litwin DEM, Kraetschmer BG:** Transperitoneal Laparoscopic Exposure for Lumbar Interbody Fusion. (Poster Presentation). Combined Meeting of English Speaking Orthopaedic Associations. Auckland New Zealand, Feb 1998.

13. **Lieberman IH:** Endoscopic L5-S1 BAK spinal fusion. (Live Surgical Demonstration) Sulzer Spine-Tech, New Technology Seminar. Teleconference Cleveland-San Francisco, October 1998.

14. **Lieberman IH, Bauer T, Salo PT, Kraetschmer BG:** Histology of a Retrieved Interbody Fusion Cage. (Poster Presentation). North American Spine Society. San Francisco. 1998.

15. **Lieberman IH, Willsher PT, Salo PT, Litwin D:** Transperitoneal Laparoscopic Exposure for lumbar Interbody Fusion. (Poster Presentation). North American Spine Society. San Francisco. 1998.

16. **Lieberman IH:** Kyphoplasty. (Live Surgical Demonstration) Kyphoplasty, A Symposium & Hands On Workshop, The Cleveland Clinic Foundation, Dept of Orthopaedics & The Minimally Invasive Surgery Center. December 1999 & January 2000.

17. **Lieberman IH, Dudeney S, Phillips F:** Inflatable Bone Tamp Kyphoplasty in the Treatment of Osteoporotic Compression Fractures. (Poster Presentation). Osteoporosis World Congress. Chicago Illinois, December 2000.

18. **Lieberman IH, Dudeney S, Phillips F:** Inflatable Bone Tamp Kyphoplasty in the Treatment of Osteoporotic Compression Fractures. (Poster Presentation). Association Bone Mineral Research Annual Meeting, Toronto Canada, December 2000.

19. **Lieberman IH, Dudeney S, Hussein M:** Kyphoplasty in the Treatment of Osteolytic Compression Fractures due to Myeloma. (Poster Presentation). Oncology Association Meeting. Banff Canada, April 2001.

20. **Garfin S, Yuan H, Lieberman IH, Phillips F:** Early outcomes in the minimally invasive reduction and fixation of compression fractures. (Poster Presentation). NASS Annual Meeting, New Orleans Louisiana, October 2000.

21. **Kuzhupilly RR, Lieberman IH, McLain R, Nair D, Najm I:** Modified Anaesthetic Protocol for Electromyography Monitoring During Anterior Endoscopic Instrumentation. (Poster Presentation). Eurospine 2000. Antwerp Belgium, October 2000.

22. **Lieberman IH, Davros W, Kuzhupilly RR:** 3-D CT Volume Rendering Techniques in Endoscopic Thoracoplasty. (Poster Presentation). Eurospine 2000. Antwerp Belgium, October 2000.

23. **Single D, Lieberman IH, Dudeney S, Steiner C, Reinhardt MK:** The Measurement of Volume Restoration Improvement after Kyphoplasty. (Poster Presentation). NASS Annual Meeting, Seattle Washington, October 2001.

24. **Dudeney S, Hussein M, Reinhardt MK, Lieberman IH.** The use of Kyphoplasty in Multiple Myeloma patients with vertebral compression fractures. (Poster Presentation). AAOS Annual Meeting, Dallas Texas, Feb 2002.

25. **Leon SP, Lieberman IH, Reinhardt MK.** Multiple cement application cavity containment kyphoplasty: technique description and efficacy. (Poster Presentation). AAOS Annual Meeting, Dallas Texas, Feb 2002.

26. **Harrop J, Reinhardt MK, Lieberman IH, Prpa B:** Incidence of remote and adjacent fractures after Kyphoplasty. (Poster presentation). NASS 17th Annual Meeting. Montreal Canada, Nov 2002.

27. **Kayanja M, Ferrara L, Lieberman IH:** Distribution of anterior cortical strain in a simulated osteoporotic vertebral compression fracture. (Poster presentation). NASS 18th Annual Meeting. San Diego CA, Oct 2003.

28. **Lieberman IH, Reinhardt MK, Hussein M:** Clinical outcome of vertebral augmentation for osteolytic collapse. (Poster Presentation). NASS 18th Annual Meeting. San Diego CA, Oct 2003.

29. **Dalcanto R, Ferrara L, Inceoglu S, Kayanja M, Lieberman IH:** Biomechanical comparison of transarticular facet screws to lateral mass plates in two level fusions of the cervical spine. (Poster Presentation). NASS 18th Annual Meeting. San Diego CA, Oct 2003.

30. **Kovacic J, Lieberman IH, Togawa D, Bauer T, Brodke D, Reinhardt MK:** The gross & histologic behavior of PMMA during kyphoplasty and vertebroplasty. AAOS 71st annual meeting, San Francisco, March 2004.

VIDEOS/MOVIES PRODUCED

Endoscopic BAK Lumbar Fusion in the Pig. Lieberman IH, Salo PT, Litwin D, Kraetschmer BG. 1996

Two Level Anterior Endoscopic Transperitoneal BAK Lumbar Fusion. Lieberman IH, Salo PT, Litwin D, Kraetschmer BG. 1996

Endoscopic Transthoracic Discectomy. Lieberman IH, Salo PT, Kraetschmer BG. 1997

Endoscopic Transthoracic Release for Spinal Deformity. Lieberman IH, Salo PT, Kraetschmer BG. 1997

Translaminar Screw Fixation of the Lumbar Spine. Stewart T, Sasso R, Lieberman IH. 2003

PATENTS ISSUED and PENDING

1) United States Patent US6468309 B1
"Method and Apparatus for Stabilizing Adjacent Bones." Issued October 2002

2) United States Patent US6488683 B2
"Method and Apparatus for Correcting Spinal Deformity." Issued December 2002

3)United States Patent US6527774 B2
"Apparatus for Attaching Fractured Sections of Bone." Issued March 2003

4) United States Patent US6551322 B1
"Apparatus for Implantation into Bone." Issued April 2003

5) United States Patient US6544265 B2
"Apparatus for Implantation into Bone Related Applications." Issued April 2003

6) United States Patent US6551319 B2
"Apparatus for Implantation into Bone (Reverse Cone DHEVBA)" Issued April 2003

7) United States Patent US6551320 B2
"Method and Apparatus for Correcting Spinal Deformity." Issued April 2003

8) United States Patent US6689168 B2
"Method and Apparatus for Stabilizing Adjacent Bones." Issued February 2004

9) United States Patent application #60/436,867
"Percutaneous Controlled Vertebral Osteotomy Tool Set" Filed Dec 2002

10) United States Patent application #60/464880
"Bone Graft and Cement Gun." Filed April 2003

11)United States Patent application #10/621,015
"L5S1 Apparatus for Lumbosacral Fixation". Filed July 2003

12) United States Patent application #US03/41043
"Percutaneous Vertebral Osteotomy Tool; Lateral Wall Cutter." Filed Dec 2003

13) United States Patent application #US03/41044
"Percutaneous Vertebral Osteotomy Tool; Articulated End Cutter" Filed Dec 2003

14) United States Patent application #10/731,942
"Method and Apparatus for Replacing a Damaged Spinal Disc" Filed Dec 2003

15) United States Patent application #10/731,964
"Method and Apparatus for Replacing a Damaged Spinal Disc" Filed Dec 2003

16) United States Patent application #10/731,660
"Method and Apparatus for Replacing a Damaged Spinal Disc" Filed Dec 2003

RESEARCH AND INVESTIGATION
Senior Investigator's Name Appears in Bold

Research Funding - Peer Reviewed

1)Allograft Cancellous Bone Augmented with Bone Marrow Aspirate for Lumbar Interbody Fusion; A Pilot Study. **Lieberman IH,** Kuzhupilly R, Muschler G, Flemming J. Funding = Dept of Orthopaedics & Research Programs Committee, The Cleveland Clinic Foundation ($22,000)

2)The thermal effects of polymethylmethacrylate on the primate vertebral column after kyphoplasty. **Lieberman IH,** Kovacic J, Bauer T, Brodke D. Funding = Kyphon Inc ($90,000)

3)Force Transmission Along the Normal and Osteoporotic Spine Following an Index Vertebral Compression Fracture. **Lieberman IH,** Kayanja M, Ferrara L. Funding = Dept of Orthopaedics & Research Programs Committee, The Cleveland Clinic Foundation ($18,000)

4)Cortoss for Kyphoplasty. An FDA Multi-center Pilot Study. **Lieberman IH,** Reinhardt MK, Schlenk R. Funding = Orthovita Inc ($35,000)

5) Surgical Robotics for Spine Surgery. **Lieberman IH,** Shoham M. Funding = The Cleveland Clinic & Technion University Development Fund ($50,000/yr X 2)

Research Funding - Non Peer Reviewed

Endoscopic techniques for spinal surgery. **Lieberman IH,** Salo PT, Litwin D: Linvatech Zimmer Corporation ($10,000 1994 - 1994)

Randomized trial of endoscopic spinal fusion versus back specific exercise therapy for degenerative disc disease. **Lieberman IH,** Salo PT, Litwin D, Kraetschmer B, Wright J: Smith and Nephew Richards Inc ($15,000 1994 - 1995)

Pullout and failure mode of new USS pedicle hook and endplate screw. **Lieberman IH,** Woodside T: Synthes Canada Incorporated ($2,500 1994 - 1994)

Spinal surgery database; CANBAK study. **Lieberman I.H.,** Salo P.T. Kraetschmer B: Smith and Nephew Spine ($5,000 1995 - 1996)

Endoscopic Instrumentation for the thoracic spine. **Lieberman IH:** Stryker/Osteonics Corporation ($2,400 1996)

Shared Decision Making in Low Back Pain. **Lieberman IH,** Salo PT, Deber R, Kraetschmer N, Kraetschmer B,: Orthopaedic Acad. Enrich. Fund, Smith & Nephew Endowment ($15,000 1997 - 1997)

A prospective randomized trial of endoscopic spinal fusion or back specific exercise in the treatment of degenerative spine disease. **Lieberman IH.,** Salo PT. Litwin D. Wright J. Kraetschmer B: Spine Tech Inc. Minneapolis, Minnesota ($118,000 1996 - 1998)

A prospective randomized trial of Kyphoplasty versus non-operative treatment in osteoporotic vertebral compression fractures. Multi-center post market study, (Garfin S. Yuan H. Kostuik J.) **Lieberman IH,** Bell G. Kyphon Inc.($5000 1999)

Biomechanical analysis of a new Femoral Ring Allograft Spacer with interlocking screws. **Lieberman IH,** McLain R, Kuzhupilly R, Synthes Spine(1999)

A randomized clinical trial of two interbody fusion cages; SAC vs BAK. McLain R, **Lieberman IH,** Stryker Osteonics Spine (1999)

Research Endeavors - Not Funded

Complications in spinal surgery: A retrospective chart review 1983-1993. **Lieberman IH,** Orr D, Wai E.

Shared decision-making in spinal surgery. **Lieberman IH,** Salo PT, Deber R, Kraetschmer N.

Pullout and failure mode of new anterior spinal fixation system. **Lieberman IH,** Woodside T.

Vertebral body failure after transpedicular PMMA augmentation. **Lieberman I.H.,** Lewis S.

Three dimensional MRI evaluation of disc herniations. **Lieberman IH,** Kiriakopolis E, Miklus D.

A prospective outcome study using the Oswestry Disability Index and the SF-36 Health Survey in the treatment of Spinal Stenosis. **Lieberman IH,** Asante D, Bhatia C, Kraetschmer BG.

A prospective analysis of Anterior Cervical Discectomy and Fusion using the Modified ODI and the SF-36 outcome instruments. **Lieberman IH,** Yee A, Bhatia C, Kraetschmer BG.

An efficacy study of a new Balloon Bone Tamp in the Treatment of Osteoporotic Vertebral Compression Fractures. **Lieberman IH,** Dudeney MS, Bell G.

Utility of Continuous EMG during Endoscopic Lumbar fusions. **Lieberman IH,** McLain R, Kuzhupilly R, Nair D, Najm I.

3D CT Scanning Reconstructions for Pre-operative Planning in Scoliosis & Thoracoplasty Surgery. **Lieberman IH,** Kuzhupilly R, Davros W.

Adjacent level vertebral body failure after vertebral augmentation: a biomechanical study. Schlenk R, Kayanja M, Ferrara L, **Lieberman IH.**

Biomechanical comparison of transarticular screws to lateral mass plates in two level instrumentations of the cervical spine. Dalcanto R, **Lieberman IH.**

VENDOR DERIVED FELLOWSHIP PROGRAM SUPPORT

1) Synthes Spine, AO/ASIF spinal fellowship sponser ($45,000 US per year). 1995, 1996, 1997, 1998, 1999, 2000, 2001.

2) SulzerMedica/Spinetech, spinal fellowship sponser ($50,000 US per year). 1999, 2000, 2001.

COMMITTEE INVOLVEMENT

University of Toronto, Faculty of Medicine Committees

- Faculty of Medicine, Men's Athletic Association, President, 1984 - 1985
- Faculty of Medicine, Undergraduate Medical Society, Member, 1984 - 1985
- University of Toronto, Intramural Athletic Association, Member, 1984-1985
- Faculty of Medicine, Undergraduate Medical Society, Member, 1985 - 1986

University of Toronto, Department of Surgery Committees

- Orthopaedic Residency Curriculum Committee, Member, 1990 - 1991

The Toronto Hospital, Hospital Committees

- Medical Advisory Committee, Member, 1990 - 1991
- Spinal Program Committee, Member, 1994 - 1997
- MRI Resource Allocation Committee, Member, 1995 - 1997
- Toronto Hospital Spinal Program, Medical Director Business Unit, 1997

AO/ASIF North American, Spine Education Committee

- MISS/Cage/Image Guided Surgery Working Group, ***Chairman***, 1999 - 2001

North American Spine Society

- Surgical Care Committee, Member, 2001 - 2003
- Operative Coding Committee, ***Vice Chairman***, 2002 - present
- Surgical Care Committee, ***Chairman***, 2003 - present

The Cleveland Clinic Foundation, Hospital Committees

- Patient Satisfaction Committee, Member, 1999 - 2000
- MISC Operations Committee, Member, 1998 - present
- Spine Center Database Committee, Member, 2000 - present
- Spine OR Pricing Committee, Member, 2000 - present
- Neurology Chairman Review Committee, Member, 2000
- International Center Strategic Advisory Board, Member, 2002-present
- World Class Service, Ortho/Spine/Neuro Continuum of Care Committee, ***Team Leader***, 2002-present
- Marketing committee of the Board of Trustees, Member, 2003 - present
- Conflict of Interest Committee, Member, 2003 - present

The Cleveland Clinic Foundation, Administrative Appointments

- ***Director***; Center for Advanced Skills Training, 2003 - present
- ***Director***; Minimally Invasive Surgery Center, 2004 - present

MEDICAL/SCIENTIFIC ORGANIZATIONS-MEMBERSHIPS

- American Academy of Orthopaedic Surgeons
- Canadian Orthopaedic Association
- North American Spine Society
- Scoliosis Research Society
- Royal College of Physicians and Surgeons of Canada
- European Spine Society
- Macnab Orthopaedic Research Society

CLINICAL AND APPLIED BASIC RESEARCH

Development and evaluation of endoscopic/minimally invasive spinal surgery techniques

Clinical outcome studies in spinal surgery

Development and evaluation of spinal instrumentation

PRACTICE INTERESTS AND AREAS OF SUBSPECIALIZATION

Orthopaedic and Spinal Surgery
Endoscopic & Minimally Invasive Spinal Surgery
Adult Spinal Deformity Reconstruction
Adolescent Idiopathic Scoliosis
Spinal Tumour Reconstruction
Spinal Trauma Reconstruction
Osteoporosis
Multiple Myeloma
Vertebral compression fractures

HONOURS AND AWARDS RECEIVED

Innis College Letter for Athletic Achievement. 1982

Rhea V. Scott Scholarship for Academic Achievement. 1982

Walter F. Watkins Scholarship for Academic Excellence. 1983

Faculty of Medicine Letter for Athletic Achievement. 1984

Faculty of Medicine Athletic Achievement Award. 1985

University of Toronto Intramural "T" Award. 1985

Robin Sullivan Award for Best Research Paper, University of Toronto, Orthopaedic Research Day. 1988

Accepted "Life Member" of the National Registry of Who's Who, published in the 2001 edition

Video Presentation Award Winner, American Academy of Orthopaedic Surgeons. Translaminar Screw Fixation. Annual Meeting 2004

ISADOR H. LIEBERMAN BSc MD MBA FRCS(C)
Orthopaedic & Spinal Surgeon,
Director; Minimally Invasive Surgery Center
Director; Center for Advanced Skills Training
The Cleveland Clinic Foundation,
Primary appointment; Cleveland Clinic Spine Institute
Joint appointments; Dept of Orthopaedic Surgery, Dept of Neurosurgery, Taussig Cancer Center

Dr Lieberman is a fellowship trained Orthopaedic and Spinal Surgeon who was recruited to join the Cleveland Clinic in 1997. He is board certified by the American Board of Orthopaedic Surgery, and holds specialist certification from the Royal College of Physicians and Surgeons of Canada. He completed Medical school and residency at the University of Toronto. He completed Spine surgery and Trauma surgery fellowships at the Toronto Hospital in Canada and at Queen's Medical Center in Nottingham England. He held a full time academic appointment at the University of Toronto and was on the Academic staff of the Toronto Hospital up to his recruitment to the Cleveland Clinic. He obtained his Masters degree in Business Administration from Cleveland State University.

Dr Lieberman specializes in the surgical treatment of spinal disorders. His clinical interests include; minimally invasive/endoscopic spinal surgery, adolescent and adult scoliosis, deformity reconstruction, cervical and lumbar degenerative disorders including herniated discs and stenosis, spinal tumors, infections and trauma. Dr Lieberman has a special interest in the treatment of osteoporotic compression fractures ("Kyphoplasty") and also in the treatment of the musculoskeletal manifestations of Multiple Myeloma. Dr Lieberman's research interests include; clinical outcomes in spinal surgery, biomechanics of spinal implants, and disc replacement technologies. He has also conceived and developed a number of spinal surgery instruments and implants and has seven issued and eight pending U.S. patents.

Dr Lieberman is recognized nationally and internationally for his contributions to minimally invasive/endoscopic spinal surgery and for his contributions to the treatment of osteoporotic vertebral compression fractures. Through research, clinical trials and surgical innovation he has been instrumental in advancing the use of minimally invasive spinal surgery techniques to treat herniated discs, lumbar degenerative disorders, osteoporotic vertebral compression fractures and scoliosis. He has thirty-three peer-reviewed publications and thirty-three book chapters to his credit. He has presented over 140 invited lectures at universities, hospitals, national meetings and international meetings.

From the time of his appointment Dr Lieberman has presented 85 lectures at Cleveland Clinic related conferences and meetings. He is the principal investigator in 4 peer-reviewed projects and 4 industry supported projects. He has supervised 4 resident projects two of which won resident research day prizes.

Dr Lieberman has edited a book, "MINIMAL ACCESS SPINAL SURGERY". He is senior editor for "ADVANCES IN OSTEOPOROTIC FRACTURE MANAGEMENT", and "DISC", and is a member of the editorial review boards for "SPINE", "THE SPINE JOURNAL" and the "JOURNAL of SPINAL DISORDERS & TECHNIQUES".

Dr Lieberman is also recognized nationally and internationally for his contributions to continuing medical education, teaching of medical students and residents, and the training of clinical as well as research spinal fellows. He has chaired over 40 hands on training courses teaching minimally invasive spinal surgical techniques to over 500 surgeons. He has chaired or co-chaired 4 CME courses for the American Academy of Orthopaedic Surgeons (over 200 participants). He is the co-chair of the Cleveland Clinic Hands on Spine Review Course and also co-chaired the first combined Turkish Spine Society Hands on Review Course. From 1994 on he has trained 18 clinical spine fellows and currently is supervising two post-graduate research spine fellows.

Over the last four years Dr Lieberman has been instrumental in Cleveland Clinic related administrative and development projects. He is the director of the "MINIMALLY INVASIVE SURGERY CENTER" and the director of the newly established "CENTER FOR ADVANCED SKILLS TRAINING". He was selected to be a team leader for the World Class Service initiative. He chairs the Minimally Invasive Surgery Center operations committee, and sits on the Board of Trustees Marketing committee, the International Center Advisory Board committee and the Conflict of Interest committee. He was instrumental in establishing the "Combined Multiple Myeloma Clinic" and the "Multidisciplinary Vertebral Compression Fracture Clinic". He was also instrumental in establishing "Health Link Canada" as well as the "Cayman Island Referral Program".

Along with his Cleveland Clinic related responsibilities Dr Lieberman is chairman of the "Surgical Care Committee" and vice chairman of the "Operative Coding Committee" for the North American Spine Society. He also serves on the scientific advisory board of three prominent medical device manufacturers and four start up spine companies.