Video-Assisted Thoracoscopic Surgery for Thoracic Disc Disease
Classification and Outcome Study of 100 Consecutive Cases With a 2-Year Minimum Follow-up Period

Neel Anand, MD, McOrth, and John J. Regan, MD

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 thoracoscopic 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, pedicle resection, corpectomy, lateral extracavitary, transverse arthrodesis, transpleural thoracoscopic, and thoracoscopy. Recent reports have documented encouraging early results with video-assisted thoracoscopic surgery for thoracic disc herniations. Comparisons between thoracoscopic and open thoracotomy have demonstrated improvement in postoperative pain and morbidity with the use of endoscopic techniques.

Methods. This study included 100 consecutive patients (64 women and 36 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 = 22), Grade 2 (pure radicular; n = 25), Grade 3A (axial and radicular; n = 38), Grade 3B (axial and radicular 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 strut and 13 had threaded fusion. The mean operative time was 173 minutes, blood loss 257 mL, average ICU stay 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 radicular pain; 32%), Grade 3B patients (axial 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 those 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 prooperative Oswestry disability scores greater than 60. Of the 88 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 (63.8%) of these 88 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 thoracoscopic 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, thoracoscopic, VATS Spine 2002; 27:871–879

The incidence of clinically significant thoracic disc herniation, according to results from computed tomographic (CT) scans, is estimated to be approximately 1 patient per 1 million individuals, or according to Arce and Dohrmann, 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. Unfortunately the patient with thoracic disc herniation can present with a variety of nonspecific symptoms leading to a wrong or delayed diagnosis. Diagnosis frequently is delayed until signs and symptoms of myelopathy develop. Bruckner et al have shown that "benign thoracic pain," a clinical entity producing mid-dorsal or unilateral chest pain, probably is caused by thoracic disc disease. Pain, if present, can vary in type,