

Title of Abstract: Posterolateral Endoscopic Thoracic Microdiscectomy with GPS System.

Author: Chiu, John C. M.D., FRCS, D.Sc, Director, Neurospine Surgery

Institution: California Spine Institute Medical Center, Thousand Oaks, CA 91360, USA

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Purpose: To demonstrate the safety and efficacy of outpatient based endoscopic thoracic discectomy with laser thermodyskoplasty performed for symptomatic thoracic herniated nucleus pulposus.

Materials and Methods: Since February 1996, 412 patients' (516 discs) with symptomatic thoracic discs without myelopathy, who failed at least 12 weeks of conservative care, were treated. The technique of percutaneous microdecompressive endoscopic thoracic discectomy (with laser thermodyskoplasty) with GPS (Grid Positioning System) by posterolateral approach is described. The thoracic disc levels were T1 to T12. All patients demonstrated a contained soft thoracic disc herniation on MRI or CT scans. Intraoperative thoracic discogram and pain provocative tests were positive and confirmed the disc involved.

Results: Preliminary postoperative follow-up demonstrates 90% of all patients had good to excellent and 6% fair symptomatic relief. The average time to return to work was ten days for the non-workers' compensation patients. Most of the patients received non-ablative lower laser energy application for thoracic disc shrinkage or tightening.

Conclusion: Percutaneous microdecompressive endoscopic thoracic discectomy with GPS (Grid Positioning System) and application of non-ablative lower Holmium laser energy for disc shrinkage (laser thermodyskoplasty) appears to be easy, safe and efficacious. This less traumatic, easier outpatient treatment leads to excellent results, faster recovery, and significant economic savings.

REFERENCES

1. Chiu J, Javidan N., Thacker, J., Posteriorlateral Endoscopic Thoracic Microdecompressive Discectomy . The Internet Journal of Minimally Invasive Spinal Technology. 2008 Supplement I - to IJMIST Vol 1 No 2
2. Chiu J. Posterolateral Endoscopic Thoracic Discectomy. In: Kim D, Fessler R, Regan J, eds. Endoscopic Spine Surgery and Instrumentation. New York: Thieme Medical Publisher; 2004: Chapter 11 pp 125-136.
3. Jaikumar S, Kim D, Kam A. History of minimally invasive spine surgery. Neurosurgery 2002;51 Suppl2:1-14
4. Jaikumar S, Kim D, Kam A. Minimally invasive spine instrumentation. Neurosurgery 2002;51 Suppl2:15-22
5. Perez-Cruet M, Fessler R, Perin N. Review: Complications of minimally invasive spinal surgery. Neurosurgery 2002;51 Suppl2:26-36
6. Chiu J, Clifford T, Sison R. Percutaneous microdecompressive endoscopic thoracic discectomy for herniated thoracic discs. Surg Technol Int 2002;10:266-269
7. Chiu J, Clifford T. Posterolateral Endoscopic Thoracic Discectomy: In: Savitz M, Chiu J, Rauschnig W, Yeung A, eds. The Practice of Minimally Invasive Spinal Technique: 2005 Edition, AAMISS

- Press, New City, New York, 2005: 55:p 415-420
8. Fessler R, Khoo L. Minimally invasive cervical microendoscopic foraminotomy: An initial clinical experience. *Neurosurgery* 2002;51 Suppl2:37-45
 9. Dickman C, Mican C. Thoracoscopic approaches for the treatment of anterior thoracic spinal pathology. *Barrow Neur Inst Quart* 1996;12:4-19
 10. Nicholas T and Curtis AD. Current management of thoracic disc herniation, *Cont Neurosurg* 1996;18:1-7
 11. Chiu J, Clifford T, Princenthal R. The new frontier of minimally invasive spine surgery through computer assisted technology. In: Lemke H.U, Vannier MN, Invamura RD, eds. *Computer Assisted Radiology and Surgery*. New York, NY: Springer-Verlag; 2002:233-237
 12. Simpson J. Thoracic disc herniation. *Spine* 1993;18:872-1877
 13. Schellhas KP, Pollei SR, and Dorwart RH. Thoracic discography: A safe and reliable technique. *Spine*, 1994;18:2103-2109
 14. Chiu J, Clifford T. Percutaneous endoscopic thoracic discectomy. In: Savitz MH, Chiu JC, Yeung AD, eds. *The Practice of Minimally Invasive Spinal Technique*. Richmond, VA: AAMISMS Education, LLC;2000:2216
 15. Chiu J, Clifford T. Posterolateral approach for percutaneous thoracic endoscopic discectomy. *J of Minimally Invasive Spinal Technique*. 2001;1:26-30
 16. Chiu J, Clifford T. Microdecompressive percutaneous discectomy: Spinal discectomy with new laser thermodiskoplasty for non-extruded herniated nucleus pulposus. *Surg Technol Int* 1999;8:343-351
 17. Chiu J. Posterolateral Endoscopic Thoracic Discectomy. *Lasers in Medical Science*. London: Springer-Verlag Publisher; Oct 2004: 19:57
 18. Chiu J, Posterolateral Endoscopic Thoracic Microdiscectomy,, *World Spine III: The Third Interdisciplinary Congress on Spine Care, Rio de Janeiro, Brazil, 7/31-8/3/2005, Proceedings*: pp. 2
 19. Chiu J, Clifford T, et al, Percutaneous Microdecompressive Endoscopic Thoracic Discectomy for Herniated Thoracic Discs: In, Szabo Z, Lewis J, Savalgi R, Fantini G, eds. *Surgical Technology International X, 2002 UMP, San Francisco*, pp. 266-272
 20. Chiu J, Clifford T. Percutaneous Endoscopic Thoracic Discectomy. In: Savitz M, Chiu J, Yeung A, eds. *The Practice of Minimally Invasive Spinal Technique: 1st Edition 2000, AAMISM Education, Richmond, VA, 2000: 24; p 2216*
 21. Chiu J, Sheng Chen J. Thoracic herniated discs with 13 ribs: Case report. *J Minim Invasive Spinal Tech*. 2002;2(1):39-40
 22. Savitz MH. Same day microsurgical arthroscopic lateral approach laser assisted (small) fluoroscopic discectomy. *J Neurosurgery* 1994;80:1039-1045
 23. Chiu J, Posterior Lateral Endoscopic Thoracic Discectomy with Laser Thermodiskoplasty, Presented at the AAMISMS/MISU China 2007, Shanghai, Beijing, March 30-April 7, 2007, *Proceedings*; pp 11
 24. Boriani S, Biagini R, Delure F. Two level thoracic disc herniations. *Spine* 1994; 21: 2461-2466
 25. Coleman R, Hamlyn P, Butler P. Anterior spinal surgery for multiple thoracic disk herniations. *Br J Neurosurg* 1990;4:541-543
 26. Dickman C, Mican C. Multilevel anterior thoracic discectomies and anterior interbody fusion using a microsurgical thoracoscopic approach. Case report. *J Neurosurg* 1996;84:104-109
 27. Shikata J, Yamamuro T, Kashiwagi N. Multiple thoracic disc herniations: Case report. *Neurosurgery* 1988;22:1068-1070
 28. Chiu J, Clifford T. Multiple herniated discs at single and multiple spinal segments treated with endoscopic microdecompressive surgery. *J Min Inv Spinal Tech* 2001; 1:15-19
 29. Clifford T, Chiu J, Rogers G. Neurophysiological monitoring of peripheral nerve function during endoscopic laser discectomy. *J Min Inv Spinal Tech* 2001;1:54-57
 30. Chiu J, Clifford T, Savitz M A et al. Multicenter study of percutaneous endoscopic discectomy (lumbar, cervical and thoracic). *J Min Inv Spinal Tech* 2001;1:33-37
 31. Chiu J, Savitz M. Multicenter Study of Percutaneous Endoscopic Discectomy: In: Savitz M, Chiu J, Rauschnig W, Yeung A, eds. *The Practice of Minimally Invasive Spinal Technique: 2005 Edition, AAMISS Press, New City, New York, 2005: 94:p622-626*