

# Monostotic Fibrous Dysplasia of the Lumbar Spine with Pathologic Fracture: A Case Report with Treatment and Follow-up

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## Abstract

**Objective:** To discuss our experience beside others in order to get a better view about these cases and their management.

**Summary of background data:** Fibrous dysplasia (FD) is a developmental abnormality of the bone and it represents about 7% of the benign bone tumors; hence vertebral involvement is reported in only 2.5% of all cases. An agreed method of treatment has not been established yet.

**Methods:** A 33 year old woman with a history of non specific chronic low back pain for more than 3 years, presented with sudden onset of an acute and severe low back pain with normal examination except for a local tenderness on lumbar vertebrae. Encountering a patient presenting red flags, spine radiography, bone scan, spinal CT scan and MRI was done and the patient underwent CT-guided biopsy afterward. When the diagnosis of fibrous dysplasia was done, she was treated with curettage and fixation with cage, screw and allograft insertion.

**Results:** The patient was followed for one year investigating spine stability, neurological deficit or any other symptoms which represent a one year good follow up outcome.

**Conclusion:** Based on our experience, here we recommend curettage, cage fixation and allograft insertion in cases of monostotic fibrous dysplasia of the spine when pain, fracture or instability exists.

**Keywords:** Lumbar monostotic fibrous dysplasia; Curettage; Allograft

## Introduction

Fibrous dysplasia (FD) is a developmental abnormality of the bone and it represents about seven percentages of the benign bone tumors. This tumor is characterized by replacement of normal bone and its marrow by fibrous-osseous tissue. This will result in decrease of bone strength, deformity. It consists of two types: It may be limited to a single bone (monostotic FD) or disseminated (polyostotic FD) [1-5]. Various types of the disease are described in combination with fibrous dysplasia such as McCune-Albright syndrome [6]. The natural course of the disorder is unpredictable. FD can involve any bone but the vertebral involvement is reported only in 2.5% of all the case. Monostotic involvement of spine is very rare and only fifty-four cases have been reported yet [7,8]. Since the symptoms overlap with the other pathologic conditions, diagnosing fibrous dysplasia in spine can be a big challenge.

Despite the absence of any established approach based on the management of this condition, many authors advocate deformity or fractures, which have lead to instability need surgical treatment with curettage and allograft replacement. Here we introduce and explain therapeutic management of a pathologic fracture of the lumbar spine (L3) vertebra caused by monostotic FD.

## Case Presentation

A 33 year old woman with a history of non specific chronic low back pain for more than 3 years, presented with sudden onset of an acute low back pain without any radiculopathy which interferes with sleeping. Examination revealed no neurological findings, no skin lesions or any evident of the deformity. There was no local mass but a local tenderness on the lumbar spinous processes was present. Encountering a patient presenting with the red flags, spine radiography was taken, which showed a destructive lesion of the 3rd lumbar vertebra in both Antero-postero and Lateral views. According to the destruction of the vertebra and possibility of bone tumors, bone scan, spinal CT scan and MRI

was done (Figures 1-3) and the patient underwent CT-guided biopsy afterward. Pathology report proposed fibrous dysplasia and a surgical plan was set.

Using the anterior retroperitoneal approach, the L3 vertebral body was identified and checked with C-Arm. Then the tumor in the vertebral body was removed and the curettage was completed using the



**Figure1:** Supplemental Digital Content 1. TIF The Plain X-Ray of the patient before surgery (AP and Lateral views) showing destructive lesion in the body of L3.

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**Received** February 13, 2013; **Accepted** July 29, 2013; **Published** July 31, 2013

**Citation:** Habibollahzadeh P, Sadat M, Mehrpour SR, Hassanmirzaei B, Mozafari M (2013) Monostotic Fibrous Dysplasia of the Lumbar Spine with Pathologic Fracture: A Case Report with Treatment and Follow-up. J Spine 2: 140. doi:10.4172/2165-7939.1000140

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power Burr. Subsequently the vertebral body was reconstructed using an expandable cage and allograft (Figure 4). To enhance the stability of the construct we put one screw above and below the L3 and fixed it with a rod and patient's life quality and medical follow up for one year revealed good outcomes.

## Discussion

Fibrous dysplasia is not an uncommon disease of the bone with a prevalence of 7% of all benign bone tumors. Depending on the number of bones affected, it is divided into two subtypes: monostotic and polyostotic. The monostotic variant has a significantly higher incidence

than the polyostotic form (70% and 30% respectively). However the polyostotic form is frequently seen in association with other pathologic situations such as McCune – Albright or Mazabraud syndromes [1,2,6].

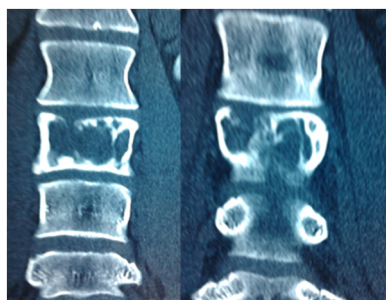
While any bone can be affected by the fibrous dysplasia, the most common sites of the disease are the femur, tibia, ribs, skull, facial bones, humerus, and pelvis. The vertebrae are less frequently involved. FD of the spine mostly occurs in polyostotic form and the monostotic form is an extremely rare condition and only 13 cases with lumbar involvement have been reported until now. Investigating all these 13 cases, monostotic FD of the lumbar vertebrae can affect any level and both the gender [9,10].

The most common symptom that patients present with is pain; however, there are also reports of deformity, radiculopathy, myelopathy and even paralysis. Moreover, incidental or posttraumatic finding was reported in many of the cases [8].

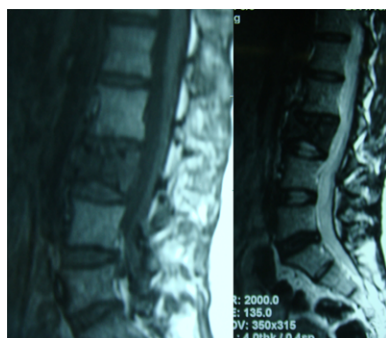
Regarding of planning for the treatment, there is not an invariant approach and most of the surgeons prefer to decide per case. In most of the case reported, aggressive curettage of the bone replaced with allograft was the treatment of the choice [11-13]. There was always a fear about recurrence or malignant transformation. Long term follow ups show only few transformation of monostotic FD to osteogenic sarcoma and in some cases there is residual fibrous tissue left which invades to the grafts [14-17]. Nevertheless, in all cases, regardless of the method of choice for treatment, there were mostly good outcomes. In this case we presented a pathologic fracture of monostotic FD of L3 vertebra which was treated with curettage and fixation with cage, screw and allograft insertion with 1 year of good follow-up.

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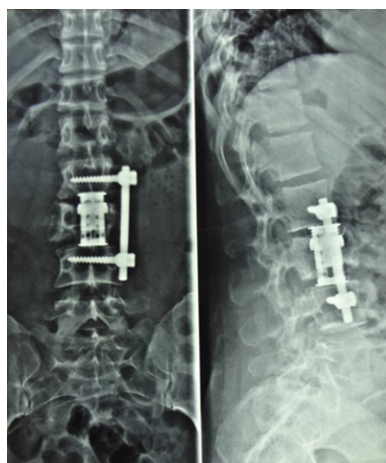
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**Figure 2:** Supplemental Digital Content 2.TIF. The CT-Scan of the patient before surgery showing destructive lesion in body of L3.



**Figure 3:** Supplemental Digital Content 3. TIF. The MRI of the patient before surgery (T1) (T2) revealing destructive lesion in L3.



**Figure 4:** Supplemental Digital Content 4. TIF. The post-operative X-Ray of the patient which.

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