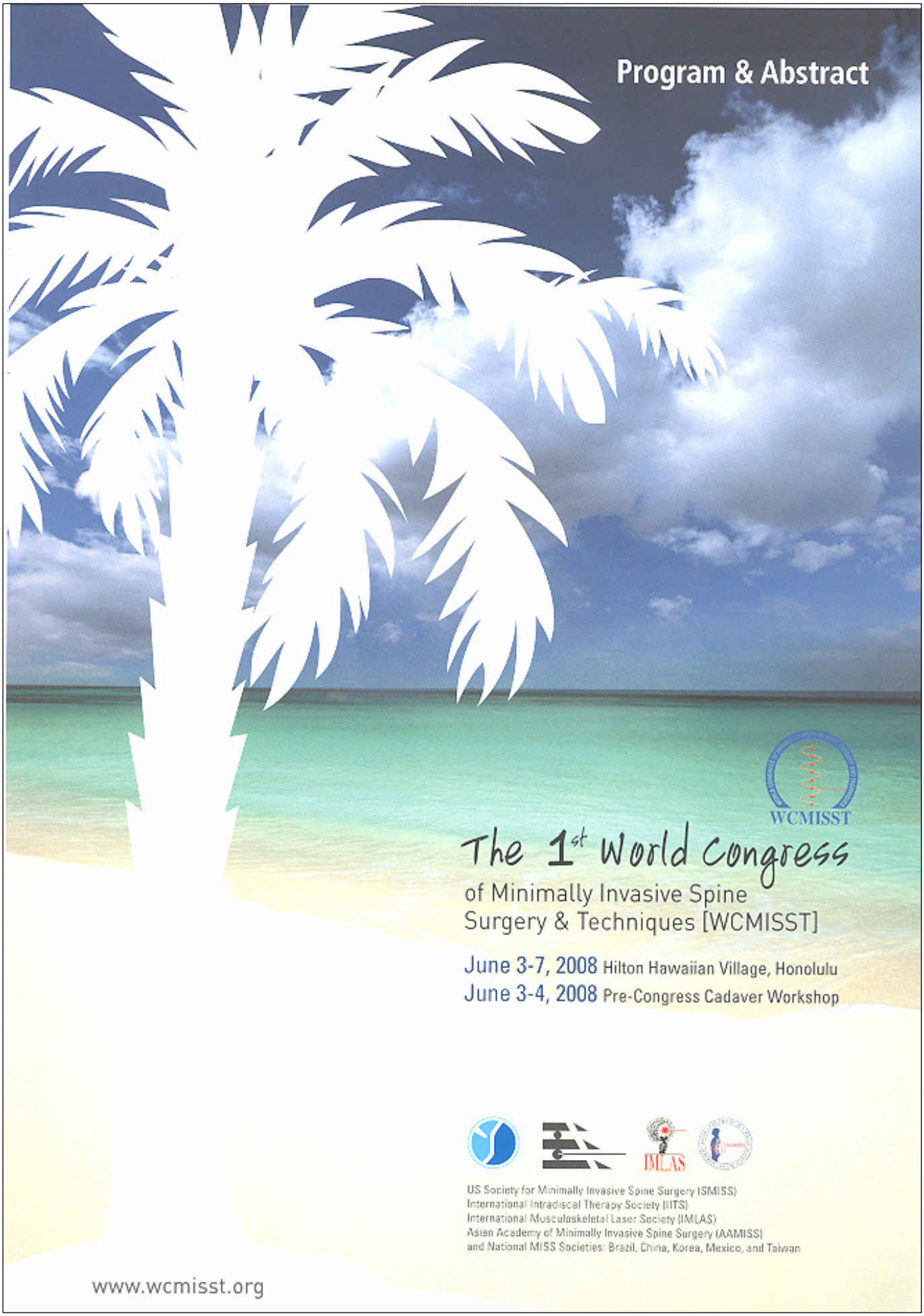
Program & Abstract
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[10103]

Expandable single implant for foraminal or lateral stenosis in extreme collapsed lumbar discs: Transforaminal endoscopic stenosis surgery (TESS)

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Purpose: The purpose of this paper is to present a new endoscopic surgical procedure for extremely collapsed discs (>50% of total disc height) secondary to DDD, that we call the transforaminal endoscopic stenosis surgery (TESS). This technique is used to ream out the foramen under direct endoscopic vision and then implant an expandable device (B-Twin) in the intervertebral space through a posterolateral transforaminal approach. The implant is used here only as a disc spacer, that expands the foramen and provides additional vertebral stability in case of spondylolisthesis up to grade 1.

Methods: Sixtyfive patients with DDD underwent TES surgery between March 2005 and July 2007. 44 patients underwent TES surgery at Centro Médico Teknon in Barcelona, (Spain) and 21 patients at Wooridul Spine Hospital, Seoul (South Korea). All 65 procedures were performed by posterolateral transforaminal approach under direct endoscopic vision. Bone reamers were used in order to perform foraminoplasty to allow the access to the intradiscal collapsed space. Implants were then placed into the intervertebral space in order to increase or maintain the disc's height. Pain was scored pre- and post-operatively with a Visual Analog Scale (VAS) and the disability was also evaluated pre- and post-operatively with the Oswestry24 disability index (ODI) for every patient.

Results: The outcome of group D (double implant, 28 cases) was: 16 excellent (57.1%), 7 good (25%), 3 fair (10.7%), 2 poor (7.2%). The outcome of group S (single implant, 37 cases) was: 24 excellent (64.9%), 8 good (21.6%), 3 fair (8.1%), 2 poor (5.4%). The VAS and ODI scores did not show significant differences ($p<0.05$) between the scores of both groups.

Conclusions: A new surgical technique (TESS) using a new endoscopic 3.5mm bone reamer for undercutting the superior facet under direct endoscopic vision is presented here. This proves to be useful for narrow foramens in which the access is generally difficult. Expandable implants are additionally placed in order to partially restore disc height. Placing one implant instead of two shows a similar outcome with no significant difference in the VAS and ODI scores.

Key words: expandable implant, endoscopic surgery, stenosis, collapsed disc, endoreamer

[10146]

Technique & indications of endoscopic lumbar foraminal decompression: A retrospective case series analysis and review of the literature

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Purpose: Endoscopic microdiscectomy is growing in popularity for the removal of lumbar disc herniations. Recent advances in surgical techniques allow for percutaneous endoscopically assisted bony decompression of the spinal canal. The purpose of this stuyd was to analyze and describe appropriate surgical indications for endoscopically performed foraminal and lateral recess decompression.

Methods: A prospective study of 40 consecutive patients undergoing percutaneous endoscopic foraminotomy and microdiscectomy at 42 levels was conducted with intent of identifying appropriate indications of endoscopic foraminotomy in patients with foraminal and lateral recess stenosis. Preoperatively, disc migration was graded by direction and distance from the disc space according to Lee's radiologic four-zone classification. Bony spinal foraminal stenosis and lateral recess stenosis was graded on preoperative MRI and CT scans into mild, moderate, and severe by dividing the lumbar neuroforamen into three zones: a) entry zone, b) mid zone, and c) exit zone. Surgical outcomes were classified according to the Macnab criteria. In addition, reduction in VAS scores were assessed.

Results: According to the Macnab criteria, excellent and good results were obtained in 65% (26/40) of the patients. The mean VAS score decreased from 7.2 ± 1.4 preoperatively to 2.3 ± 1.6 at the final follow-up ($P<0.01$). Thirteen patients had recurrence of their symptoms. There were no approach-related complications. Clinical failures occurred in patients with bony stenosis in the lateral recess and entry zone of the neuroforamen.

Conclusions: Foraminal and lateral recess decompression is feasible through the percutaneous endoscopic approach and works well in patients with bony stenosis in the mid and exit zone of the neuroforamen. Current endoscopic instrumentation does not permit adequate decompression of the lateral recess and the neuroforaminal entry zone using the transforaminal approach. In cases of lateral recess height of less than 3 mm, decompressive surgery from a midline approach should be considered.

Key words: spinal stenosis, transforaminal approach, lateral recess stenosis, outpatient spinal surgery

[10147]

Transforaminal endoscopic decompression: Clinical results of two clinical cohort studies

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Purpose: Endoscopic microdiscectomy is growing in popularity for the removal of lumbar disc herniations. Recent advances in surgical techniques allow for percutaneous endoscopically assisted bony decompression of the spinal canal. The purpose of this study was to compare clinical results in two separate outpatient spine centers with the transforaminal endoscopic lumbar decompression for disc herniations and foraminal stenosis.

Methods: A retrospective study of 216 consecutive patients undergoing single-level transforaminal endoscopic decompression was conducted. Cohort A included 40 patients (26 females, 14 males; age 52.4 [24-86]), and cohort B included 176 patients (73 females, 103 males; age 45±14 [17-83]).

Results: The follow-up period in both cohorts ranged from 6-28 months. Response rate in cohort A was 92.5% (37 patients), and in cohort B 76% (127 patients). In Both cohorts, the majority of surgeries were performed at the L4/5, and L5/S1 level. There was a higher percentage of foraminal stenosis in cohort A (56%) than in cohort B (15%). In cohort A, 56% of patient showed minimal disability using Oswestry disability scores. This compared to 80% in cohort B. There were 3/40 reoperations in cohort A, and 12/176 in cohort B. Complications included transitory headaches and one transitory nerve palsy that resolved within 8 weeks (cohort B). There were no infections in either groups.

Conclusions: This study indicates that outcomes of transforaminal endoscopic decompression are less favorable for foraminal stenosis compared to herniated nucleus pulposus. The learning curve is steep. Initially, clinical complications should be expected. Outcomes improve with continued surgical practice.

Key words: transforaminal, endoscopic, decompression, clinical results, outpatient spinal surgery

[10156]

The learning curve in foraminal endoscopic discectomy

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Purpose: We sought to construct a general methodology for objectively quantifying the learning curve associated with any surgical technique and to determine the number of cases needed to achieve a success rate of 90% for the technique of transforaminal endoscopic lumbar discectomy. To our knowledge, no other studies have observed the learning curve of endoscopic lumbar discectomy by transforaminal approach.

Methods: We studied the learning curve of 1 orthopedic surgeon who had had experience performing open spine surgery and knee and shoulder arthroscopic surgery, but not endoscopic spine surgery. We studied 144 patients who had an endoscopic lumbar discectomy by transforaminal approach (using the Yeung Endoscopic Surgery System). We evaluated results with modified MacNab criteria and used a questionnaire to determine the patients' satisfaction with the surgery. The average follow-up period was 24 months. We used an algorithm, analyzing the patient outcome and the surgical time evolution, to determine the case at which a success rate of 90% good/excellent results was reached.

Results: The cut for the calculated learning curve was placed at case no. 72; i.e., the results in the first 72 cases were 75% good/excellent, 18% fair, and 7% poor, and the results in the following 72 cases were 90.3% good/excellent, 9.7% fair, and 0% poor.

Conclusions: A methodology to calculate the learning curve of a surgical procedure was developed. A learning curve of 72 cases was needed to reach the goal of 90% of good/excellent results for transforaminal endoscopic lumbar discectomy.

Key words: learning curve, endscopic surgery, transforaminal approach

Congress Outline

Combining Societies & Cooperating Societies

Combining Societies



2008 Annual Meeting of US Society for Minimally Invasive Spine Surgery (US SMISS)
21st Congress of International Intradiscal Therapy Society (IITS)
15th Congress of International Musculoskeletal Laser Society (IMLAS)
2008 Annual Meeting of Asian Academy of Minimally Invasive Spine Surgery (AAMISS)
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Cooperating Societies


Sociedad Interamericana de Cirugia Minimamente Invasiva de Coluna
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Brazilian Minimally Invasive Spine Society (BMISS)
Sociedad Mexicana de Minima Invasion de Columna (SOMMIC)
Taiwan Society of Minimal Invasive Spine Surgery (TSMISS)
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