

# Lateral disc herniation following percutaneous lumbar discectomy

## A case report

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**Summary.** *A case of lateral disc herniation in the lumbar spine which occurred soon after percutaneous discectomy is described. This is a rare complication, but in this patient it appeared that the extrusion occurred through the hole in the annulus made at the first operation.*

**Résumé.** *Un cas de hernie discale latérale survenant précocément après une discectomie lombaire percutanée est rapportée. Les auteurs présentent une revue de la littérature sur ce sujet. Bien que rare, cette complication de la discectomie percutanée doit être connue des chirurgiens.*

## Introduction

The first report of percutaneous lumbar discectomy was in 1975 [7], and since then the place of this procedure has been discussed and compared with the alternative method of open discectomy. Percutaneous discectomy with discoscopy which allows the selective removal of herniated nucleus pulposus has recently gained more general acceptance, although the indications may be limited [13, 21, 25].

This report describes a patient in whom a lateral disc herniation extruded through the passage in the annulus fibrosus early after percutaneous discectomy.

## Case report

A man, 31 years of age, complained of low back pain in August 1992 with pain in the right leg developing in November of that year. He was treated conservatively for 5 months without improvement. Myelography at another hospital confirmed a L4-5 disc herniation and he underwent an automated percutaneous lumbar discectomy from the posterolateral side in January 1993. The low back pain and right leg pain were relieved, but 2 weeks later he developed severe pain in his left leg associated with low back pain. The pain in the left leg radiated from the outer part of the thigh to the buttock and was not relieved by rest.

He came to our hospital in March 1993. Straight leg raising was positive at 70° on the left, the femoral stretch test was negative, and there was sensory disturbance in the L4 root area with weakness of his left quadriceps. Compression of the L4 root was diagnosed. A plain radiograph and myelography showed no abnormality, but MRI (T1-weighted) showed an area of low signal density in the left L4-5 extraforaminal region (Fig. 1). The severe pain in the low back and left leg was provoked by discography, which showed leakage of contrast media from the hole in the annulus through which the percutaneous discectomy had been carried out. On CT after discography, the leak was consistent with the site of the probe placement (Fig. 2). It was considered that a lateral disc herniation had occurred through the annular hole made by percutaneous discectomy.

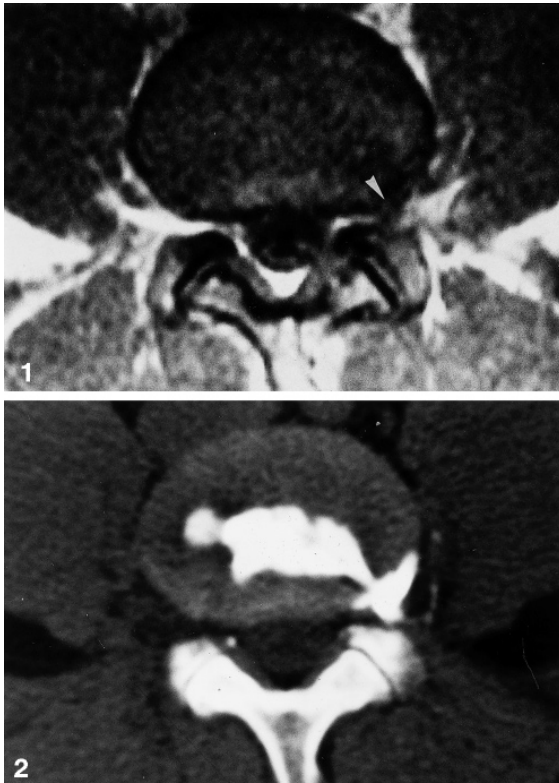
At operation, a left L4-5 lateral fenestration was made and a disc herniation was found directly compressing the L4 root. Herniectomy and discectomy were performed and 2.5 g of white and viscous degenerate disc material removed (Fig. 3). After operation, the severe pain in the left leg and low back pain disappeared, and the neurological changes improved.

Three years later he was working in an electric appliance shop which involved lifting.

## Discussion

Percutaneous discectomy causes little damage to the nerve root and the posterior lumbar structures compared to open discectomy, but there can be serious complications. Out of 2034 cases in 20

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**Fig. 1.** Axial T1-weighted MRI at L4-5 showing a lateral disc herniation (arrow) at the site of probe placement

**Fig. 2.** CT after discography showing escape of contrast medium through the annulotomy to the extraforaminal region

**Fig. 3.** Photograph (with diagram) showing a lateral disc herniation compressing the L4 root

reports [1–3, 5, 6, 8–11, 14–22, 24, 25], the following complications were recorded: a haematoma in the psoas muscle in 46 (2.3%); discitis in 10 (0.5%), requiring reoperation in 2; nerve root injury in 4 (0.2%), and vascular injury in 2 (0.1%), one of whom required an abdominal operation to deal with an injury to a sigmoid artery. Recently, Gill has reported a case in which a lateral disc herniation extruded through the annulotomy after automated percutaneous lumbar discectomy at L5-S1 [4].

In our case, the original nucleotomy was inadequate since 2.5 g of disc material was removed at the subsequent operation, and as a consequence a further lateral disc herniation occurred through the annulotomy at an early stage.

With regard to the repair reaction of the disc, Smith and Walmsley reported that there is a rapid proliferation of both fibroblasts and cartilage cells in the nuclear tissue which remains in situ during 6 months after nucleotomy in rabbits [23]. Lipson and Muir described the surface of the incised annulus as being covered by granulation with repair of the annular wound; proliferation of fibrocartilage continued for 6 to 8 weeks after injury [12]. Urayama reported that the repair reaction occurred only in the inner layer of the annulus in rabbits, but not in the intermediate and outer layers

[26]. Thus the injured annulus does not repair completely, and nucleotomy accelerates both proliferation of nuclear cells and aging degeneration. Therefore, a disc herniation may extrude through the passage of the annulus fibrosus after percutaneous discectomy as occurred in our case. An adequate nucleotomy needs to be performed to avoid this complication.

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