Case Reports

Congenital Fusion of Lumbar Vertebrae Leading to Chronic Low Back Pain

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Low back pain is a common ailment in the general patient population. The etiology of a patient's pain profile is multifaceted. Age-related changes to the vertebral column and Modic changes are among the most common culprits for a patient's pain. We present the interesting case of chronic low back pain in a patient who developed a congenital fusion of his lumbar vertebrae.

INTRODUCTION

The congenital fusion of lumbar vertebrae is a rare cause of chronic low back pain. Congenital vertebral body fusion is most common in the cervical spine, followed by thoracic and seldom seen in the lumbar spine.¹ Vertebral body fusion can be seen in some congenital disease processes such as Klippel-Feil syndrome and some forms of achondroplasia.²⁻⁴ Magnetic Resonance Imaging (MRI) and Computed Topography scanning (CT) is recommended for further radiographic evaluation. A characteristic “wasp-waist sign” can frequently be seen on CT, where the anteroposterior diameter is smaller than the diameter of the superior and inferior limits of the vertebrae adjacent to the affected level.^{5,6} Much like the symptomatology of spinal stenosis, facet arthropathy, and other forms of lumbago, pain from the fusion of lumbar vertebrae can be exacerbated with certain positional changes and can persist for long periods. Narrowing of the intervertebral foramen compresses the nerve roots, which can be manifested as radicular pain.

CASE REPORT

We present the case of a 72-year-old male with chronic low back pain in the middle back radiating into the upper thighs. Magnetic Resonance Imaging (MRI) of the lumbar spine noted fusion of the L1/2 vertebral bodies. This anatomical variant represented a “block vertebra” picture where a failure of separation of the two adjacent vertebrae existed at the L1/2 level. There is no loss of vertebral height, but no intervertebral disc can be seen at this level. No other pathology can be seen at the other lumbar vertebral segments. The patient was successfully treated with medication management, including nonsteroidal anti-inflammatories and acetaminophen, along with infrequent interlaminar epidural steroid injections.

Figure 1. T1 (A) and T2 (B) weighted sagittal Magnetic Resonance Imaging of the lumbar spine displaying a fusion of the L1 and L2 vertebral bodies.

Note the lack of intervertebral disc at this level as indicated.

DISCUSSION

Although spinal stenosis and lumbar radiculopathy are some of the most common causes of low back pain in patients, unusual etiologies must also be properly identified and managed. This exemplifies the point of obtaining more advanced imaging such as MRI to clarify the problem further. Our patient with a congenital fusion of his lumbar vertebrae was successfully managed with a conservative medication regimen and intermittent interventional pain procedures. He did not require more invasive surgical procedures as his pain was well controlled.

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REFERENCES

1. Congenital fusion of three lumbar vertebral bodies. *Radiology*. 1958;71(3):425-427. [doi:10.1148/71.3.425](https://doi.org/10.1148/71.3.425)
2. Mahirogullari M, Ozkan H, Yildirim N, Cilli F, Güdemez E. Klippel-Feil syndrome and associated congenital abnormalities: evaluation of 23 cases. *Acta Orthopaedica et Traumatologica Turcica*. 2006;40(3):234-239.
3. Mladenov KV, Spiro AS, Krajewski KL, Stücker R, Kunkel P. Management of spinal deformities and tibial pseudarthrosis in children with neurofibromatosis type 1 (NF-1). *Child's nervous system: ChNS: official journal of the International Society for Pediatric Neurosurgery*. Published online 2020. [doi:10.1007/s00381-020-04775-4](https://doi.org/10.1007/s00381-020-04775-4)
4. Verla T, Prablek M, Ropper AE, Xu DS, Raber M. Congenital Fusion of Dens to T3 Vertebra in Klippel-Feil Syndrome. *World Neurosurgery*. 2020;143:18-22. [doi:10.1016/j.wneu.2020.06.232](https://doi.org/10.1016/j.wneu.2020.06.232)
5. Yuksel M, Karabiber H, Yuksel KZ, Parmaksiz G. Diagnostic importance of 3D CT images in Klippel-Feil syndrome with multiple skeletal anomalies: A case report. *Korean J Radiol*. 2005;6(4):278. [doi:10.3348/kjr.2005.6.4.278](https://doi.org/10.3348/kjr.2005.6.4.278)
6. Ridley LJ, Han J, Ridley WE, Xiang H. Wasp waist sign: Congenital vertebral fusion. *J Med Imaging Radiat Oncol*. 2018;62:166-167. [doi:10.1111/1754-9485.36_12786](https://doi.org/10.1111/1754-9485.36_12786)