Hemilaminoplasty

After general anaesthesia, patients were put in prone position. Through a 3-cm midline posterior approach, the paravertebral muscles on the affected side were detached from the spinous processes and laminae, while the supraspinal ligaments and interspinal ligaments were preserved. The laminae were cut carefully in a trapezoid manner just medial to facet joints. The inferior two thirds of the spinous process and laminae of the superior vertebra and superior one third of the spinous process of the inferior vertebra and ligamentum flavum (LF) were detached.

The laminae and spinous processes were carefully elevated en bloc from the caudal to the cranial side to expose the dura sac. The osteotomy was performed by a micro saw and custom-made thin osteotome to decrease the bone loss of laminae.

The osteotomy range of hemilaminoplasty.

After discectomy under direct visualisation, the laminae, spinous processes, LF, supraspinal ligaments, and interspinal ligaments were reattached to the original site. First, thread was used to suture the detached LF, then the spinous processes were fixed by the threads passing through the bony holes on both sides of the cutting line; finally, the supraspinus ligaments were sutured to accomplish the reconstruction. External braces were used for four weeks after the operations. Patients began to walk with a brace ten days after surgery.

Follow-up was made at two, four, and six months, and one, two, four, and five years after surgery. The assessment of clinical results during the follow-up was completed independently by two experienced neurologists (X. Liu and J. Li). Ordinary and dynamic roentgenograms in the standing position were performed to monitor the alignment and stability of lumbar spine. The Cobb angles of sagittal alignment of lumbar spine were measured twice respectively by two doctors (Y. Zheng and L. Gong), and the average angles were used for statistical analysis. X-rays and/or CT scans were used to assess the fusion of the laminae. Bony fusion was defined as disappearance of the osteotomy-line of laminae and having a callus formation at the cut edges of the laminae. MRI was used to observe the epidural scar and exclude recurrence of disc herniation.

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