

## Solitary Lumbar Osteochondroma arising from L3 Lamina Presenting as Lump- Rare Case Report and Review of literature

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**Abstract :** Osteochondromas or osteocartilagenous exostoses, are the most common benign neoplasms of long bones, they rarely involve spine and even rare in lumbar region. They can present as solitary or multiple forms. Till now very few cases of lumbar osteochondromas have been reported in literature. Here in we report an unusual case of solitary lumbar osteochondroma arising from L3 lamina in a 16 yr old girl presenting with lump without radiculopathy / neurological deficit. She underwent gross total excision of tumor along with removal of L3 lamina and spinous process. To the best of our knowledge till now only 6 cases of solitary osteochondroma arising from lumbar lamina have been documented in literature.

**KeyWords:** Lamina, Lumbar Region, Solitary Osteochondroma.

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### I. Introduction

Osteochondromas, also called as osteocartilagenous exostoses, are the most common benign neoplasms of bone, usually arise from metaphysis of long bones<sup>1</sup>. These tumors comprise 20 -50% of all benign bone tumors and 10-15% of all osseous neoplasms<sup>1,2</sup>. They can present as solitary or multiple forms<sup>3</sup>. Multiple Osteochondromas, also known as hereditary multiple exostoses(HME), diaphyseal aclasis, osteochondromatosis, inherited as an autosomal dominant pattern. Spinal Osteochondromas most commonly found in cervical region followed by thoracic region. Lumbar spinal Osteochondromas are rare when compared to other regions. We report a rare case of solitary Osteochondromas arising from L3 left lamina presenting as a lump without any neurological deficit in a 16 year old girl.

### II. Case Report

A 16 year old girl born to non consanguineous parentage presented to our hospital with the chief complaint of lump in the lumbar region for past 4 months. Occasional history of low backache present. Physical examination revealed a 3x2 cm hard swelling noted in mid lumbar region with well defined borders. Neurological examination revealed no motor/sensory deficit. Family history is not significant. Skiagram of lumbosacral spine showed a hyperlucent mass in L3 lamina with eccentric growth. MRI showed 4x3 cm well defined isointense lesion with peripheral hyperintense rim covered by cartilaginous cap noted at L3 lamina with partial encasement of spinous process noted. She was planned for gross total excision of tumor through posterior approach. Intra operatively 4x3 cm hard mass arising from L3 lamina noted. Gross total excision of tumor along with removal of L3 lamina and spinous process done to prevent recurrence. Postoperative recovery was uneventful without any deficit. Histopathological examination revealed osteochondroma.

### III. Discussion

Osteochondromas are most common tumors of long bones, can rarely involve spine. The incidence of spinal osteochondromas varies, depending upon solitary or multiple forms. Among these, solitary spinal Osteochondromas comprises 1-4%,<sup>4,5,6</sup> where as multiple spinal Osteochondromas comprises 7-9% as per literature.<sup>7</sup> Multiple spinal Osteochondromas was first reported by Boyer in 1814.<sup>8</sup> HME inherited as autosomal dominant pattern with variable inheritance pattern. Solitary Osteochondromas most commonly seen in 2<sup>nd</sup> and 3<sup>rd</sup> decades with male preponderance(2.5:1). In literature occurrence of spinal Osteochondromas in old age also have been reported. Spinal Osteochondromas are most commonly seen in cervical region followed by thoracic region, they are very rare in lumbar region.

Spinal Osteochondromas mostly arises from posterior elements( spinous process, transverse process, lamina, facets), they can occur from vertebral body and pedicle also. This high occurrence in posterior elements is due to, secondary ossification centre is usually sited in the neural arch. Various pathogenetic mechanisms have been described in literature for occurrence of Osteochondromas. The abnormal cartilaginous tissue in secondary ossification centres can lead to development of Osteochondromas is the most accepted theory.<sup>9</sup> The

pathogenesis of tumor formation in elderly age group is still not clearly understood. Some advocate that spinal Osteochondromas may continue to grow even after the skeletal maturity is completed.<sup>10</sup> Others advocate degenerative changes and micro trauma may be contributory factors for development of Osteochondromas in spine.<sup>11</sup>

Spinal Osteochondromas can present with myelopathy and / or radiculopathy and rarely asymptomatic. MRI & CT are the best imaging modalities for diagnosis of Osteochondromas. On CT these are hyperdense bone density lesions with eccentric growth with sharp outline borders and scattered calcifications, covered by cartilaginous cap. MRI can delineate cartilaginous, soft tissue and bone marrow component. On contrast, enhancement of benign lesions is normally seen in the tissue that covers the cartilaginous cap which fibrovascular in nature, however the cartilaginous cap itself should not enhance. Here our case had few peculiarities. 1. Lumbar spine is uncommon site for osteochondromas, in that arising from lamina in lumbar spine is still rare one. 2. As per literature sporadic Osteochondromas are most common in male, in contrary to that our case was female. 3. Here patient presented with lump without any deficit.

Till now as per our knowledge only 6 cases of spinal Osteochondromas from lumbar lamina have been reported in literature. The goal of treatment in symptomatic cases is total excision of tumor as to prevent recurrence and malignant transformation. Asymptomatic lesions can be managed conservatively with serial follow up scans. But some authors advocate excision of tumor is best as frequency of malignant transformation accounts for 1% in solitary Osteochondromas, 10% in Hereditary multiple osteochondromas.<sup>9,12</sup> Most of the tumors were excised through posterior approach where as involvement of vertebral body may need anterior or combined approach.

**Laminar origin of lumbar Osteochondroma cases list in literature**

Case no	Author year	Sex	Age in years	Origin of osteochondroma	Presentation	Treatment	Prognosis
1	Natale M et al <sup>13</sup> ,2013	Female	56	L2 right lamina with intraspinal extension	Perineal pain, weakness and parasthesia of right leg.	Enbloc resection along with L2 laminectomy	Good
2	Zaijun L et al <sup>14</sup> ,2013	Female	68	L2 lamina and transverse process	Pain, hyposthesia and paraparesis	L2 laminectomy+total excision+posterior instrumentation	Good
3	Choi BK et al <sup>15</sup> ,2010	Female	57	Spondylolytic L3 lamina	Low backache, Right leg radicular pain, weakness, intermittent claudication	Enbloc removal+laminectomy+facetomy+stabilisation	Good
4	Barsap et al <sup>16</sup> ,2009	Male	75	L3 right lamina and spinous process extending into spinal canal & adjacent facet joint	Low backache& neurogenic claudication	Total resection of tumor+stabilisation	Not investigated properly
5	XU J et al <sup>17</sup> ,2009	Male	38	L5 right lamina extending towards spinal canal	Low backache, parasthesias& weakness of right leg	Laminectomy and excision of tumor	Good
6	Carrera JE et al <sup>18</sup> ,2007	Male	50	Right L4 lamina	Low backache, right leg parasthesias& weakness of right leg	Laminectomy and excision of tumor	Good

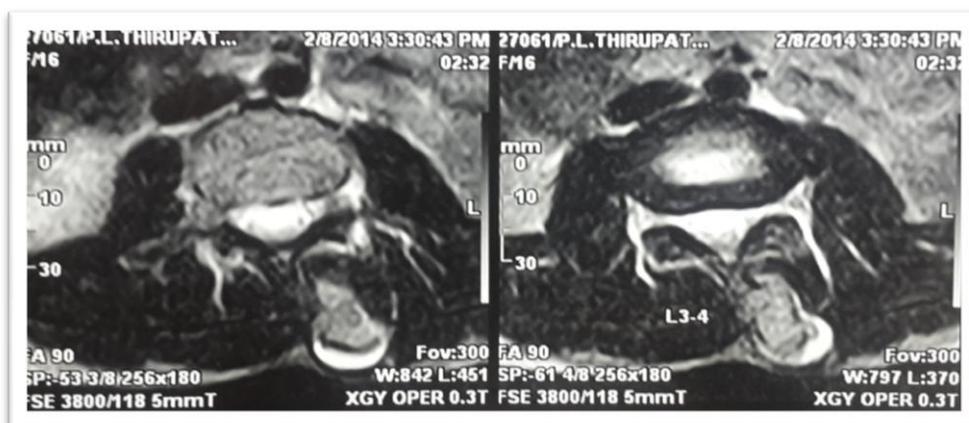
#### IV. Conclusions

Spinal Osteochondromas are rare tumors, in that tumor origin from lumbar lamina is very rare entity. CT and MRI are investigating modalities of choice for diagnosis of solitary Osteochondromas. We advice gross total excision of tumor is the treatment of choice for both symptomatic as well as asymptomatic cases due to risk of malignant transformation or recurrence in future.

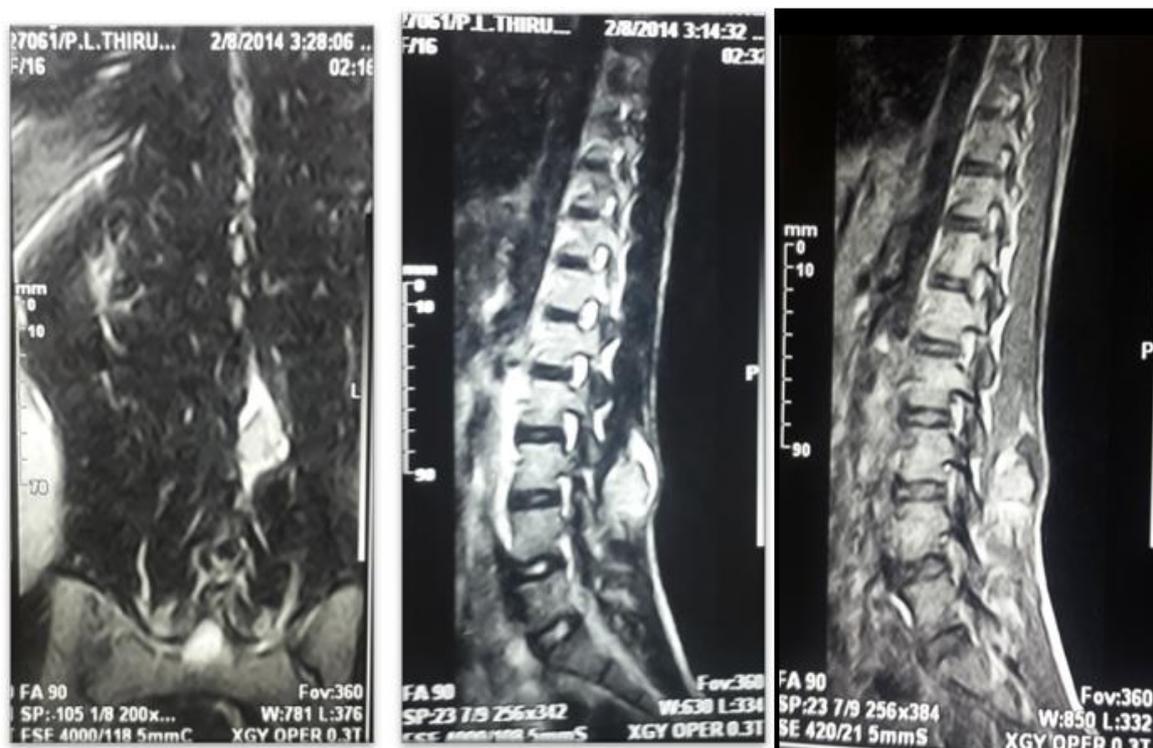
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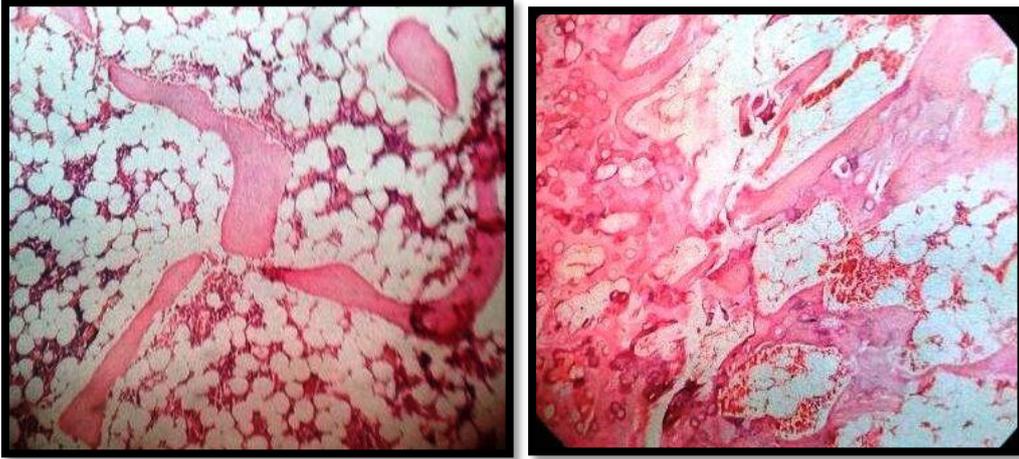
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**Fig 1** - MRI Lumbar spine axial sections showing isointense lesion with peripheral hyperintense rim covered by cartilaginous cap noted at L3 lamina with partial encasement of spinous process.



**FIG 2** - MRI Lumbar spine coronal, sagittal sections showing osteochondroma.



**Fig -3** H&E section studied show histopathological features of osteochondroma.