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Case Report

Orthopaedics Section

Solitary Osteochondroma of L2 Spinous Process

MAHESHWAR LAKKIREDDY[1], SRIKANTH EPPAKAYALA[2], MALEY DEEPAK KUMAR[3], RAVI KUMAR[4], SREEDHAR SATHU[5]

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ABSTRACT

Osteochondroma is the most common primary benign bone tumour frequently affecting the appendicular skeleton and rarely involves the spine and even more rarely involves the lower lumbar region. The present case report was a rare case of osteochondroma arising from spinous process of L2 vertebra. A 12-year-old male visited with his parents with complaints of progressive painless swelling in the lower back for six months. After thorough evaluation, osteochondroma arising from L2 spinous process was diagnosed. The patient was operated with extraperiosteal enbloc excision of the tumour along with L2 spinous process. Enbloc excision of axial exostosis should be considered owing to the risk factor of neurological involvement and rare malignant transformation.

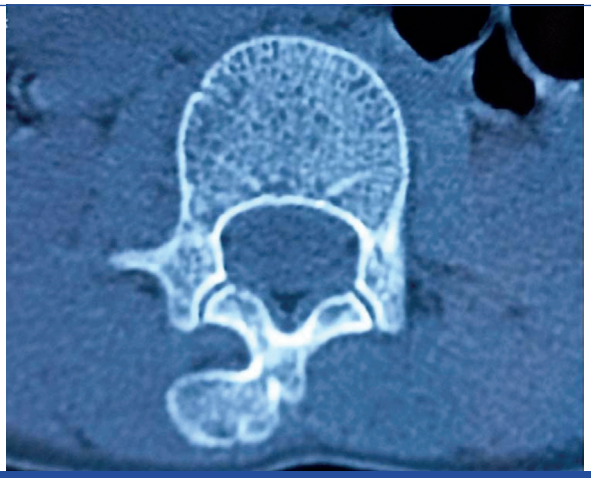
Keywords: Axial skeleton, Enbloc excision, Exostosis, Extra periosteal excision, Osteochondroma

CASE REPORT

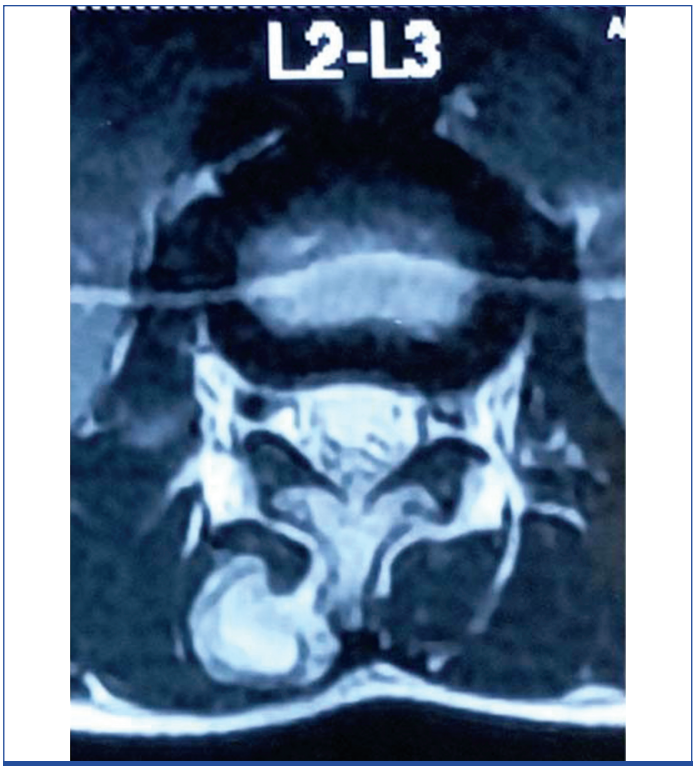
A 12-year-old male presented with complaints of progressive painless swelling in the lower back for the last six months. Swelling was insidious in onset, gradually progressive and attained the present size. There was no history of trauma or constitutional symptoms, weight loss or loss of appetite. There was no history of weakness in lower limbs or paraesthesia.

On examination, a solitary swelling of 4×4 cm was noted in the paracentral lumbar region at L2 vertebral level. Skin over the swelling was normal and there was no local rise in temperature. The swelling was non tender, irregular, and hard in consistency and was fixed to the underlying bone. Lumbar spine movements were normal without any distal neurovascular deficit or proximal lymphadenopathy. No other similar swellings were noted.

Radiographs of the lumbar spine and Computed Tomography (CT) scan showed a bony swelling arising from the spinous process of L2 vertebra suggestive of osteochondroma [Table/Fig-1]. Magnetic Resonance Imaging (MRI) of the lumbar spine was done to measure the thickness of the cartilaginous cap, which was less than 1 cm, and to rule out any infiltration of mass into the spinal canal. On MRI, the cartilaginous cap was isointense to hyperintense on T1-weighted sequences and hyperintense on T2-weighted sequences [Table/Fig-2]. All other haematological investigations were within normal limits. Extraperiosteal resection of the tumour along with L2 spinous process was planned under general anaesthesia. Midline posterior incision of 5 cm was given over the swelling. Supraspinous ligament was lifted off the L2 spinous process and the same was preserved to be sutured back in place after tumour resection. Paraspinal muscles were elevated off the L2 spinous process and the tumour was dissected free from the surrounding tissues. L2 spinous process along with the periosteum and the tumour was resected enbloc (extraperiosteal marginal resection) and was sent for Histopathological Examination (HPE) [Table/Fig-3]. HPE confirmed the diagnosis of benign bone tumour "osteochondroma" with margins of the excised being free of tumour [Table/Fig-4]. The patient was allowed to move out of the bed and mobilise with full weight bearing from the first postoperative day. Suture removal was done on the tenth postoperative day and the wound healed well without any complications.



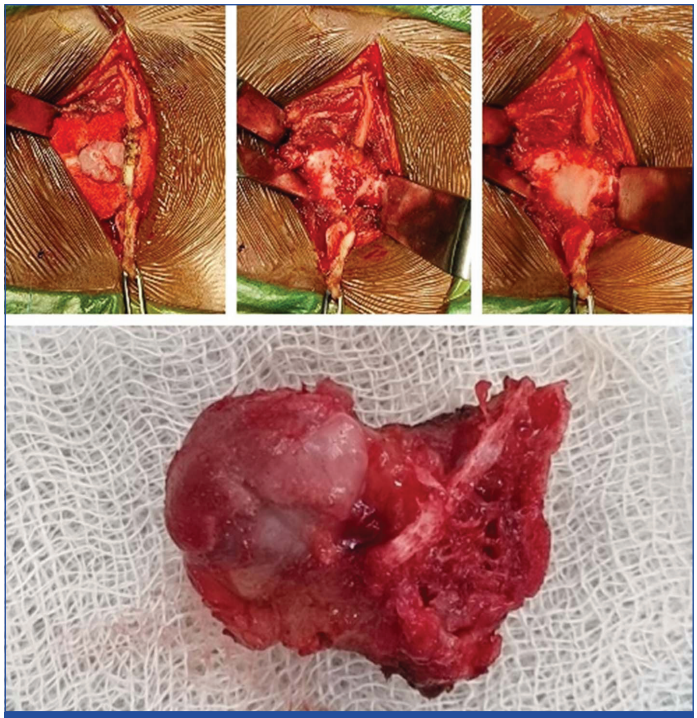
[Table/Fig-1]: Axial section of the CT scan showing solitary exostosis from L2 vertebral spinous process.



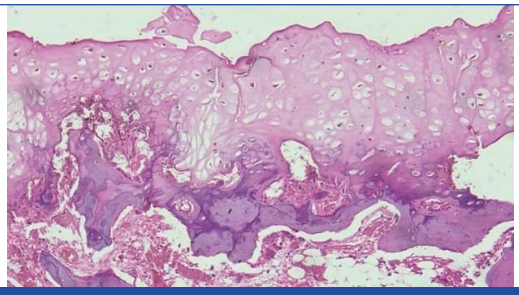
[Table/Fig-2]: Axial section of MRI showing the osteochondroma with bony and cartilaginous component and the thickness of cartilage cap.

DISCUSSION

Osteochondroma is the most common primary benign bone tumour, and these lesions arise on account of a congenital defect in the



[Table/Fig-3]: Intraoperative pictures showing L2 spinous osteochondroma.



[Table/Fig-4]: Histopathological examination showing hyaline cartilage cartilaginous cap with benign chondrocytes and underlying endochondral ossification (H&E, 40X).

perichondrium [1]. These occur in any age group and composed of spongy bone covered by a cartilaginous cap. They were first described in the year 1818 by Sir Astley Cooper and were reported to be seen in males according to Gaetani P et al., [2]. These present in two clinically distinct forms-solitary osteochondroma and multiple osteochondromas. About 85% of osteochondromas are solitary. Osteochondromas are commonly seen in childhood and adolescence, frequently affect the appendicular skeleton and are seen in the distal femur, proximal tibia, and proximal humerus [2]. However, this tumour rarely involves the spine and is even more rarely seen in lower lumbar region [3]. It accounts for 40% of all benign bone tumours, 2% of all tumours and 2.6% of the benign tumours of the spine [4,5].

Solitary osteochondromas present symptomatically in the 2nd and 3rd decade for peripheral lesions. Spinal lesions become symptomatic at an average age of 32 years which is distinctly different from the peripheral lesions seen in children [6]. The age of the subject reported herein was 12 years, which is less than the average age (32 years) considered for spinal osteochondromas to be symptomatic [7]. Yakkanti R et al., published a case series of cervical spine osteochondromas presenting early in life [6].

Osteochondromas arise from the cartilaginous tissue of the secondary ossification centres of the posterior elements of the spine (tip of spinous process or transverse process) [8,9]. About 1-4% of osteochondromas involve the spine and has a predilection for the cervical and upper thoracic regions [10]. About 50% of spinal osteochondromas arise in the cervical spine with majority in the posterior arch of C2 [11,12]. Lumbar locations are very rare, accounting for only 3-4% of spinal lesions [7]. Solitary osteochondromas arising exclusively from the spinous process of L2 vertebra could not be traced in the literature. The authors attribute it to be the index solitary osteochondroma from the L2 spinous process.

A painless mass may be the only presenting symptom as in this case, but osteochondromas located near neurologic or vascular structures can cause cord or root compression or vascular compression [5]. Gunay C et al., in their case series of six patients, reported that one female patient aged 36 years had back pain and numbness and weakness of right lower extremity. MRI showed osteochondroma arising from right pedicle of T12 vertebra. The patient improved after excision of the tumour and T11-L2 laminectomy, posterior instrumentation and fusion [12]. Similarly, Gurkanlar D et al., reported an osteochondroma arising from inferior articular facet of L4 vertebra in a 35 years old male patient suffering from radicular pain in the right leg [13]. Kahveci R et al., reported a case of a 62-year-old female with osteochondroma of lumbar spine arising from left inferior articular facet of L2 vertebra causing cauda equina syndrome. The patient was operated with emergency surgical decompression and excision of the osteochondroma after which the patient recovered full motor, sensory, and urological functions [14].

Plain radiographs detect only a minor proportion of spinal osteochondromas [11]. CT scan is the most commonly used modality for the diagnosis of spinal osteochondromas [15]. MRI helps to measure the thickness of the cartilage cap and demonstrates compression in cases of neurological symptoms [16]. Malignant transformation is rare in solitary osteochondromas and is estimated to be about 1% [17]. Malignancy must be suspected if the swelling is rapidly progressing and painful and the thickness of the cartilaginous cap exceeds 1 cm or in cases of rapidly progressive local recurrence [17].

In symptomatic patients, surgical resection is the treatment of choice. However, Gille O et al., recommended systematic surgical resection of all solitary spinal osteochondromas, given the risk of malignant transformation [17]. Resection without spinal instrumentation can be done in most of the cases, as it rarely compromises the spinal stability, as osteochondromas show focal growth in the posterior elements. Local recurrence is seen in 4% of the cases after resection and complete removal of the cartilaginous cap is essential to avoid local recurrence [17]. The authors support the recommendation of Gille O et al., to resect all the rapidly progressing solitary spinal osteochondromas as neurovascular involvement will have serious implications, though malignant transformation is rare [17].

CONCLUSION(S)

Solitary osteochondromas of L2 spinous process are a rare entity. In view of the risk of neurological impingement and rare malignant transformation, early and extra periosteal excision is indicated.

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PARTICULARS OF CONTRIBUTORS:
1. Additional Professor, Department of Orthopaedics, All India Institute of Medical Sciences, Bibinagar, Hyderabad, Telangana, India.
2. Senior Resident, Department of Orthopaedics, All India Institute of Medical Sciences, Bibinagar, Hyderabad, Telangana, India.
3. Assistant Professor, Department of Orthopaedics, All India Institute of Medical Sciences, Bibinagar, Hyderabad, Telangana, India.
4. Assistant Professor, Department of Orthopaedics, All India Institute of Medical Sciences, Bibinagar, Hyderabad, Telangana, India.
5. Senior Resident, Department of Orthopaedics, All India Institute of Medical Sciences, Bibinagar, Hyderabad, Telangana, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
Dr. Maley Deepak Kumar,
Assistant Professor, Department of Orthopaedics,
All India Institute of Medical Sciences, Bibinagar, Hyderabad, Telangana, India.
E-mail: maleydeepak@gmail.com

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