# Atypical Osteochondroma of Lumbar Spine: A Rare Entity

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**Abstract:** <u>Introduction</u>: Osteochondromas are the most common benign bone tumor, accounting for 36% of all benign bone tumors and often found within the appendicular skeleton. Atypical Osteochondromas of the spine are rare and comprising 4% - 7% of all primary benign spinal tumors. <u>Case Summary</u>: We report a case of an atypical lumbar osteochondroma in a 13 - year - old male child which came in the orthopaedic ward with a history of a mass in midline posterior at lumbar region, extending from L3 to L5 vertebrae. It was gradually increased and attend the recent size approx 9x6x5 cm. He underwent mass excision without the use of adjuvants. The excised tissue was sent for histopathological examination in our pathology department. <u>Conclusion</u>: Osteochondromas are common tumors of the appendicular skeleton but rarely occur within the spine and it is treatable condition. This case discussion supplements current osteochondroma literature by describing an unusual presentation of this tumor.

Keywords: Spine osteochondroma, Lumbar osteochondroma, Laminectomy, Case report, histopathological examination

### 1. Introduction

Osteochondromas are the most common benign bone tumor, accounting for 36% of benign bone tumors<sup>1</sup>. Often found within the appendicular skeleton, osteochondromas of the spine are rare, comprising 4% to 7% of primary benign spinal tumors <sup>2, 3</sup>. Spine osteochondromas typically originate in the posterior elements as opposed to the vertebral bodies. The cervical spine is most affected (50%), followed by the thoracic and lumbar regions <sup>4</sup>. Characterized as outgrowths of bone covered with a cartilaginous cap.

Over time, the cartilaginous fragments undergo ossification and expand <sup>5</sup>. Their expansile nature may cause compression of surrounding structures resulting in pain and neurologic symptoms <sup>4, 6, 7</sup>. Radiation - induced osteochondroma is a known phenomenon that occurs in patients with a childhood history of radiation therapy <sup>8</sup>, but it is extremely unusual.

A review of literature reveals only one case of rare atypical osteochondroma occurring in the lumbar spine occurring in the L - 5 body of a 18 - year - old male. The case presented to the pediatric orthopaedic clinic with the complaint of a posterior midline protuberance at the level of the lumbar spine. Initial radiographic evaluation demonstrated a large osteochondroma arising from the right spinous process at the level of the L5 vertebral body and confirmed by CT and MRI imaging. CT and MRI scan are the gold standard in the evaluation of spinal osteochondromas, especially in the setting of spinal cord compressive symptoms <sup>13, 14</sup>. Given the symptomatic nature and location of the mass, the patient was offered surgical treatment and excised tissue sent for histopathological examination to rule out malignancy.

We present a symptomatic lumbar spine atypical osteochondroma in a 13 year old male came in the orthopaedic department with a history of palpable mass midline posterior in lumbar region at level of L3 - L4 - L5 vertebrae, was painful. The surgery was successfully done

and excised tissue was sent to histopathological examination in our pathological department.

### 2. Case Presentation

A 13 years old boy presented with posterior midline painful swelling in the lumbar region. His parents gave history of small mass in the back at lumbar region since child was 6 year of age, then mass was gradually increased and attended the recent size approx 9x6x5cm. and now became painful and difficulty on sitting and lying posteriorly. There was no history of prior trauma or activity - related injury or chemoradiotherapy. The patient denied constitutional or neurologic symptoms. There was no family history of hereditary multiple exostosis reported. On physical examination, there was a palpable osseous protuberance approximately 9x6x5 cm in size along the posterior midline at the level of the lumbar spine. The mass was fixed and exquisitely tender to palpation. Further examination of the body and extremities revealed no other masses. Neurologic testing was normal.

CT scan of lumbosacral spine reveals a well - defined osseous mass lesion (of ~ size 61x73x108mm / APxMLxSI) arising from the spinous process of L3 vertebra in the left para vertebral muscle extending from L3 to L5 vertebrae. No evidence of obvious extension seen into the spinal canal. Rest of the vertebrae are showing normal height, alignment and density pattern. No nerve root compression seen. Features suggestive of neoplastic etiology/? atypical osteochondroma.

Furthermore on histopathological examination present with multiple irregular, greyish - white to greyish - brown, firm tissue pieces and on cutting gritty sensation felt. On microscopic examination from excised mass demonstrating mature cartilage, fibrous perichondrium, and trabecular bone without evidence of cellular atypia or malignant transformation; consistent with Atypical Osteochondroma of Lumbar spine.

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Figure 1



Figure 2

Figure: 1 & 2 Histology of excised mass demonstrating mature cartilage, fibrous perichondrium, and trabecular bone without evidence of cellular atypia or malignant transformation; consistent with osteochondroma.

## 3. Discussion

Osteochondromas are benign osteocartilaginous proliferations at a growth plate that typically stop increasing in size at skeletal maturity<sup>5.</sup> They infrequently occur in the spine (1% to 4% of osteochondromas) with the majority localized to the cervical spine<sup>4</sup>. Cases of lumbar osteochondromas, like the case presented, are scarce.

Patients typically present with axial pain which may be exacerbated with certain positions or activity like the patient in this study. Neurological manifestations from cord compression are rare. Initial radiographic evaluation may reveal a spinal lesion composed of a cortical protuberance. Advanced imaging and histopathology are recommended to aid in diagnosis. CT imaging provides detail of the osseous and cartilaginous margins whereas MRI can provide the thickness and architecture of the cartilaginous cap. A cartilage cap > 3 cm thickness can indicate malignant transformation<sup>1, 4</sup>.

Lumbar involvement of these exostoses is rare, perhaps due to increased stiffness of the lumbar spine when compared to the cervical spine. Osteochondromas may become symptomatic with growth into the paraspinal musculature. Pediatric oncology literature describes osteochondroma growth as a complication of both localized radiation therapy as well as total body irradiation. The proposed pathogenesis is radiative damage to the epiphyseal plate resulting in immature cartilage fragment migration to the epiphysis and periosteal layers. These cartilage fragments expand during subsequent maturation and ossification. Painful lesions or those causing neurologic deficit require surgical intervention. The goal of surgery should be complete resection of the lesion.

## 4. Conclusion

Osteochondromas of the Lumbar spine are a rare but treatable condition. Histopathological examination gives diffentiation from other benign and malignant lesions and helps in definitive diagnosis. For symptomatic lesions, complete resection is largely curative without adjuvant therapy.

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