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Lumbosacral Transitional Vertebra: A Case Report

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Abstract: Lumbosacral transitional vertebra is a congenital anomaly which involves either the sacralisation of the 5th lumbar vertebra or lumbarilization of 1st sacral vertebra. The aim of the present study is to highlight a case of incomplete left sided sacralization of 5th lumbar vertebra found during routine undergraduate teaching for osteology.The knowledge of the possibility of presence of such transitional vertebrae will be helpful for the clinicians in the diagnosis and treatment of patients with low back pain.Also the awareness of this possible congenital anomaly is important before any spinal surgery to avoid the incorrect numbering of vertebrae and cosequently wrong level spinal surgery.
Keywords: Lumbosacral; Transitional; Vertebra; Low back pain.

INTRODUCTION

Lumbosacral transitional vertebra [LSTV] is a congenital anomaly where either the 5th lumbar vertebra undergoes sacralization[partial or complete]or the 1st sacral vertebra undergoes lumbarilization.Bertolotti 1st observed the LSTV and stated that these abnormal vertebrae may produce low back pain due to arthritic changes occurring at the site of pseudoarthrosis[1]. LSTV are common with the prevelance ranging from 1-20% [2, 3]. Some previous workers have suggested the role of LSTV in low back pain [4, 5], whereas others have contradicted the role of LSTV [5,6]. The aim of the present case report is to highlight a case of lumbosacral transitional vertebrae; the knowledge of this anatomical variant would be helpful for the clinicians in the diagnosis and treatment of patients with low back pain. It is also very important to identify an LSTV in patients in whom surgical or interventional procedure is planned as inaccurate identification may lead to surgical and procedural errors.

CASE REPORT

During routineundergraduate teaching for osteology an abnormal sacrum with an incomplete left sided sacralization of L5 vertebra was found in the bone library of Khajabanda Nawaz Institute of Medical sciences,Gulbarga,Karnatka. The body of L5 was usual in shape,the transverse process on the left side was large butterfly shaped, whereas on the right side it was usual in size. The following measurements were made:

- Transverse diameter between two transverse processes - 5.5cm.
- Vertical length of the 5th lumbar vertebra - 4.5cm
- Length of the transverse process on left side - 4.5cm
- Length of the transverse process on right side- 2.5cm.
- Vertical and transverse diameter of the left 5th lumbar intervertebral foramen-1.4cm and 0.7cm respectively.
- Vertical and transverse diameter of the right 5th lumbar intervertebral foramen-1.4cm and 1.7cm respectively.

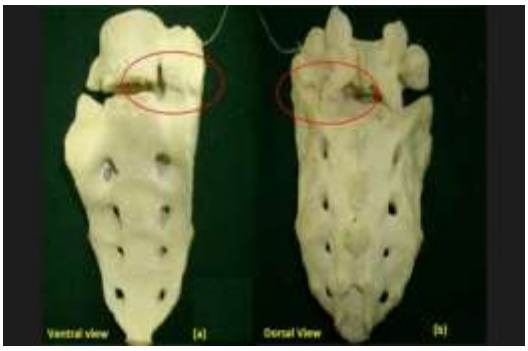

Fig. 1: Showing the anterior and posterior view of sacrum with incomplete left sided sacralisation of the 5th lumbar vertebra

DISCUSSION

LSTV is though a common congenital variation but its knowedge and identification are very important in patients with low back pain or in whom surgical or interventional procedure is planned. Various workers have studied the role of lumbosacral transitional vertebrae in low back pain[1,4,7].

Otani *et al.* [8] stated that a lumbosacral transitional vertebra was found more often in patients with disc herniation (17%) than in the control group (11%). It has been demonstrated that the discs immediately above the transitional vertebra were significantly more degenerative (disc protrusion or extrusion) compared with the disc found between the transitional vertebra and the sacrum [3, 9]. Also, nerve root canal stenosis has been found at the level suprajacent to the transitional vertebra [3].

According to Castellvi *et al.* the transitional vertebrae cause abnormal torque movements above these anomalous vertebrae, a fact that could result in disc degeneration [2]. Aihara *et al.* in an anatomical study of 70 cadavers claimed that the iliolumbar ligament at the level immediately above the transitional vertebra is much thinner and weaker than in cadavers without a lumbosacral transitional vertebra[9]. LSTV therefore may be one of the causative factors for low back pain and the importance of its identification in patients with low back pain cannot be ignored.

Murlimanju *et al.* reported a similar case of incomplete sacralisation of the lumbar vertebra on the left side [10]. Embryologically the vertebra is bisegmental in development and each vertebra receives contribution from caudal half of one sclerotome and cranial half of succeeding sclerotome [11]. Improper formation, differentitation and union of somites results into segmental vertebral abnormalities [12].

CONCLUSION

The present case once again highlights the importance of knowledge of lumbosacral transitional vertebrae for clinicians in making the appropriate diagnosis and treatment in patients with low back pain. Also the awareness of this congenital anomaly is important for the surgeons during spinal surgeries and other interventional procedures related to the lumboscaral region to avoid any complications.

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