Recurrent sciatica due to periligamentous trapped epidural gas after spinal sequestrectomy

Case report

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The authors describe the unusual case of a 50-year-old woman who suffered from sciatic pain due to periligamentous trapped epidural gas after lumbar sequestrectomy. The patient underwent removal of free herniated disc material via a translaminar approach through the L-5 lamina without discectomy. Four days later she suffered from recurrent pain, and neuroimaging studies revealed an epidural gas formation at the site of the sequestrectomy. After evacuation of the gas, her pain resolved. Postoperative intraspinal gas may be symptomatic in the rare case.

KEY WORDS • disc herniation • gas • lumbar spine • sequestrectomy

EPIDURAL gas is occasionally found in patients with sciatica. As has been suggested by Kawaguchi and colleagues, intraspinal gas can be classified as a gas-containing pseudocyst, herniated intradiscal gas, or free gas. The treatment of this condition depends chiefly on the symptomatic presentation of the patient. There are a few reports on intraspinal gas accompanying disc herniation and causing severe radicular pain. Gas formation after spinal surgery, however, is very unusual.

We report on the case of a patient with a periligamentous epidural gas bubble that formed after lumbar surgery and led to severe pain that was alleviated by a second operation.

Case Report

Presentation and Examination. This 50-year-old woman suffered from a 4-week history of sciatic pain radiating to her right forefoot. Neurological examination demonstrated no sensory or motor deficits. Magnetic resonance imaging revealed an intraforaminal disc herniation superior to the L5–S1 level on the right side (Fig. 1). In addition, we observed a marked spondylosis with hypertrophy of the facet joints, L5–S1 osteochondrosis with reduced disc height, and forward slippage of the L-5 vertebra. Gas was trapped in the L5–S1 interspace, but no intraspinal gas bubbles were present. Conservative treatment was not efficient, and the patient was scheduled for surgery.

Operation. Because the disc herniation did not affect the S-1 nerve root—only the L-5 root—and the disc space appeared too narrow for a discectomy, we elected to remove the free herniated disc material via a translaminar approach. A small channel through the L-5 lamina was created using an electric drill and rongeurs, and the herniated disc material was identified and extirpated. The operation was uneventful, and no microdiscectomy was performed. Postoperatively the radicular pain was alleviated.

Postoperative Course. Four days after surgery the patient complained of recurrent pain in her right leg. The pain was worsened while she lay in bed, whereas walking resulted in some relief. Computerized tomography myelography demonstrated epidural gas formation at the site where the

Fig. 1. Preoperative axial magnetic resonance image revealing intraforaminal disc herniation on the right side at L5–S1.
free disc material had been removed (Fig. 2). The radicular pain was not alleviated by medication with diclofenac, opioid agents, and corticosteroid medication during a 7-day period.

Second Operation/Postoperative Course. The patient was scheduled for a second operation. The lesion was approached via the previous translaminar route. A thin blisterlike membranous structure contiguous with the posterior longitudinal ligament was found and opened. The disc herniation did not recur. Postoperative CT scanning (Fig. 3) revealed only small remnants of gas. Postoperatively, the patient’s pain was immediately alleviated and did not recur during a year-long follow-up period.

Discussion

Intraspinal gas is thought to be secondary to the formation of gas within the intervertebral disc space. Intradiscal gas is the result of disc degeneration and mostly comprises nitrogen.10 Intradiscal gas may move into the intraspinal space with herniated disc material. Moreover, intradiscal gas can migrate into the epidural space as a result of normal movements of the lumbar spine, and this can, albeit infrequently, lead to nerve root compression. In most cases, the gas formation is associated with a disc herniation, but isolated so-called pseudocysts have also been reported.2,6,8–10 The primary sign is radicular pain, but sensory or motor symptoms may occur. Decompressive surgery has been the treatment of choice because it results in good pain relief.

In our patient the gas formation was trapped under a membrane adjacent to the posterior longitudinal ligament, causing nerve root compression. A peculiar finding was that the pain improved while the patient ambulated. This phenomenon was described also by Beatty1 in a case report, whereas in most other reported cases walking increased a patient’s pain.9

Recurrent sciatica due to postoperative intraspinal gas has been reported only in two instances previously. In one case reported by Raynor and Saint-Louis7 radicular symp-
Symptomatic postoperative trapped epidural gas
toms developed 10 days after surgery, whereas in the pa-
tient described by Yoshida and colleagues, the interval be-
tween spinal operation and presentation was more than 2
years. Although treatment was conservative in the former
report, in the latter needle aspiration of the gas bubble ef-
effectively reduced pain. We considered open surgery based
on the idea that revision surgery should also include in-
spection of the site because of the unusual occurrence of
postoperative pain in our patient after an initial surgery in
which the disc space had not been entered.

Our case is unique with regard to two issues and it pro-
vides further evidence that intraspinal gas, by itself, can
result in radicular symptoms. First, the disc herniation was
removed via a translaminar approach and discectomy was
not performed. The gas that “herniated” postoperatively
from the disc space formerly occupied by the herniated
disc material actually resulted in a similar pain severity.
Second, postoperative CT studies (Fig. 3) confirmed that
removal of the gas bubble was indeed responsible for the
disappearance of pain.

Conclusions

Although intraspinal gas formation causing radicular
pain is a rare finding, spine surgeons should be aware that
it can develop. It may occur even after spinal surgery in
which discectomy is not performed, and it can be treated
effectively by evacuating the air to decompress the
nerve root.

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