Case Report

Simultaneous Cervical and Lumbar Surgery for Combined Symptomatic Cervical and Lumbar Spinal Stenoses

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Summary: Spinal stenosis may rarely involve both cervical and lumbar spines. An alternative surgical strategy used for the treatment of combined cervical and lumbar spinal stenosis is presented. Two cases with symptomatic combined stenosis of the cervical and lumbar spinal canal are described. Simultaneous surgery was performed in both cases. The combined stenosis of the cervical and lumbar spinal canal dictates careful neurologic and neuroradiologic examinations. Simultaneous surgery is an alternative approach for patients with symptomatic multilevel spinal stenoses, whose general conditions necessitate a one-session and short-lasting surgery. Key Words: Combined stenosis—Lumbar spine—Cervical spine—Simultaneous surgery.

As the age of the population increases, the rate of degenerative and spondylotic processes of the spine increases. Spondylotic processes of the spine may affect the spine either segmentally or more diffusely (1). Although there are many reports on spinal stenosis limited to one segment of the spine, there are only a few reports on combined spinal stenoses. According to Epstein, 5% of patients with spinal stenosis have symptoms at both levels (2). The combination of spinal stenosis in two levels may confuse the clinical picture. At the beginning of the disease, symptoms and signs referable to one level will dominate the clinical picture and obscure the second level. However, in the late stage, findings referable to the second level may occur. Such a situation complicates the surgical decision-making process and dictates the consideration of several questions, including the priority of the level to be decompressed, the selection of surgical approach, and the interval between the interventions for the two levels, if any. This study reports two patients with such a condition who underwent simultaneous cervical and lumbar decompressions and discusses several aspects of combined cervical and lumbar spinal stenoses.

CASE REPORTS

Case 1

A 73-year-old woman was admitted to our hospital because of weakness of both arms and legs for 3 years. She also complained of low back pain and pain in both legs after short periods of walking. The patient had a history of a C4–5 Cloward operation 6 years before her new admission. A neurologic examination revealed quadripareis (muscle power: 4/5). There was a hyperactivity of deep tendon reflexes in the four extremities, and Babinski and Hoffman reflexes were positive on the left side. She also had atherosclerotic heart disease. Cervical radiographs showed an acquired fusion of C4–5 level and spondylotic changes of the cervical spine. Magnetic resonance imaging (MRI) of the cervical spine showed degenerative changes secondary to previous anterior fusion and loss of C6 vertebral height as well as posterior stenosis of the cervical spinal canal at the C3–4 level (Fig. 1). A lumbar radiograph and a lumbar MRI showed L4–5 grade I spon-
dylolisthesis (Fig. 2A and B). Flexion/extension radiographs showed a mobile segment at the same level. The patient underwent surgery for a simultaneous C3 total laminectomy, L3 laminectomy, and L3–5 transpedicular fixation (Fig. 2C). The surgery lasted 130 minutes. The patient was discharged 7 days after the surgery and an uneventful postoperative period. She was neurologically improved.

Case 2

This 65-year-old woman who lived alone in senior housing was admitted to our hospital because of low back pain, right leg pain, weakness of the right arm and right leg, as well as gait imbalance. The aforementioned complaints began 20 years before, after a traffic accident. Her complaints increased 2 years ago and her symptoms did not respond to medical or physical therapies. The patient had also complained of urinary incontinence for 1 year. Neurologic examination revealed a right hemiparesis (muscle power: 4/5). Deep tendon reflexes were hyperactive on the right side, and Babinski reflexes were positive bilaterally. There was no sensory deficit. Cervical spine radiographs revealed loss of lordosis and the presence of spondylotic changes. Cervical MRI showed a central stenosis at the level of C4–5 and a dorsolateral C5–6 stenosis (Figs. 3A and 4A and B). Static and dynamic lumbar radiographs showed an unstable L3–4 spondylolisthesis. Lumbar spine MRI showed spinal stenosis at the level of L3–4 and L4–5 and a disc herniation at the level of left L4–5 and right far lateral L4–5 (Fig. 5). The patient underwent simultaneous lumbar and cervical decompression and instrumentation (right L4-5 far lateral discectomy, right L3 hemilaminectomy and right L4 foraminotomy, left L4-5 discectomy, L3–4–5 transpedicular fixation, C4–5 posterior discectomy, and C4–5 laminoplasty) (Figs. 3B and 4C and D). The surgery lasted 155 minutes. The patient’s gait improved in the early postoperative period.

DISCUSSION

Spinal stenosis leads to narrowing of the sagittal diameters of the spinal canal and neuroforamina. It occurs most commonly in the cervical and lumbar area. Depending on the location of the stenosis, the narrowing of the spinal canal may cause spinal cord and/or nerve root compression. Besides the segmental stenosis of the spinal canal at the cervical or lumbar spine, the stenosis may rarely involve both cervical and lumbar spine (3–7). The association of cervical and lumbar spinal stenosis was first reported by Teng and Papatheodorou in 1964 (8). They reported 12 cases, only 3 of which had both cervical and lumbar symptoms. Eight patients had pure cervical spondylotic myelopathy, and one patient had signs and symp-
toms of lumbar spinal stenosis. In the years thereafter, similar cases of combined spinal stenosis were reported by others (3–5).

One of the most important aspects of combined stenosis is the clinical picture. Simultaneous symptomatic cervical and lumbar spinal involvement commonly results in a combination of upper and lower motor neuron findings, gait imbalance, and neurogenic claudication. Dagi et al. (4) called this condition tandem spinal stenosis, reporting the incidence of symptomatic tandem spinal stenosis to be 5% to 25%. They found that 7 of 12 cases reported by Teng and Papatheodorou (8) as well as 3 of 20 patients reported by Wilson (9) had tandem spinal stenosis. Both of our cases presented with symptoms of both cervical and lumbar spinal stenosis, therefore indicating decompression of both levels.

Abnormal imaging findings have been shown in asymptomatic adults by using discography (37%) (10), myelography (24%) (11), computed tomography (36%) (12), and MRI (8,13–17). The fact that the prevalence of radiologic spinal stenosis is higher than the prevalence of symptomatic spinal stenosis dictates that the surgeon decide about the indication of surgery in patients with an accompanying radiologic stenosis without clinical signs. It is our opinion that the presence of an accompanying radiologic spinal stenosis without neurologic symptoms does not constitute an indication for decompression. The most important indication for two-level surgery is the presence of symptoms at both levels.

In cases with symptomatic two-level spinal stenosis, another surgical consideration is the choice of which level should be decompressed first. Most physicians prefer to decompress one level in each session. We prefer to decompress the cervical spine before the lumbar spine because cervical decompression may also provide some improvements in lumbar symptoms. This is because the lumbar neural fibers may also be under compression in the cervical spondylotic processes.

Although Benini (3) reported that a simultaneous decompression in such cases is impossible, Dagi et al. (4) were the first surgeons who performed a simultaneous cervical and lumbar spinal decompression in four cases. We performed a simultaneous decompression and fixation of both levels. The reasons for simultaneous surgeries in our patients include the presence of symptomatic stenoses of both cervical and lumbar spine and the patients’ general condition, necessitating a one-session and short-lasting surgery (i.e., a simultaneous procedure by two surgery teams to reduce the surgical duration in patients with a risky general condition).

In summary, the surgical considerations in patients with symptomatic combined spinal stenoses include the definition of the disease, the indication for one-level or two-level surgery, and the choice of surgery in one or two sessions, dictating a detailed neurologic examination and careful neuroradiologic investigation. It is concluded that simultaneous surgery for different segments of the spine is an alternative approach in patients with combined symptomatic pathologies, whose general or social condition is risky for two long-lasting procedures.

**COMMENTARY**

The authors present two case reports and the suggestion that combined cervical and lumbar spinal stenoses can be

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**FIG. 3.** Case 2. A: Preoperative cervical magnetic resonance image shows central stenosis at the level of C4–5 and a dorsolateral C5–6 stenosis. B: Postoperative cervical spine radiograph shows the miniplate fixing cervical laminoplasty.

**FIG. 4.** Case 2. A and B: Preoperative axial tomographic images of the cervical spine show spinal stenosis. C and D: Postoperative axial tomographic images of the cervical spine show the expansion of the cervical spinal canal and the position of miniplate spinal stenosis.
I happen to agree with this and have done such procedures regularly, though infrequently. I think this is a worthwhile concept to present. This is an important clinical observation and worth publishing, even though it is no more than a case report.

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REFERENCES