Lumbar discal cyst is a rare cause of radiculopathy. Their exact pathogenesis and the optimal treatment modality remain unidentified. Depending on their location, discal cysts cannot always be easily identified intraoperatively. We describe 2 patients with discal cysts and introduce an intraoperative discography technique for discal cyst location. Both patients were treated with surgical excision; with intraoperative discography, the cystic lesions could easily be detected and removed.

Key Words: Discal cyst - Intraoperative discography.

INTRODUCTION

Discal cysts are uncommon, but are capable of causing radiculopathy. In most cases their removal is easily accomplished, however sometimes the location of the cyst precludes its intraoperative detection. We describe 2 patients with discal cysts and discuss the efficacy of an intraoperative discography technique for discal cyst location. In our 2 patients, the discal cysts could not easily be identified in the intraoperative field because of their location under the peridural membrane. We performed intraoperative discography to locate the concealed discal cysts and thereby successfully removed them. Intraoperative discography can be useful, both for locating discal cysts and for confirming whether a cystic lesion is totally removed, or if it has been penetrated, before concluding the operation.

PATIENT 1

A 28-year-old male presented with a several-week history of left L4 radiculopathy. He had sensory abnormalities in the L4 dermatomal area of the left leg, and the straight leg raising test was positive at 50 degrees. Magnetic resonance imaging (MRI) demonstrated a spherical, extradural, cystic mass behind the L3/4 intervertebral disc space, with high signal intensity on T2-weighted images (Fig. 1A, B) and low signal intensity on T1-weighted images.

His symptoms persisted after conservative treatment and surgical management was planned. A partial hemilaminectomy was performed and the thecal sac and L4 root were carefully manipulated, but the cyst was not found. It was assumed that the cyst was penetrated during the surgical manipulation. After surgery, the patient's symptoms disappeared but postoperative MRI showed that the cyst was still present (Fig. 1C).

On the first postoperative day, a second operation was performed. Intraoperative discography was performed under C-arm fluoroscopic guidance. A long, 18-gauge needle was inserted into the disc space at the left paracentral region of L3-L4, through the area of the previous laminotomy, and 2 mL of radiopaque dye (Hexabrix, Guerbet Asia Pacific Ltd., Hong Kong) was injected. Care was taken not to injure the thecal sac or the nerve root (Fig. 2A). The bluish cyst was then seen to be located ventrally on the thecal sac, under the peridural membrane. The discal cyst was penetrated with a 22-gauge needle and
that the discal cyst had been removed (Fig. 1D).

**PATIENT 2**

A 47-year-old male presented with radiating left buttock pain. His symptoms had developed 3 years prior, and had been aggravated 1 week before his presentation. Conservative treatment was ineffective. He had sensory abnormalities in the L4 dermatomal area of the left leg, and the straight leg raise test was positive at 60 degrees. MRI demonstrated a cystic lesion at the level of the L3/4 intervertebral disc space, with high signal intensity on T2-weighted imaging (Fig. 3A, B) and low signal intensity on T1-weighted imaging. The cystic mass, located between the thecal sac and the L4 nerve root, compressed both structures.

After a left L3/4 partial hemilaminectomy failed to reveal the discal cyst, intraoperative discography was performed. A dark blue, cystic lesion was visualized, compressing the thecal sac and the L4 nerve root. The cyst communicated with the L3/4 intervertebral disc by means of a central annular tear. The cyst was aspirated, then totally excised. The patient achieved complete pain relief after surgery. Histologic examination revealed that the cyst had a fibrotic wall without an epithelial-cell lining (Fig. 3C). Postoperative MRI showed no evidence of any remaining mass lesion.

**DISCUSSION**

A discal cyst is a rare disease entity; in most cases, its clinical symptoms are caused by compression of a unilateral single nerve root. Discal cysts occur at a slightly younger age and at higher intervertebral levels than typical disc herniation, and imaging studies typically show minimal degeneration of the involved disc. Discography demonstrates a communication between the cyst and the corresponding intervertebral discs, and patients experience severe radiating pain in the affected leg at the time of contrast injection. The cyst contains bloody-to-clear serous fluid.

The pathogenesis of discal cysts is unknown. Chiba et al. proposed that they arise from an underlying intervertebral disc injury that causes a fissure in the posterior aspect of the annulus fibrosis. Bleeding from the rich epidural venous plexus may occur in the space between the peridural membrane and the vertebral body. MRI is the modality of choice for the diagnosis of discal cysts. Lee et al. reported their typical MRI features: a ventrolateral extradural cyst attached to a lumbar disc; rim enhancement on contrast-enhanced MRI; and occasional extension into the lateral recess.

Several options for treating discal cysts have been reported, but clear therapeutic guidelines have not been established. Most patients are treated by surgical excision, including both mi-
Intraoperative Discography for Discal Cyst

Intraoperative discography can be useful for the intraoperative detection of discal cysts and for confirming whether a cystic lesion has been totally removed or if it has been entered during surgery.

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