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Does lumbosacral transitional vertebra associate with degenerative lumbar spinal stenosis?

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Degenerative lumbar spinal stenosis (DLSS) is one of the most commonly diagnosed and treated conditions among the elderly population. Its clinical prevalence is about 47% in adults with lower extremities symptoms and 13% of those who seek help of a specialist for low back pain (LBP). Lumbosacral transitional vertebrae (LSTV) are common congenital spinal anomalies, referring to a total or partial unilateral or bilateral fusion of the transverse process of the lowest lumbar vertebra to the sacrum. Although some studies show association between LSTV and LBP or nerve-root symptoms, data regarding LSTV and DLSS are ambiguous. The aim of this research was to shed light on the association of LSTV and DLSS. Two groups were studied: the first included 165 individuals with DLSS (age range: 40–88 years; sex ratio: 80 males, 85 females) and the second 180 individuals (age range: 40–90 years, sex ratio: 90 males, 90 females) without DLSS related symptoms. High-resolution CT images (Brilliance 64, Philips Medical Systems, Cleveland, OH; slice thickness 0.9–3 mm) were utilized which enabled processing the scans in all planes and allowed a 3D reconstruction of the lower lumbar region. The presence of LSTV was based on Castellvi classification system using the volume rendering method to obtain three-dimensional CT images of the lumbosacral area. The prevalence of LSTV for unilateral and bilateral anomalies in both stenosis males and females were significantly higher compared to their counterparts in the control group ($P < 0.001$). In addition, the presence of LSTV was found to increase the likelihood of DLSS development ($df=1$, odds ratio=3.752, confidence intervals=2.322–6.061, $P < 0.001$). We believe that although DLSS is considered a degenerative spine disorder, however, in some cases this phenomenon may also be affected by congenital spine anomalies, i.e. LSTV.