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Therapeutic Feasibility of Full Endoscopic Decocmpression in One-to Three-Level Lumbar Canal Stenosis Via a Single Skin Port using a New System, Percutaneous Stenoscopic Lumbar Decompression

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Introduction

This new endoscopic system, PSLD, Percutaneous stenoscopic lumbar decompression, optimized for lumbar stenosis is fitted for a surgeon to perform laminectomy, flavectomy, foraminotomy, and discectomy and is designed to provide an easy handling during the unilateral approach and bilateral decompression as well as multi-level decompression. The system composed of 8.0mm of the working sleeve and 5.5mm of the working channel in diameter, and 10° of the field of view.

Methods

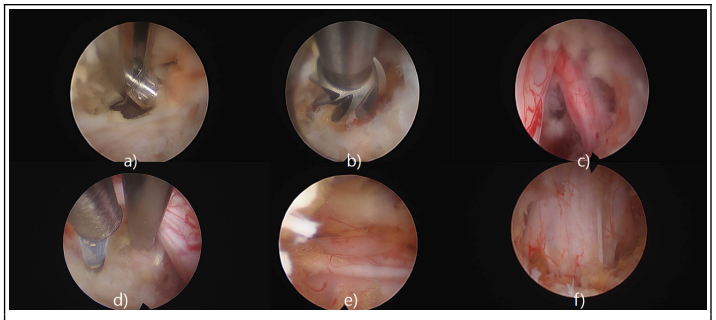
The study was retrospectively conducted in 450 consecutive cases treated with PSLD under spinal epidural anesthesia between April 1 2016 and January 31 2017. The surgical level was 483 in number and included 408 cases of 1 level operation, 33 of 2 levels and 9 of 3 levels. The patients composed of 254 males and 196 females.

Results

Postoperative MRI revealed that PSLD increased the canal volume by mean 53.7% of preoperative one at the index segment ($P<0.001$), and demonstrated that damage in the normal soft tissues including muscles and the extent of removed normal bony tissues appeared minimal. The mean improvements of VAS score and ODI were 4.0 ($P<0.001$) and 40% ($P<0.001$) respectively. Mean duration of operating times was 52 minutes for bilateral decompression of 1 level and mean hospital stay was 1.2 days.

Conclusions

Decompression of spinal canal stenosis with PSLD not only improved the clinical outcomes but also increased the spinal canal volume at the index segments each significantly. The main advantages of this new technique in the current study should be a potential of uniportal multi-level procedure under local anesthesia, minimal damage of normal anatomical structures surrounding the pathology, and short hospitalization. PSLD could replace feasibly other means including microscopic decompression in the surgical treatment of not only single level including bilateral but also two to three levels spinal stenosis in the lumbar spine.



surgical technique. a) flavectomy with 5mm kerisson punch. b) bone work with 3mm drill. c) axialla and shoulder. d) nerve root retracrion and annuloplasty. e) contralateral axillar and shoulder. f) end point of PSLD.

Learning Objectives

minimal invasive endoscopic decompression for lumabar stenosis.

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