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Video-Assisted Thoracoscopic Surgery for Thoracic Disc Disease

Classification and Outcome Study of 100 Consecutive Cases With a 2-Year Minimum Follow-up Period

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Study Design. Prospectively collected data from regular clinical follow-up evaluations were tabulated, analyzed, reviewed using a patient self-reported questionnaire.

Objective. To develop a classification system and present the long-term functional outcome of video-assisted thorascopic surgery for refractory thoracic disc disease.

Summary of Background Data. Recent studies have found an 11.1% to 14.5% prevalence of thoracic disc herniations. Surgical approaches have included laminectomy, pediculectomy, costotransversectomy, lateral extracavitary, transverse arthropediculectomy, transthoracic-transpleural thoracotomy, and thoracoscopy. Recent reports have documented encouraging early results with video-assisted thorascopic surgery for thoracic disc herniations. Comparisons between thoracoscopy and open thoracotomy have demonstrated improvement in postoperative pain and morbidity with the use of endoscopic techniques.

Methods. This study included 100 consecutive patients (45 women and 55 men) with an average follow-up evaluation of 4 years (range, 2–6 years). The average age of the patients was 42 years (range, 22–76 years). The average duration of symptoms was 26 months (range, 6–96 months), and 18 patients had undergone prior spine surgery. Patients were graded as follows according to the presenting symptoms (Table 1): Grade 1 (pure axial; n = 28), Grade 2 (pure radicular; n = 5), Grade 3A (axial and thoracic radicular; n = 38), Grade 3B (axial with lower leg pain; n = 19), Grade 4 (myelopathic; n = 8), or Grade 5 (paralytic = 2).

Results. A total of 117 discs were excised in 100 patients. Of the 40 patients who underwent fusion, 27 had autologous rib struts and 13 had threaded fusion. The mean operative time was 173 minutes, blood loss 259 mL, average ICU stay less than 1 day, and average hospital stay 4 days. Minor complications occurred in 21 patients, all of which resolved with no untoward effect. No patient's neurologic status worsened. Four patients underwent a secondary fusion, and a pseudarthrosis developed in one patient. Clinical success was defined objectively as an improvement in Oswestry score of 20% or more at 2 years and at final follow-up assessment, as compared with the preoperative Oswestry score. Overall, objective clinical success was observed at 2 years in 73% of the patients, and at final follow-up assessment in 70% of patients. The average percentage of improvement in Oswestry scores was most marked in Grade 4 patients (myelopathy; 60%), followed by Grade 3A patients (axial and thoracic radicular pain; 37%), Grade 3B patients (axial with leg pain; 28%), and Grade 1 patients (pure axial; 24%). The Oswestry disability score (Table 2) and back pain visual analog score (Table 3) also were significantly improved ($P < 0.05$) at 2 years and at final follow-up assessment in these patients. In the Grade 2 patients, those pure thoracic radicular pain, Oswestry scores initially improved significantly up to 1 year ($P < 0.05$). At 2 years, no significant improvement could be shown, and four of the five Grade 2 patients reported increased axial pain as their main symptom at the final follow-up assessment. Significant improvement also was seen in patients with no prior spine surgery and patients with preoperative Oswestry disability scores greater than 50. Of the 68 patients who responded to the final questionnaire, 12 rated the procedure as excellent, 37 as good, 11 as fair, and 8 as poor. Also, 57 (83.8%) of these 68 patients were satisfied and indicated they would recommend the surgery. Of the 36 patients at the final follow up assessment who had severe disability, 34 (94%) were satisfied, as compared with 23 of the 32 patients (72%) who had presented with milder disability.

Conclusions. The clinical classification system helps in differentiating different presentations of thoracic disc disease and their final outcome. Video-assisted thorascopic surgery appears to be a safe and efficacious method for the treatment of refractory symptomatic thoracic disc herniations. The current data suggest that the procedure has an acceptable long-term outcome, with an 84% overall subjective patient satisfaction rate, and with objective long-term clinical success achieved in 70% of patients. [Key words: clinical classification, functional outcome, thoracic disc disease, thoracoscopy, VATS] **Spine 2002; 27:871–879**

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The incidence of clinically significant thoracic disc herniation, according to results from computed tomographic (CT) scans, is estimated to be approximately one patient per 1 million individuals,[9] or according to Arce and Dohrmann,[1] 0.25% to 0.75% of all disc ruptures. Recent studies using magnetic resonance imaging (MRI) and postmyelographic CT scanning have found an 11.1% to 14.5% prevalence of thoracic disc herniations.[2,44]

Unfortunately the patient with thoracic disc herniation can present with a variety of nonspecific symptoms leading to a wrong or delayed diagnosis.[5,11,22,43] Diagnosis frequently is delayed until signs and symptoms of myelopathy develop.[32] Bruckner et al[7,8] have shown that "benign thoracic pain," a clinical entity producing middorsal or unilateral chest pain, probably is caused by thoracic disc disease. Pain, if present, can vary in type,