



Usefulness of Percutaneous Endoscopic Lumbar Foraminoplasty for Lumbar Disc Herniation

Kyung-Chul Choi¹, Hyeong-Ki Shim¹, Chan Jin Park², Dong Chan Lee¹, Choon-Keun Park³

■ **OBJECTIVE:** Endoscopic foraminoplasty facilitates engagement of the working cannula via the intervertebral foramen, allowing cannula access near a herniated disc (HD) for successful application of percutaneous endoscopic lumbar discectomy (PELD). The purpose of this study was to evaluate the efficacy of foraminoplasty for HD and propose applicable situations for foraminoplasty in PELD.

■ **METHODS:** A retrospective review of consecutive patients who underwent PELD was performed. Patients were divided into a foraminoplasty group (FG) and non-foraminoplasty group (NFG). Group differences in disc location and radiologic parameters, such as disc height (DH), foraminal width, lamina angle, facet angle, superior articular process thickness, and iliac height, were evaluated. Clinical outcomes were assessed using a visual analog scale for back and leg pain.

■ **RESULTS:** There were 136 patients (36 FG and 100 NFG) were. The FG had a significantly smaller DH and higher prevalence of high-grade down migration, downward sequestration, and recurrent HD compared with the NFG. For HDs at the L5-S1 level, the FG had a significantly greater iliac crest height and smaller DH and foraminal width compared with the NFG. For central HDs, the FG had a wider lamina angle and smaller DH compared with the NFG. Improvements in back and leg pain were similar in the 2 groups.

■ **CONCLUSIONS:** Percutaneous endoscopic lumbar foraminoplasty may be effective for small DH, migration,

sequestration, recurrent HD, HD in L5-S1 with a high iliac crest, and central HD with a wide lamina angle.

INTRODUCTION

Percutaneous endoscopic lumbar discectomy (PELD) has results comparable to conventional open surgery for herniated discs (HDs). Since the introduction of contemporary endoscopic discectomy by Kambin and Sampson,¹ remarkable advances in techniques and instruments have expanded its surgical application for various types of HDs.²⁻⁵ However, the inability to place a working cannula near the disc fragment because of an anatomic barrier can lead to surgical failure and revision open surgery. The superior articular process (SAP) should be the chief obstacle in transforaminal endoscopic access to the dural sac and nerve root in the spinal canal. To overcome this hurdle, foraminoplasty can be considered, allowing the working cannula access near the HD. In this article, we describe our experience using foraminoplasty for HDs and propose the applicable situations for foraminoplasty in PELD for HDs.

MATERIALS AND METHODS

This study was approved by the institutional review board (2016-Woz). A retrospective review of consecutive patients who underwent PELD performed by a single surgeon (K.-C.C.) between December 2014 and December 2015 was performed. Patients were included if they had an HD at L1-2, L2-3, L3-4, L4-5, or L5-S1; were unresponsive to 6 weeks of conservative treatment; and underwent only transforaminal PELD for intracanal disc herniation. Patients

Key words

- Central disc herniation
- Foraminoplasty
- L5-S1
- Migrated disc herniation
- Percutaneous endoscopic lumbar discectomy

Abbreviations and Acronyms

- AP:** Anteroposterior
- CT:** Computed tomography
- DH:** Disc height
- FG:** Foraminoplasty group
- HD:** Herniated disc
- NFG:** Nonforaminoplasty group

PELD: Percutaneous endoscopic lumbar discectomy

SAP: Superior articular process

From the ¹Department of Neurosurgery, the Leon Wiltse Memorial Hospital, Anyang;

²St. Vincent Hospital, College of Medicine, Catholic University of Korea, Suwon; and

³Department of Neurosurgery, the Leon Wiltse Memorial Hospital, Suwon, Korea

To whom correspondence should be addressed: Choon-Keun Park, M.D., Ph.D.

[E-mail: allspine@gmail.com]

Citation: *World Neurosurg.* (2017) 106:484-492.

<http://dx.doi.org/10.1016/j.wneu.2017.07.035>

Journal homepage: www.WORLDNEUROSURGERY.org

Available online: www.sciencedirect.com

1878-8750/\$ - see front matter © 2017 Elsevier Inc. All rights reserved.

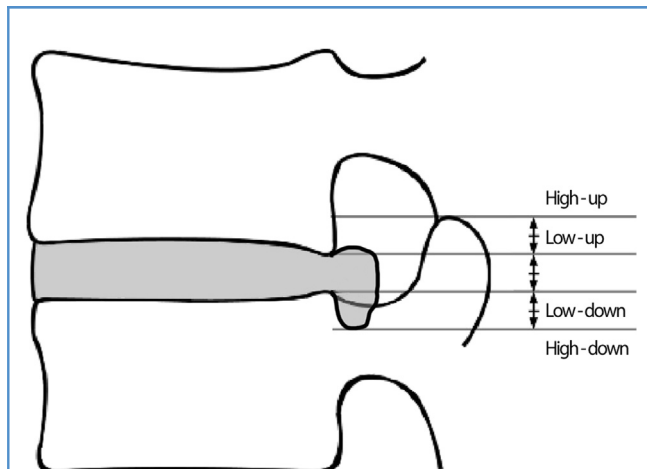


Figure 1. Degree of migration in relation to posterior disc height. Migration is divided into 4 types based on extent and direction: high-grade up, low-grade up, low-grade down, and high-grade down.

were excluded if they had a foraminal and/or extraforaminal disc herniation, had multilevel disc herniation, or underwent interlaminar PELD. Preoperative and postoperative data were obtained from a review of the medical chart and radiologic examination, which included magnetic resonance imaging and computed tomography (CT) scans.

An independent observer performed the radiologic assessments. Migration was defined as herniation displaced away from the endplate of the index level. HD migration was classified as high grade if the extent of the migration was larger than the measured height of the posterior marginal disc space (Figure 1). HD migration of less than the measured height of the posterior marginal disc space was classified as low grade.⁶ Based on the extent and direction of the herniation, HD migrations were further classified as high-grade up, low-grade up, high-grade down, or low-grade down. Sequestration referred to the lack of a remaining continuity of the disc material between the fragment and the disc of origin. The location of the herniation in relation to the pedicle and spinal canal was described either as central or paramedian. A higher herniation with a midline split ratio >60:40 was classified as paramedian.

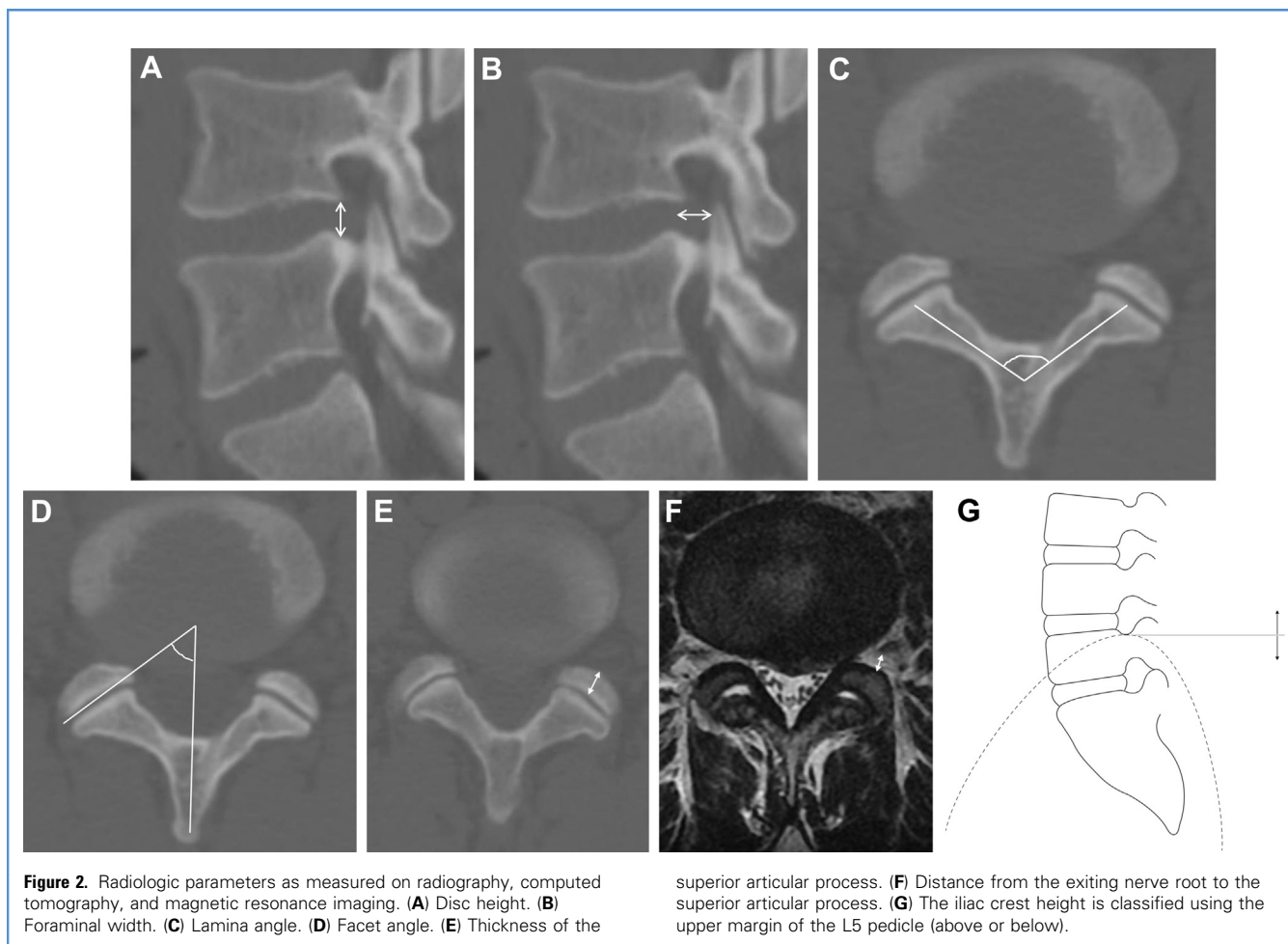


Figure 2. Radiologic parameters as measured on radiography, computed tomography, and magnetic resonance imaging. (A) Disc height. (B) Foraminal width. (C) Lamina angle. (D) Facet angle. (E) Thickness of the

superior articular process. (F) Distance from the exiting nerve root to the superior articular process. (G) The iliac crest height is classified using the upper margin of the L5 pedicle (above or below).

Download English Version:

<https://daneshyari.com/en/article/5634011>

Download Persian Version:

<https://daneshyari.com/article/5634011>

[Daneshyari.com](https://daneshyari.com)