

# CASE REPORT

---

## SOLITARY OSTEOCHONDROMA OF L4 SPINOUS PROCESS - A RARE PRESENTATION

S.M. Arvind Kumar<sup>1</sup>, B.K. Dinakar Rai<sup>2</sup>, S. Shantha Kumari<sup>3</sup>, V. Chandan Noel<sup>4</sup>

### HOW TO CITE THIS ARTICLE:

SM Arvind Kumar, BK Dinakar Rai, S Shantha Kumari, V Chandan Noel. "Solitary osteochondroma of L4 spinous process - a rare presentation". Journal of Evolution of Medical and Dental Sciences 2013; Vol2, Issue 49, December 09; Page: 9520-9524.

**ABSTRACT:** Osteochondroma is a benign tumour of the bone, predominantly involving long bones. In our case we report, a rare presentation of osteochondroma in the lumbar spine (L4) in an 18 year old male patient. Osteochondromas are rarely seen in the spine and if found, are confined to the cervical-dorsal region. Very few cases have been reported till date of osteochondroma presenting in the lumbar spine. Even rare is an osteochondroma arising from the spinous process. In our case intra operatively a bony tumour with a cartilaginous cap was noted. Histopathology of the specimen confirmed the diagnosis of osteochondroma. Following excision of the tumour patient was symptom free.

**KEY WORDS:** OSTEOCHONDROMA, BENIGN BONE TUMORS, RARE SPINAL TUMORS, BENIGN SPINE TUMORS, ADOLESCENT TUMORS OF SPINE.

**ETHICS:** The case report was reviewed by the ethical committee of PSG IMS&R, Coimbatore & cleared for publishing.

**INTRODUCTION:** Osteochondroma is a benign tumour of long bones. It is believed to be more of a developmental malformation as growth ceases following skeletal maturity. It occurs in long bones metaphysis (distal femur, proximal tibia, humerus). Occurs as two variants solitary and multiple exostosis (hereditary). Osteochondroma presents rarely in the spine, usually restricted to the cervico-dorsal region. They are usually asymptomatic, so far about only 20 cases have been reported of spine osteochondroma causing neurological symptoms.

We here in report a case of osteochondroma of the lumbar spine in a 18 year old, boy which was successfully treated by excision.

**CASE REPORT:** An 18 years old male presented with swelling in his lower back for the past 2 months. He had first noticed a hard swelling 2 months back, not progressive. The swelling was associated with dull and achy pain, aggravated on long hours of sitting. He had no radicular pain, paraesthesia in the lower limbs. He had no constitutional symptoms- fever, loss of weight and appetite. He had no family history of multiple hereditary exostosis, no other such swellings else were in his body. On examination he had a fixed swelling of size 10 x 5cms, hard in consistency and not pulsatile over the L3-L4 region right side. There was no localized warmth, tenderness. The swelling was found to be prominent on flexion of lumbar spine; no evidence of nerve root stretch pain was noted. Neurological examination showed no distal deficits. Radiographs of the lumbosacral spine showed a bony mass posterior to the spinous process of the L3, L4 and L5 vertebra. MRI of the lumbosacral spine was taken which showed a pedunculated bony mass arising from the right lamina and spinous process of L3 and extending in to the Para spinal muscles. Radio – isotope bone scan showed increased tracer uptake at L3-L4 at the site of mass. .

# CASE REPORT

---

Blood investigations were within normal limits. Through a posterior midline incision, tumour excision was done under general anaesthesia and sent for biopsy. Though MRI report suggested that the peduncle of the swelling was arising from L3 spinous process & lamina, the findings of the MRI were deceptive. Intra operatively a pedunculated bony mass was seen arising from the L4 spinous process & right lamina with a cartilaginous cap which was enclosing the posterior elements of L3. The tumour was removed En-Bloc along with the spinous process and hemi-laminectomy (RT) was done. After the en bloc resection we found there was no involvement of the posterior elements of L3 and L5. Resected tumour mass was sent for HPE. Slide sections had shown lobules of cartilaginous tissue covered by a fibrous connective tissue, with mature bone along with marrow spaces seen below the cartilage. Focal endochondral ossification was also seen consistent with an OSTEochondroma. Patient was followed up for another one year no evidences of recurrences were noted.

**DISCUSSION:** Osteochondroma is more frequent in males; presentation is usually in the age of 20 years according to Carrera et al<sup>1</sup>.

Spinal osteochondromas are progressively expanding lesions during the growth period of the skeleton and the lesions often become quiescent when the epiphyses of secondary ossification centres of the vertebral column are closed. Thus, they usually become symptomatic during the second and third decades of life. Neurological symptoms caused by spinal osteochondromas are quite rare because most of the lesions grow out of the spinal canal as stated in the study done by Bess et al<sup>2</sup>, khavecı et al<sup>3</sup>.

According to Fimura et al<sup>4</sup> about 1-4% of osteochondromas involves the spine and commonly involves the posterior elements of the vertebrae. osteochondroma has a predilection for the cervical and upper thoracic regions. They rarely involve Lumbosacral region of the spine.

There are two hypotheses for the preferred development of osteochondroma in the cervical vertebra suggested by Albrecht ET al<sup>5</sup>, That the predominance of cervical lesions is caused by microtrauma inflicted on the epiphyseal cartilage, because of the greater mobility and flexibility of these vertebrae. According to this hypothesis, the cervical and lumbar spine should be involved more than the thoracic spine. However, in the cases published in the literature there is clearly a lower incidence of osteochondroma in the lumbar region in the study done by Fiumara ET al<sup>4</sup>.

The second hypothesis by Albrecht ET al<sup>5</sup> focus on the difference in the time of appearance of secondary ossification centres in the spinous process, transverse process, articular process, and endplate of the vertebral body. These centres appear in children between the ages of 11 and 18 years and develop into complete ossification in the cervical spine during adolescence. In the thoracic and lumbar spines during the end of the second decade of life, in the sacrum during the third decade of life. Cartilage in these secondary ossification centres may be the origin of aberrant islands of cartilaginous tissue that may be causative of osteochondromas. A more rapid ossification process in these centres may be associated with a greater probability that aberrant cartilage will form. Therefore, the more frequent presence of osteochondroma in the upper segments of the vertebral column could be explained by different durations of the ossification processes in the different centres.

# CASE REPORT

---

The most common presenting symptom is a painless palpable mass in the back - kahveci et al<sup>3</sup>, Fiumara et al<sup>4</sup>. There may be other features like radicular pain, neurological deficits. In cases of growing into canal patient may have a chronic neurogenic claudication and progressive deficits. Fiechtl et al<sup>6</sup> has reported a rare case of a lumbar osteochondroma presenting as an atypical spinal curvature.

Our differential diagnosis initially were

1. An aggressive mineralized mass either a chondroid or osteoid with osseous and soft-tissue involvement- chondrosarcoma or osteosarcoma.
2. Osteochondroma
3. Aneurismal bone cyst
4. Giant cell tumour

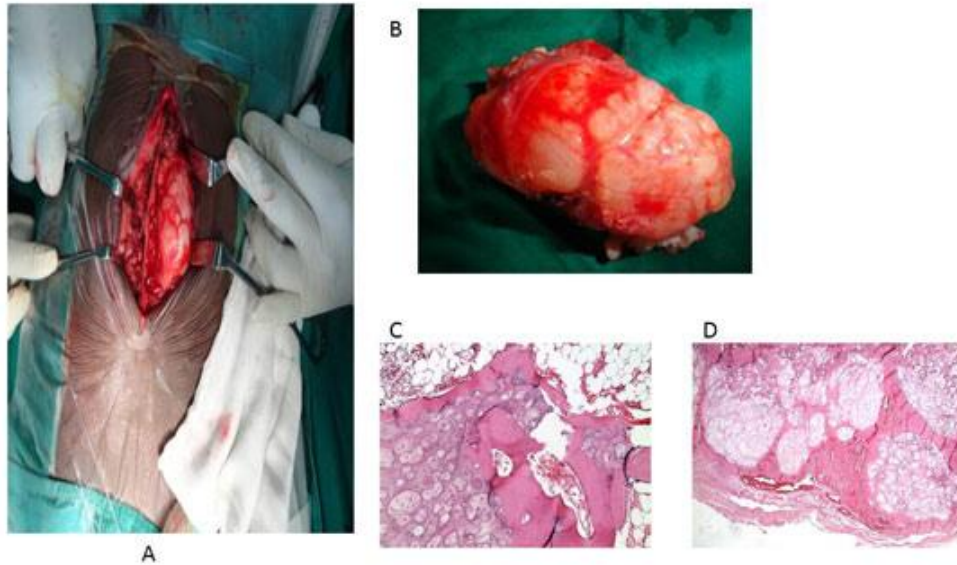
In our case a mass arising over the posterior elements of the lumbar spine with no neurological deficits with age in the second decade, male predominance, clinical / radiological findings were more in favour of osteochondroma as a primary diagnosis, Although studies suggest rarity of solitary osteochondroma .Our second diagnosis was in favour of a chondrosarcoma or an osteosarcoma.

**CONCLUSION:** In our study, we present an 18 year old boy with a progressive swelling in the back for 2 months. Clinically patient had no neurological deficits, bony hard tumour at the lower lumbar region. Intra-operatively tumour was seen to arise from L4 posterior element which was contradictory to the MRI report probably because of the growth of the tumour in close proximity to the L3. This also suggests us to be more cautious on approaching the peduncle of tumour mass. Histopathology revealed findings consistent with an osteochondroma. The patient was followed up to 1-year; he had no recurrence of the tumour.

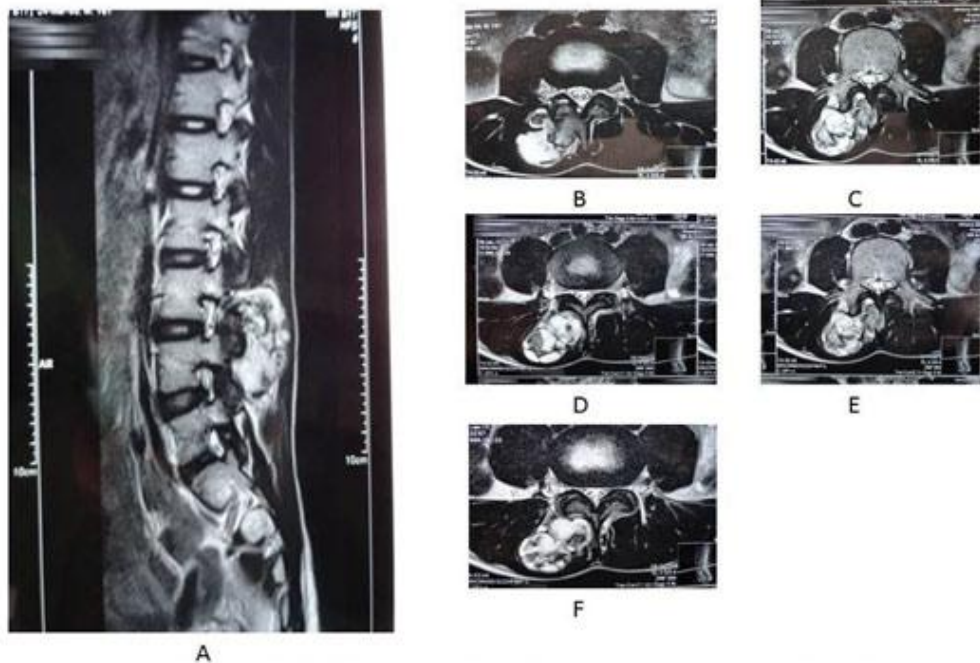
## REFERENCES:

1. Carrera JE, Castillo PA, Molina OM: Lumbar osteochondroma and radicular compression. A case report. *Acta Orthop Men* 2007, 21(5):261-266.
2. Bess RS, Robbin MR, Bohlman HH, Thompson GH: Spinal exostoses: Analysis of twelve cases and review of the literature. *Spine (Phila Pa 1976)* 30:774-780, 2005.
3. Kahveci.r et al, Solitary lumbar spine osteochondroma causing foot drop. *Turkish journal of neurosurgery*-2012, volume 22 no-3 (386-388).
4. Fimura E, Scarabino T, Guglielmi G, Bisceglia M, D'angelo V : osteochondroma of the L5 vertebra –a rare cause of sciatic pain. Case report. *Journal of neurosurgery* 1999, 91 (sup 2):219-222.
5. S. Albrecht, J. S. Crutchfield, and G. K. SeGall, On spinal osteochondromas, *J Neurosurg*, 77 (1992), 247-252.
6. Fiechtl JF, Masonis JL, Frick SL: Spinal osteochondroma presenting as atypical spinal curvature: A case report. *Spine (Phila Pa 1976)* 28 : E252-E255, 2003.

# CASE REPORT

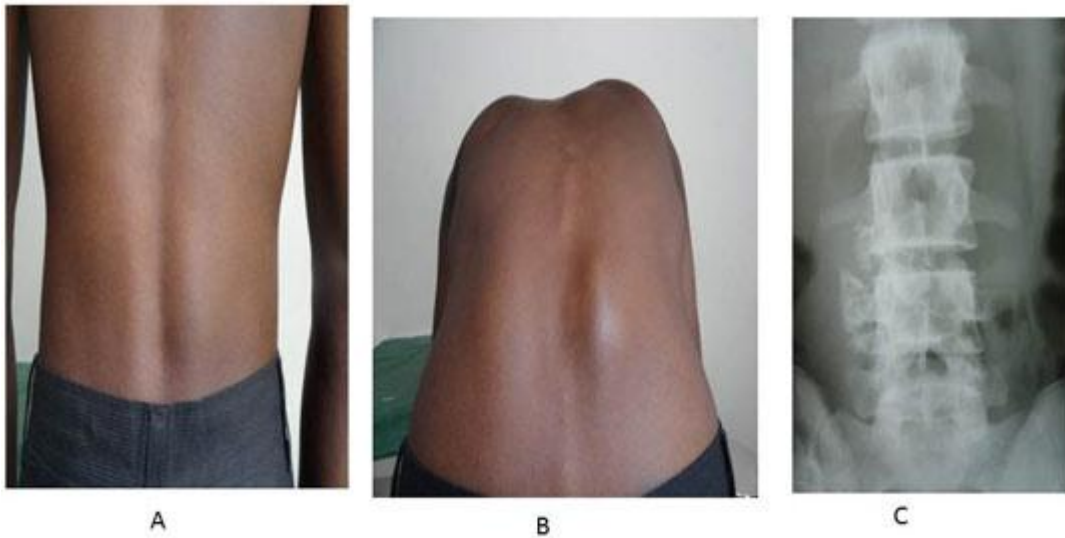


**FIG- A.) Pedunculated bony mass with cartilage cap arising from L<sub>4</sub> lamina B.) Tumour resected En-bloc with Hemilamina C.)enchondral ossification D.)lobules of fibrous tissue**



**FIG-A. MRI shows tumour mass extending from L3-L5.  
FIG-B. Transverse sections showing pedunculated tumour.  
FIG-C,D,E&F. Shows tumour mass extending from L3-L5.**

# CASE REPORT



**FIG-A,B.)Clinical images of tumor in the upper lumbar region more prominent on flexion C.)Bony massevident on x ray at level of L3-4**

## **AUTHORS:**

1. S.M. Arvind Kumar
2. B.K. Dinakar Rai
3. S. Shantha Kumari
4. V. Chandan Noel

## **PARTICULARS OF CONTRIBUTORS:**

1. Associate Professor, Department of Orthopedics, PSG IMS&R, Coimbatore.
2. Head of the Department, Department of Orthopedics, PSG IMS&R, Coimbatore.
3. Professor, Department of Pathology, PSG IMS&R, Coimbatore.
4. Junior Resident, Department of Orthopedics, PSG IMS&R, Coimbatore.

## **NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:**

Dr. S.M. Arvind Kumar,  
Associate Professor,  
Department of Orthopedics,  
PSGIMSR, Peelamedu,  
Coimbatore – 641004.  
Email – arvindkumar.sm@gmail.com

Date of Submission: 15/11/2013.  
Date of Peer Review: 18/11/2013.  
Date of Acceptance: 25/11/2013.  
Date of Publishing: 03/12/2013