

LUMBOSACRAL TRANSITIONAL VERTEBRAE: INCIDENCE IN PATIENTS WITH LOW BACK PAIN

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ABSTRACT

OBJECTIVES: To study the association of lumbosacral transitional vertebrae detected by plain radiography in patients with low back pain. **STUDY DESIGN:** Prospective Descriptive Study. **SETTING:** PAC Hospital Kamra. **DURATION OF STUDY:** Six months (Jan 2011 to June 2011). **SUBJECTS AND METHODS:** Radiographs of 100 patients presenting with low backache and fulfilling the inclusion/exclusion criteria were examined. Data was analyzed on SPSS version 16 and frequency of patients with low backache with lumbosacral transitional vertebra(LSTV) was calculated. **RESULTS:** In 100 patients, 42 were males and 58 were females. The incidence of LSTV was 27% with a male preponderance. **CONCLUSIONS:** There is convincing evidence of a relationship between lumbosacral transitional vertebrae and low backache.

Key words: Anteroposterior; lumbosacral transitional vertebrae(LSTV).

Introduction

Low backache is common, effecting 80% of population in their life time. Lumbosacral transitional vertebrae (LSTV) is common in spine but its association with Low back pain is debated. LSTV is a congenital anomaly of lumbosacral spine.¹ It is defined as sacralization of lower lumbar vertebrae or lumbarization of superior segment of sacral spine. Its prevalence is 4-30% in general population.² LSTV is identified by lateral and Ferguson radiographs (Fig. 1).³ Castellvi classified 4 types of LSTV (Fig. 2). Type I includes unilateral (Ia) or bilateral (Ib) dysplastic transverse processes, measuring at least 19mm in width (craniocaudal dimension). Type II exhibits in complete unilateral (IIa) or bilateral (IIb) lumbarization/ sacralization with an enlarged transverse process that has a diarthrodial joint between itself and the sacrum. Type III LSTV describes unilateral (IIIa) or bilateral (IIIb) lumbarization/sacralization with complete osseousfusion of the transverse process(es) to the sacrum. Type IV involves a unilateral type II transition with a type III on the contralateral side. Although useful

for characterizing the relationship between the transitional segment and the level above or below, this classification system does not provide information relevant to accurate enumeration of the involved segment. The controversy is a stimulus for carrying out this study.⁴ The aim is to find out the incidence of this congenital anomaly with low back pain.



Figure 1: Ferguson radiograph in a 35-year-old man. AP radiograph angled cranially at 30° allows better characterization of the transverse processes of L5. LSTVs have been classically described as best imaged by using Ferguson radiographs.

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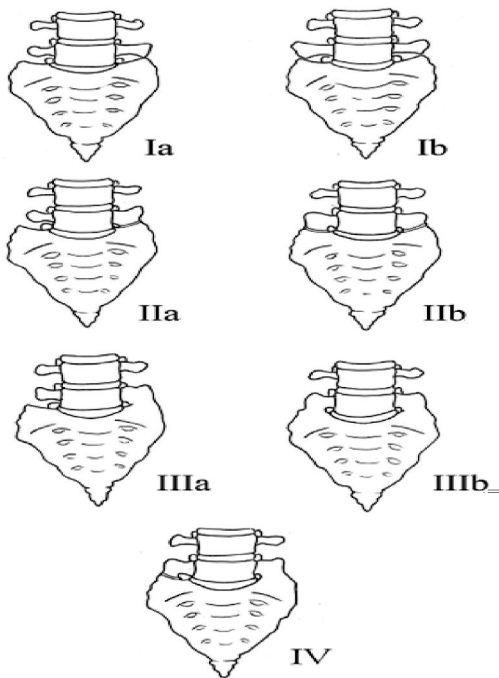


Figure 2: Castellvi classification of LSTVs

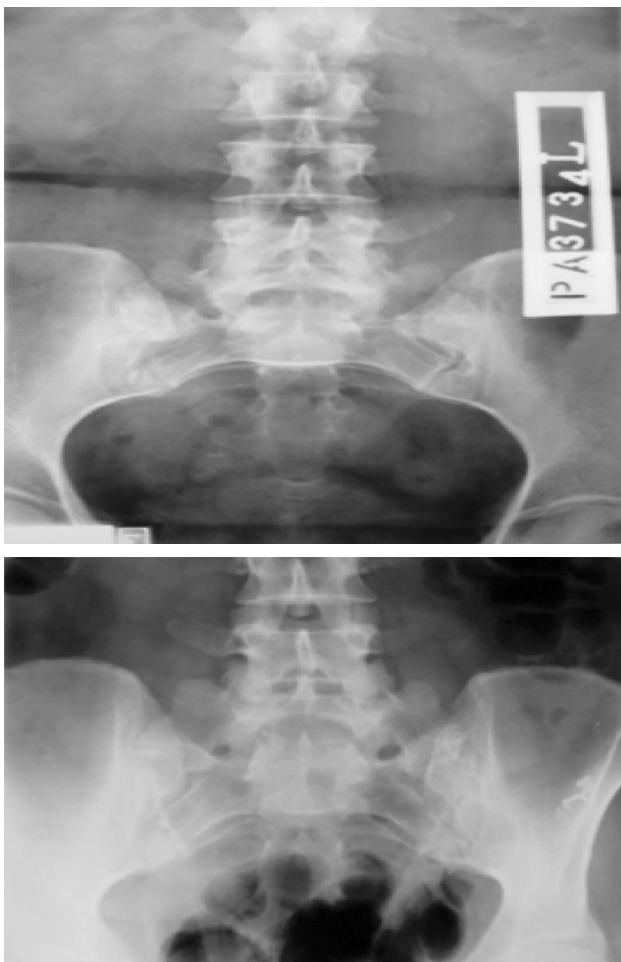


Figure 3: Lumbar transitional vertebrae.

Patients and Methods

The study was carried out at PAC Hospital Kamra from jan 2011 to june 2011. 100 patients of both sexes above age of 18 years presenting with low backache to radiology OPD were selected. Patients with history of trauma with back, distal abnormality, degenerative osteoarthritis or spina bifida were excluded.

Frontal and lateral evaluation radiographs of LS region were carried out of all patients excluded.

Data including age, sex and findings of radiographs including incidence of LSTV, lumbarization and sacralization was recorded.

Data was analyzed using SPSS 16 with frequency calculated of sex and incidence of LSTV.

Results

- Data of 100 patients included in the study was evaluated.
- 27% of patients had LSTV while 73% had normal spines.
- Age distribution and sex distribution of patients with LSTV and normal spine is shown in (Tab.1 & 2) respectively.
- Frequency of sacralization and lumbarization in male and female patients of LSTV is shown in (Tab.3).

Class Interval	LSTV (%)	Normal spine (%)
<=30	2	13
31-40	6	13
41-50	5	15
51-60	9	23
>60	5	9
Total	27	73

Table 1: Age

	No of males(%)	No of females(%)	Total
Lumbosacral transitional vertebrae	16(59%)	11(41%)	27
Normal spine	28(38%)	45(62%)	73

Table 2: Sex incidence of lumbosacral Transitional vertebrae in 100 patients of low back pain

	Males	Females	Total
Sacralization	16	6	22 (81%)
Lumbarization	3	2	5 (19%)
Total	24	13	27(100%)

Table 3: Incidence of lumbarization and sacralization in 37 patients with lumbosacral Transitional vertebrae

Discussion

This study shows the incidence of LSTV in population is 27%.⁵ This is high incidence which cannot be overlooked. Castellvi et al (30%) agree with our findings. The association of low back pain and LSTV bertolotti syndrome was first described by bertolotti in 1917.⁶ The transitional segment is Castellvi types I I to IV. Castellvi states that type LSTV is not clinically significant.⁷

As compare to lumbarization ,sacralization is more painful .The lumbosacral spine protect the spinal cord and spinal nerves. It plays a role in posture, locomotion and transmit body weight. It suffer more abuse then other skeleton of body. Integrity of all vertebrae should be mentioned otherwise it will affect the stabilityand biomechanics.⁸ In upright position major weight of trunk is borne by skeletal structure. Lumber spine experience more abuse. To this integrity of vertebrae should be maintained. Any congenital or acquire pathology will affect the stability of spine therefore LSTV can produce low back pain, is the commonest rheumatological symptom to general practitioner. In LSTV intervertebral disc is narrow,⁹ disc herniation may occur,¹⁰ spondylolisthesis can occur, it may be painful.

It is important to assess accurate level of LSTV to eliminate surgical and procedural error, because wrong level surgery on patients with variant anatomy. Often surgical error occur when MR imagingwas done without lumbosacral radiograph,¹¹ which is important for confirmation of disc level in spinal surgery. To avoid wrong level surgery communication between surgeon and radiologist is essential.

There are many treatment options, including conservative like oral analgesics, local injections of anesthetic and corticosteroid.¹² Radiofrequency ablation and surgical treatment like partial resection

of transverse process and posterior spine fusion.¹³ Operative treatment is suggested in selected patients for example, resection of the transverse process may be beneficial for those who demonstrate pain truly emanating from transitional joint and fail conservative treatment.

Conclusion

Common anomalies of spine are LSTVs which need correct identification of affected segment.¹⁴ Although it is debatable but it is fairly convincing evidence of an association of low back pain and LSTV. Accurate identification of LSTV can help to avoid complications as wrong level surgery.¹⁵

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