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Case Report

Anterior discectomy and total disc replacement for three patients with multiple recurrent lumbar disc herniations

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Abstract

BACKGROUND CONTEXT: Although results of primary discectomy are generally excellent with relief of leg pain, recurrent lumbar disc herniation is relatively common ranging from 5% to 25%. Patients with recurrent herniation may undergo revision surgery; however, this carries with it increased risks and lower success rates. Many surgeons will advocate a fusion in addition to repeat discectomy after the third recurrent herniated disc. With the approval of lumbar total disc arthroplasty, there now exists another option for the patient with three or more recurrent disc herniations to preserve motion, theoretically decrease the rate of adjacent-level disease, and ameliorate the patient's symptoms.

PURPOSE: The purpose of this case report is to describe our experience using total disc replacement (TDR) in three patients after prior partial hemilaminectomy and discectomy for the treatment of a third and fourth recurrent lumbar disc herniation.

STUDY DESIGN: This article is a report of three cases from a spine specialty center describing an alternative surgical technique for patients with multiple recurrent lumbar disc herniation.

METHODS: Comprehensive chart review of three patients with recurrent lumbar herniation who underwent TDR.

RESULTS: Anterior discectomy and TDR were undertaken, and at most recent follow-up (8–12 months), all patients had improvement of their visual analog scale and Oswestry Disability Index. No patient had postoperative complications or reoperation.

CONCLUSIONS: Recurrent disc herniation is a relatively common problem that may be difficult to treat. Traditionally, a patient presenting with three or more recurrent disc herniation may likely have undergone revision discectomy with fusion. The current case report suggests that TDR may be an alternative option in select patients.

Keywords: Recurrent disc herniation; Total disc replacement; Lumbar spine; Clinical outcome

Introduction

Although results of discectomy are generally good, recurrent lumbar disc herniation is a relatively common problem. Large population-based studies report reoperation rates of 5% to 25% after lumbar discectomy [1–10]. A major reason for recurrent disc herniations after a discectomy is that the annular rent does not seal completely, thus allowing a weakened defect to continue to be exposed to mechanical intradiscal

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The disclosure key can be found on the Table of Contents and at www.TheSpineJournalOnline.com.

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pressure changes. There was no association found between revision surgery for recurrent disc herniation and the factors of age, gender, traumatic events, times of prior surgery, level of herniation, side of recurrence, pain-free interval, duration of recurrence symptoms, walking capacity, associated spinal stenosis, revision surgery, and dural tear [11].

Treatment options for recurrent disc herniations include revision laminotomy with discectomy alone or in combination with a spinal fusion. An emerging newer procedure that may be applicable for the treatment of recurrent disc herniation is anterior discectomy and total disc replacement (TDR). Prospective randomized clinical trials involving TDR have been promising for the treatment of presumed discogenic low back pain [12,13]. Patients with previous discectomy were included in these trials, and Leahy et al. [14] reported that TDR is an alternative treatment option for patients with symptomatic disc degeneration arising from a previously operated lumbar disc. The purpose of this case report is to describe our experience using TDR in three patients with multiple recurrent lumbar disc herniations.

Anterior discectomy before TDR placement in patients with a herniated disc

The herniated disc material was removed anteriorly in conjunction with preparing the disc space for TDR placement in these three cases. Using this technique of performing an anterior-based complete discectomy, the surgeon may remove the herniated disc fragment and successfully decompress the canal contents without having to reenter the canal through a previously operated area while minimizing the revision decompression risks, eliminating the offending herniation. A similar technique has been described for anterior lumbar interbody fusion [15]. A combination of curette and punch Kerrison rongeur can be used to take down the posterior longitudinal ligament and allow direct visualization and nerve hook access into the epidural space. As neurologic decompression is the primary goal, stenosis caused by posterior element compression cannot be addressed. Extruded fragments that have migrated cranial or caudal may require significant bone removal to retrieve and may, therefore, be better approached posteriorly.

Case 1

The patient was a healthy 42-year-old man who had undergone an L4–L5 right-sided laminotomy and partial discectomy for a paracentral herniation causing lumbar radicular pain in 1992. He subsequently underwent a second and third discectomy in 2004, for clinically debilitating radicular pain and image-documented reherniation on the same right side at L4–L5. After all three operations, the patient had complete relief of his leg pain.

In early 2008, the patient complained 4 weeks of low back, right buttock, and right leg pain similar to prior symptoms. He worked full time as a production manager with moderate physical demands. On physical examination, his patellar and Achilles reflexes were symmetrically diminished; his manual motor testing revealed that right extensor hallucis longus was four (sign not present until current pain episode), with the remaining muscles Grade 5; and straight leg raising was reproductive of right leg pain. In addition, his examination was consistent with mechanical low back pain. Radiographs showed narrowing of the L4–L5 disc

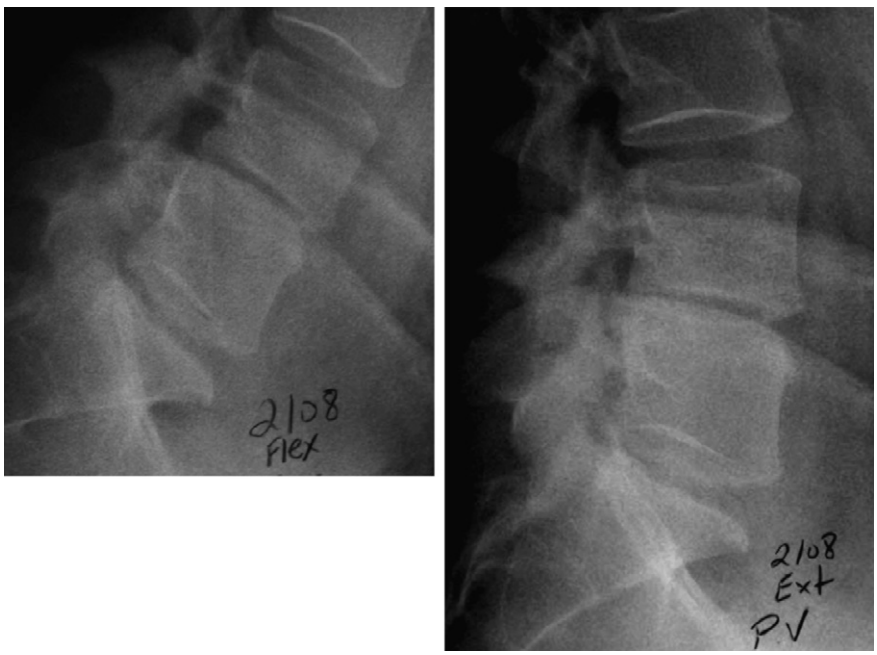

Fig. 1. (Left) Preoperative lateral flexion and (Right) extension radiographs showing decreased disc space height at L4–L5.