« Letter to Editor»

User-friendly database software for the analysis of low back pain base on Japanese Orthopedic Association Back Pain Evaluation Questionnaire

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Abstract

The present study developed a user-friendly computerized medical records database base on Japanese Orthopedic Association Back Pain Evaluation Questionnaire (JOABPEQ) for low back pain disorders.

The JOABPEQ questionnaire contains five scales: Low back pain, lumbar function, walking ability, social life function and mental health. A computerized database called low back pain database software (LBPDS) was written with Visual C++ language software. The LBPDS is including: demographics, lumbar spinal stenosis, spondolysthesis, thoracolumbar fracture, disc herniation, chronic low back pain, morphology of the dural sac on MRI, thoracolumbar injury classification system (TLICS), and lumbar levels. The data of LBPDS stored in the Microsoft Excel, and the ability to transfer SPSS software environment would be possible. Multi-center low back pain studies would be conceivable.

A total of 96 patient's data with aged 46 ± 8 (17 to 82 years) were entered into the LBPDS and subjected to various analyses. Overall the LBPDS demonstrated acceptable reliability and validity. The LBPDS be used in departments of neurosurgery, orthopedic and physiotherapy.

It seems that the low back pain database software is certified. The use of this software is recommended.

Keywords: japanese orthopedic association back pain evaluation questionnaire, low back pain, low back pain software, low back pain database.

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Introduction

Although back pain is ancient history, but still about 80 percent of people are experiencing back pain at least once in their life time (1). The prediction is one of the concerns of patients and physicians in terms of lumbar pain outcome (2). Epidemiology and patient's health information management are two important factors which complement each other (3). Although, health information systems are available in some hospitals to improve patient's quality of service, however these systems have no enough capability for essential professional projects (4). The present study aimed to introduce a database application for registration of patients with back pain applying in clinical research in order to better understanding of epidemiology of these patients. One of the indicators to evaluate back pain is JOABPEQ's questionnaire. This index has 25 questions, based on the weight of each question evaluating 5 patients' parameters. The ranking of this index was confirmed and its validity and acceptability were assessed (5, 6). This study was conducted to produce the software assisting researchers to categorize lumbar pain. Model database language was written based on VC++ (Visual C + +). Software including seven Files; 1- JOA.exe, 2 - DB.csv and 5 files of DLL. Selecting the type of disease can also be accessed any disease subsets that include: 1 - lumbar stenosis: MRI morphology and surface features involved, 2 – Lumbar disc herniation: disc extrusion, protruded disc , lateral disc herniation and involved levels, 3 – spondolysthesis: four grade levels 1 to 4 can be selected, 4 - Thoracolumbar fractures: Thoracolumbar Injury Classification and Severity Score (TLICS) a score ranging from 1 to 10 can be selected as well as the level of involvement, 5 - chronic back pain can be programmed to select medicine type application. Selecting the type of disease and button the "Aver. DB " the overall average rating of the patient's "JOABPEQ" can be used before and after surgery to view the entire database. Selecting the patient's name and clicking the "printer" bottom Pdf file of the report can be printed and be applied in legal matters particularly forensics issues. Select a file of DB.csv with all the information on each patient the file can be observed in the Excel and data is transferrable to the SPSS software.

Benefits of the present software include: 1 - Ease of use, user-friendly software, despite having advanced features. 2 – Entering the data volume is independent of speed and efficiency (scalability), 3 – Applicable presentation of scientific and practical reports, 4 - Connectivity to Health Information System (HIS) to carry out hospitals' researches in the entire country. This software has potential capability to aggregate data from several centers for extra data analysis processing. As well as the software can be used in neurosurgery, orthopedics and physiotherapy centers in order to categorize patients' information. This application could be run on Windows XP, Vista and Windows 7 and requires a Pentium (Pentium CPU) or equivalent PC for better performance. The pilot study was successfully conducted in 96 patients.

Patients with spondolysthesis have got 5 indices of JOABPEQ method. The pre-operative information of "Low back pain", "Lumbar function", "Walking ability", "Social life function", "Mental health", was obtained with 68.3, 7.0, 91.8, 90.0, and 78.0% respectively. Other back pain diseases scored 66.6, 86.4, 92.6, 92.0 and 83.0%, correspondingly. Symbolic database applications are shown in Figures 1 to 5. Since the recording of this program registered, so, interested readers could get the necessary information from the author via email. Once, the program being patent

the software manual program for this model would be available to those interested researchers. Different studies using a variety of tests and questionnaires have assessed the severities of pain in low back pain. The most famous include: VAS, SSS, ODI, SWT, OCS, and NCOS (7). The JOABPEQ scale has been introduced in 2007 (8) and since then its effect has repeatedly been report in many documents. This questionnaire has been applied traditionally in many investigations. However, it has usually not been accounted in the software's (14-5). From the time when JOABPEQ has been introduced by the Japanese Orthopaedic Association (8), the instance of the database software JOABPEQ rank was not come into view in English literature reviews. However, the question is why this program software (database) has potential capability to assist the researchers in the evaluation of patients' treatment with low back pains. For the time being the data collection for the patients with low back pains has some limitations in the pain clinics centers, which include; 1 - Lack of appropriate standardized techniques in applied questionnaires. 2 – The studies have been carried out only on the basis of patient's satisfaction and surgeon preference. In addition, the surgery achieved results are not defined based on obtained data from postoperative questionnaires. The obtained results from questionnaire after surgery indicating the performed quality consequences and can be used to assess the outcome of surgery compared with preoperative applied questionnaire. 3 – Patients' file records; particularly in surgical centers are faced with many difficulties.

The advantages of database software applications including: 1 - Checking more on how to enter patient information and quick calculations performing. 2 – Avoiding user errors in the use of information. 3 - Adding automatic calculation ability to schedule using scripting. 4- Queries and exclusive reports construction. 5 - Use a shared partner's database. 6 - The use of intermediate data formats (*e.g.* Excel) to transfer data between these applications (*e.g.* Excel to SPSS). 7- Evaluation of rare Patients, with comparisons between the all different groups of patients with low back pain and producing the case reports. 8 – Considering the information saving in a database query for the long run; the questionnaire has potential capacity to be native and modified. 9 – With one-time data entry they can be permanently used in scientific reports. 10 - Do not need to fill out the completed questionnaires by the physician acting, only to be managed. 11 - To flow up the patients, the questionnaire can fill out using phone call and the patient in attendance does not necessarily require. 12 - With regard to the five sub-groups related to the questionnaire if the patients' information is available, the valid clinical and research data can also be offered. 13 - Based on the accessible information in the database the physicians and research projects can be presented. 14 – Carrying out studies on the epidemiology of back pains. 15 – Surveying on the obtained database results for practical studies.

It seems that the database software based on ranging of JOABPEQ is a clever method and the quantitative measurement of information storage is valuable in patients with low back pain. Therefore, neurosurgeons, orthopedic surgeons and physical therapists can conveniently apply the software in their clinics in order to evaluate promptly patients' matters. As well as it should bear in mind that the software features evaluate the patients' legal issues to the best deliberation of the patient and physician point of views. The limitation of this study is that the software program was written on Windows and if it was written on the network (Web) it would functionally have more capability.

Conclusion

It seems that the software has validity and reliability and taking into consideration the shortcomings of data collection of other methods, the application of this software is recommended.

Figure 1: Facades software back pain

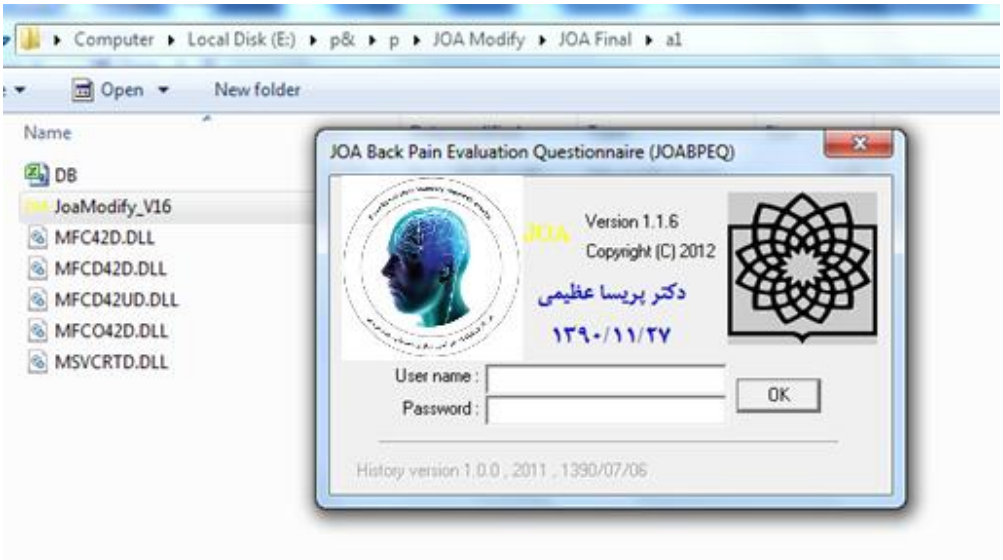
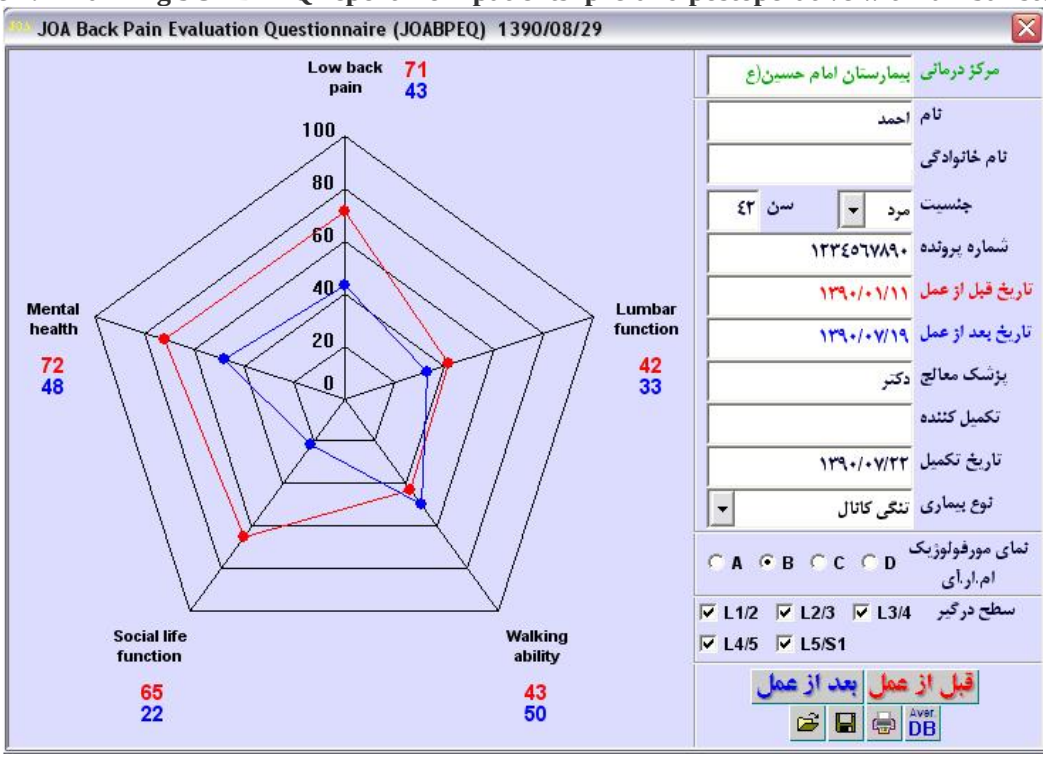
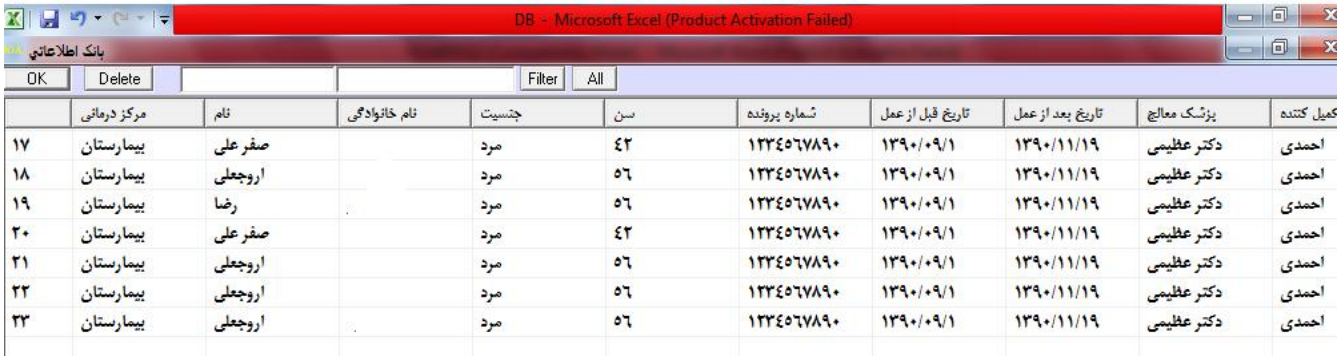


Figure 2: A ranking JOABPEQ report from patients' pre-and postoperative with lumbar stenosis



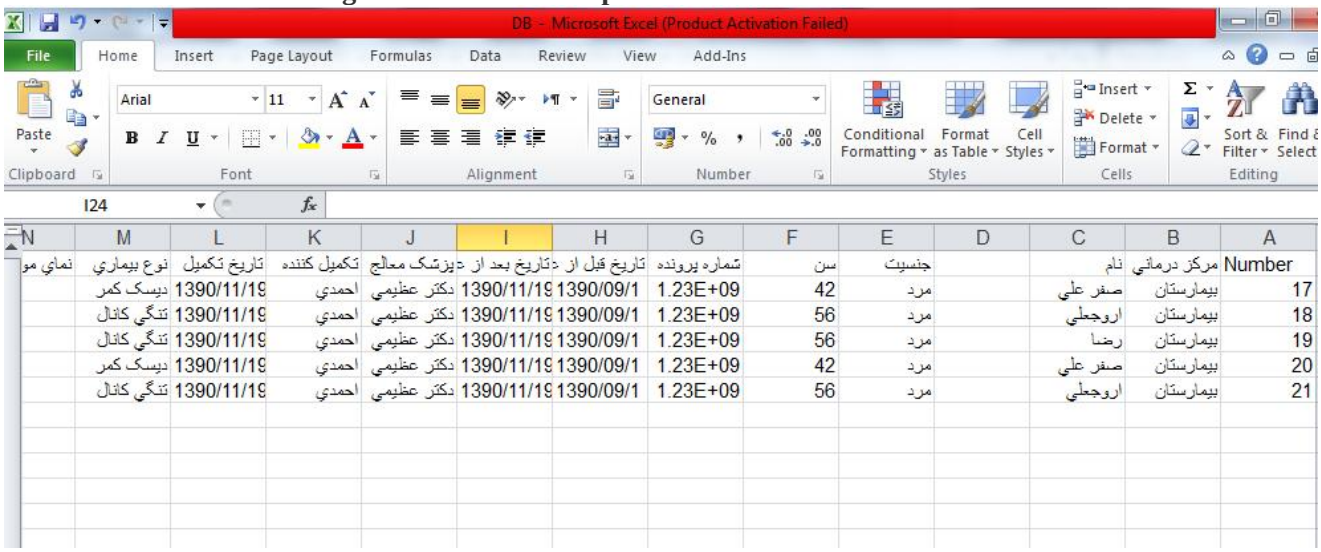
☃☃The red characteristics shows pre-operation and blue show post-operation.

Figure 3: Characteristics of patients in Database Software



	مرکز درمانی	نام	نام خانوادگی	جنسیت	سن	شماره پرونده	تاریخ قبل از عمل	تاریخ بعد از عمل	پزشک معالج	تکمیل کننده
۱۷	بیمارستان	صفر علی		مرد	۴۲	۱۲۳۴۵۶۷۸۹۰	۱۳۹۰/۰۹/۱	۱۳۹۰/۱۱/۱۹	دکتر عظیمی	احمدی
۱۸	بیمارستان	اروجعلی		مرد	۵۶	۱۲۳۴۵۶۷۸۹۰	۱۳۹۰/۰۹/۱	۱۳۹۰/۱۱/۱۹	دکتر عظیمی	احمدی
۱۹	بیمارستان	رضا		مرد	۵۶	۱۲۳۴۵۶۷۸۹۰	۱۳۹۰/۰۹/۱	۱۳۹۰/۱۱/۱۹	دکتر عظیمی	احمدی
۲۰	بیمارستان	صفر علی		مرد	۴۲	۱۲۳۴۵۶۷۸۹۰	۱۳۹۰/۰۹/۱	۱۳۹۰/۱۱/۱۹	دکتر عظیمی	احمدی
۲۱	بیمارستان	اروجعلی		مرد	۵۶	۱۲۳۴۵۶۷۸۹۰	۱۳۹۰/۰۹/۱	۱۳۹۰/۱۱/۱۹	دکتر عظیمی	احمدی
۲۲	بیمارستان	اروجعلی		مرد	۵۶	۱۲۳۴۵۶۷۸۹۰	۱۳۹۰/۰۹/۱	۱۳۹۰/۱۱/۱۹	دکتر عظیمی	احمدی
۲۳	بیمارستان	اروجعلی		مرد	۵۶	۱۲۳۴۵۶۷۸۹۰	۱۳۹۰/۰۹/۱	۱۳۹۰/۱۱/۱۹	دکتر عظیمی	احمدی

Figure 4: View of back pain in database software Microsot Excel



	A	B	C	D	E	F	G	H	I	J	K	L	M	N
	Number	مرکز درماني	نام		جنسيت	سن	شماره پرونده	تاريخ قبل از	تاريخ بعد از	پزشک معالج	تکميل کننده	تاريخ تکميل	نوع بيماري	نماي مو
1	17	بيمارستان	صفر علي		مرد	42	1.23E+09	1390/09/1	1390/11/19	دکتر عظيمي	احمدي	1390/11/19	ديسک کمر	
2	18	بيمارستان	اروجعلي		مرد	56	1.23E+09	1390/09/1	1390/11/19	دکتر عظيمي	احمدي	1390/11/19	تنگي کانال	
3	19	بيمارستان	رضا		مرد	56	1.23E+09	1390/09/1	1390/11/19	دکتر عظيمي	احمدي	1390/11/19	تنگي کانال	
4	20	بيمارستان	صفر علي		مرد	42	1.23E+09	1390/09/1	1390/11/19	دکتر عظيمي	احمدي	1390/11/19	ديسک کمر	
5	21	بيمارستان	اروجعلي		مرد	56	1.23E+09	1390/09/1	1390/11/19	دکتر عظيمي	احمدي	1390/11/19	تنگي کانال	

Figure 5: Preoperative JOABPEQ questionnaire along with answer


بعد از عمل
Low back pain : 43
(۱-۱) برای تسکین کمر درد شما اغلب وضعیت خود را تغییر می دهید؟۱
(۱-۲) بدلیل کمر درد شما بیش از حد معمول استراحت می کنید؟۳
(۱-۳) قسمت تحتانی کمر شما تقریبا همیشه دردناک است؟۱
(۱-۴) بدلیل کمردرد شما نمی توانید براحتی بخوابید؟۳
(اگر شما به دلیل درد قرص خواب آور مصرف می کنید جواب خیر را انتخاب کنید.)
Lumbar function : 33
(۲-۱) بدلیل کمر درد شما بعضی اوقات از دیگران برای انجام بعضی امور کمک می گیرید؟۱
(۲-۲) بدلیل کمر درد، شما از خم شدن به جلو یا جمع کردن زانوها اجتناب می کنید؟۱
(۲-۳) بدلیل کمر درد ، مشکل در بلند شدن از روی صندلی دارید؟۳
(۲-۴) بدلیل کمر درد، غلت زدن در تخت خواب برای شما سخت است؟۱
(۲-۵) بدلیل کمر درد، شما در پوشیدن جوراب مشکل دارید؟۱
(۲-۶) آیا شما در هر یک از حرکات زیر مشکل دارید؟۳
شامل: خم شدن به جلو، زانو زدن یا خمیده راه رفتن
Walking ability : 50
(۳-۱) بدلیل کمر درد، شما فقط مسافت کوتاهی راه می روید؟۱
(۳-۲) بدلیل کمر درد شما بیشتر روز می نشینید؟۱
(۳-۳) بدلیل کمردرد ، شما آهسته تر از معمول از پله ها بالا می روید؟۱
(۳-۴) آیا در بالا رفتن از پله مشکل دارید؟۳
(۳-۵) آیا در راه رفتن بیش از ۱۵ دقیقه مشکل دارید؟۳
Social life function : 22
(۴-۱) بدلیل کمردرد، این روزها شما کارهای روتین منزل را انجام نمی دهید؟۳
(۴-۲) آیا شما فعالیت های شغلی و معمول خود را آنگونه که دوست دارید، نمی توانید انجام دهید؟۳
(۴-۳) آیا انجام کارهای معمول خود را بدلیل درد به تعویق می اندازید؟۱
Mental health : 48
(۵-۱) بدلیل کمر درد شما بیشتر اوقات از دست دیگران عصبی می شوید؟۳
(۵-۲) در حال حاضر وضعیت سلامتی شما چگونه است؟۳
(۵-۳) آیا شما دلسرد و افسرده هستید؟۳
(۵-۴) آیا شما احساس خستگی می کنید؟۵
(۵-۵) آیا شما احساس خوشحالی می کنید؟۱
(۵-۶) آیا فکر می کنید وضعیت سلامتی مطلوبی دارید؟۵
(۵-۷) آیا احساس می کنید سلامتی شما رو به بدتر شدن است؟۱
OK

Refrences

1-Hoy D, Brooks P, Blyth F, Buchbinder R. The Epidemiology of low back pain. Best Pract Res Clin Rheumatol. 2010;24(6):769-81.
2-Friedman BW, Mulvey L, Davitt M, Choi H, Esses D, Bijur PE, Gallagher EJ. Predicting 7-day and 3-month functional outcomes after an ED visit for acute nontraumatic low back pain. Am J Emerg Med. 2012;30(9):1852-9
3-Watzlaf VJM. Research and epidemiology. In: Abdelhark M, Grostick S (editors). Health Information Management of strategic research. 2nd ed. Saunders; 2001. P.342–65.
4-Lippeveld T, Bodart C, Sauerborn R. (Editors). Design and implementation of Health Information System. World Health Organization. 2000.
5-Fujiwara A, Kobayashi N, Saiki K, Kitagawa T, Tamai K, Saotome K. Association of the Japanese Orthopaedic Association Score With the Oswestry Disability Index, Roland- Morris Disability Questionnaire, and Short-Form 36. Spine . 2003 15;28(14):1601-7.
6-Azimi P, Shahzadi S, Montazeri A. The Japanese Orthopedic Association Back Pain Evaluation Questionnaire (JOABPEQ) for low back disorders: a validation study from Iran. J Orthop Sci. 2012; 17(5):521-5.
7-Roland k.,et al,The Reliability of the shuttle walking test,the swiss spinal stenosis questionnaire,the oxford spinal stenosis score,and the oswestry disability index in the assessment of patients with lumbar spinal stenosis. Spine 2002;27:84-91.
8-Inoue S, Kataoka H, Tajima N, et al. Assessment of treatment for low back pain. J Jpn Orthop Assoc 1986;60:391– 4.
9-Yorimitsu E, Chiba K, Toyama Y, Hirabayashi K . Long-term outcomes of standard discectomy for lumbar disc herniation: a follow-up study of more than 10 years. Spine 2001;26(6):652–7.
10-Dai LY, Zhou Q, Yao WF, Shen L. Recurrent lumbar disc herniation after discectomy: outcome of repeat discectomy. Surg Neurol. 2005;64(3):226-31.
11-Kasai Y, Inaba T, Akeda K, Uchida A. Tadpole system as new lumbar spinal instrumentation. J Orthop Surg Res. 2008 ;12;3:41.
12-Tsutsumimoto T, Shimogata M, Yoshimura Y, Misawa H. Union versus nonunion after posterolateral lumbar fusion: a comparison of long-term surgical outcomes in patients with degenerative lumbar spondylolisthesis. Eur Spine J. 2008; 17(8): 1107–12.
13-Endo K, Suzuki H, Tanaka H, Kang Y, Yamamoto K. Sagittal spinal alignment in patients with lumbar disc herniation. Eur Spine J 2010; 19(3):435–8.
14-Yamada H, Yoshida M, Hashizume H, Minamide A, Nakagawa Y, Kawai M, Iwasaki H, Tsutsui S. Efficacy of Novel Minimally Invasive Surgery Using Spinal Microendoscope For TreatingExtraforaminal Stenosis at the Lumbosacral Junction. J Spinal Disord Tech. 2011; 0(0): 1-9.