

**Benign Metastasizing Leiomyoma: A Case Report**Rajaram R<sup>1,\*</sup> and Fong PL<sup>2</sup><sup>1</sup>Nurse Clinician (Advanced Practice Nurse), Speciality Nursing (Orthopaedics), Singapore General Hospital<sup>2</sup>Consultant, Department of Orthopaedics, Singapore General Hospital**\*Corresponding author:**

Rajashulakshana Rajaram,  
Nurse Clinician (Advanced Practice Nurse),  
Speciality Nursing (Orthopaedics), Singapore  
General Hospital,  
E-mail: rajashulakshana.rajaram@sgh.com.sg

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**1. Abstract**

Metastasizing benign leiomyoma is an extrauterine smooth muscle tumour. Leiomyoma in spine is extremely rare. We report a case of a 47-year-old female with benign leiomyoma metastasizing to the spine. To our knowledge no case of benign leiomyoma metastasizing to the spine has been reported before. Magnetic Resonance Imaging (MRI) revealed C6, C7 vertebral involvement, T2, T4, T7, T8, T11, L2, L3, L4, L5 moderate spinal canal stenosis and cord impingement and cord compression at T12 level. She also presented with growth over her right elbow and psoas muscle. The patient underwent posterior decompression laminectomy T10-L2 instrumentation and stabilization and excision of left paravertebral mass. Histology examination of the surgical specimen shows leiomyoma. Postoperatively patient improved. Currently there is no guidelines in treating leiomyoma. Patients are treated with surgical resection, radiotherapy or hormonal treatment and radiological surveillance. Since patients present as a challenging in terms of diagnosis and management. It is important to considered as a differential diagnosis of spinal lesions in females.

**2. Introduction**

Leiomyomas are benign tumors. Usually it occurs in the uterus. It is extremely rare in the spine. There are not much reported literature of it. The present study reviews a case of metastasizing leiomyoma in the spine causing thoracic cord compression in 46-year-old female.

**3. Case Presentation****3.1. Chief Complain**

A 46-year-old female presented to the accident emergency with

low back pain started 3 weeks ago. She was lifting archive boxes at work, while bending backwards the pain started. The pain started at the left paraspinal area near L1 region. The back pain got slightly better with rest but did not resolve. She did not complain of any night awakening. She did not report any urine incontinence or bowel incontinence. She also did not present with any lower limb weakness or numbness. She also did not present with any fever, loss of weight or night sweats.

She presented to her local General Practitioner. She did a spine radiograph which shows slight loss of height of the T12 vertebral body with sclerosis noted as well as suggestion of a lucent expanded lesion which was seen in the left transverse process of L5 involving the left pedicle (Figure 1). Magnetic Resonance Imaging (MRI) shows C6, C7 vertebral involvement, T2, T4, T7, T8, T11, L2, L3, L4, L5 and moderate spinal canal stenosis and cord impingement and cord compression at T12 level (Figure 2).

**3.2. Past Medical History**

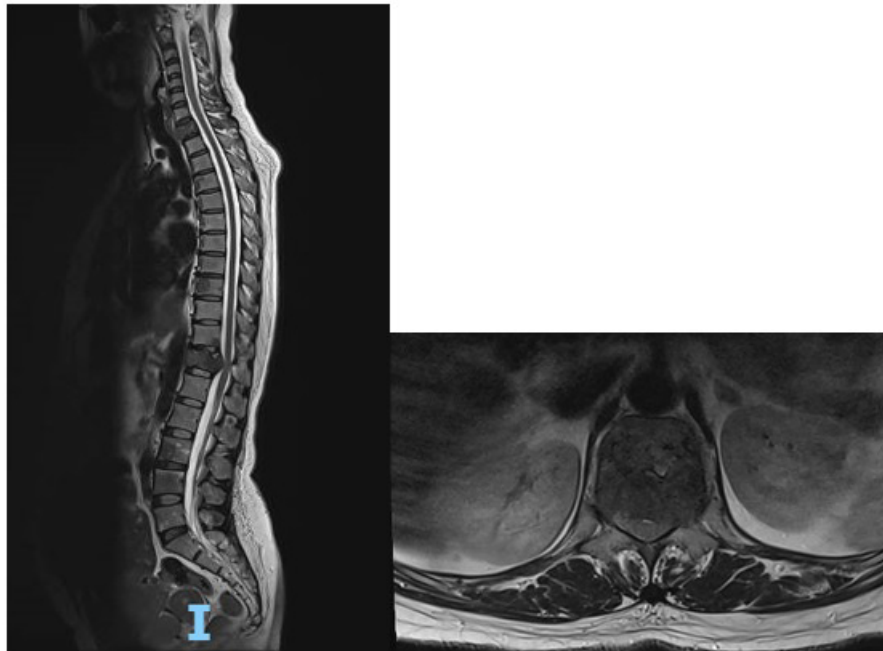
Mrs X has past medical history of fibroids diagnosed in 2020. She was advised for hysterectomy but patient declined. She underwent a laparoscopy to remove one fibroids. She was started on ulipristal to shrink the fibroids but the drug was stopped last year as it was banned. Her mammogram on 2020 shows fibroids on her left breast fibroids which was managed conservatively. Her pap smear done on 2018 showed unremarkable.

She noticed a mass at left lower lumbar region and right medial aspect of elbow last year in Mid-2020. She did an ultrasound and was managed conservatively. The mass remains stable in size and no overlying skin changes.



There is a slight reduction of T12 height. There is suggestion of a lucent expanded lesion is seen in the left transverse process of L5 involving the left pedicle.

**Figure 1:** Anterior Posterior/ Lateral Radiograph of the Spine



Multiple osseous lesions in the thoracic and lumbar spine, the sacrum and ribs.

T12 pathological fracture causing severe spinal canal narrowing.

In the T1 vertebral body, abnormal signal and enhancement suspicious for metastasis is seen.

**Figure 2:** Magnetic Resonance Imaging of the Spine

### 3.3. Family History

Her mother had a family history of cervical cancer but no other family history of malignancy.

### 3.4. Social History

Patient stays with husband and two children aged 13 and 10 years old. She works in a deskbound job in a bank.

She is a non-smoker and non-drinker.

### 3.5. Menstrual History

Mrx X had her menses last December. Her menarche started at age of 11. She describes it as regular and last for 3-4 days. No dysmenorrhea however was experiencing blood clots.

### 4. Physical Examination

Physical examination revealed the presence of mass of 8 x 8 cm

over the left lower lumbar region and 6 x6 cm right medial aspect of elbow (Figure 3). No tenderness, no signs of erythema or fluctuant was noticed. Left paraspinal tenderness was also palpated at T12 region. There were no signs of step deformity and no overlying skin changes. Neurological examination revealed the power and sensation was intact. The tone and reflexes were intact. No lymphadenopathy was detected.

Laboratory analysis showed a blood haemoglobin concentration of 118 g/Dl. Tumor markers was unremarkable. The reminder of her laboratory results were within physiological parameters. Thoracolumbar radiograph shows slight loss of T12 vertebral body with sclerosis seen.

Chest radiograph shows lobulated 2.6 x 4.2 cm radiopacity is seen in the periphery of the left lower zone (Figure 4). The mass form

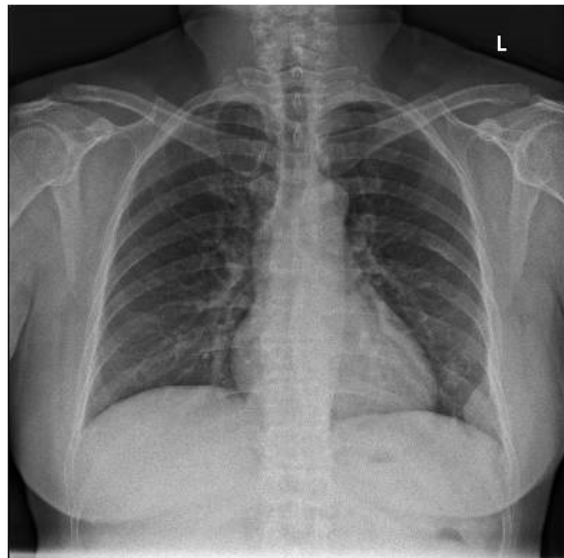
of an obtuse angle in relation to the pleural surface. It is associated with destruction of the left 7th lateral rib. This mass is likely extra-pulmonary; differentials include pleural based mass or bony destruction associated with soft tissue component. The heart size is normal. T12 vertebral fracture is again noted Magnetic Resonance Imaging (MRI) shows multiple spine metastasis involving C6.C7 T2, T4, T7, T8, T11, L2, L3, L4, L5 worst at T12 with pathological fracture and moderate spinal canal stenosis.

No intracranial abnormality detected in the computed tomography of the brain. Computed tomography of thoracic abdomen pelvis revealed as a large lobulated abdominopelvic mass is likely of gynecological origin (Figure 5). It was described as a possibility of leiomyosarcoma. Histological assessment was suggested. The preliminary tokuhashi score was 8 and the sins score was 14.



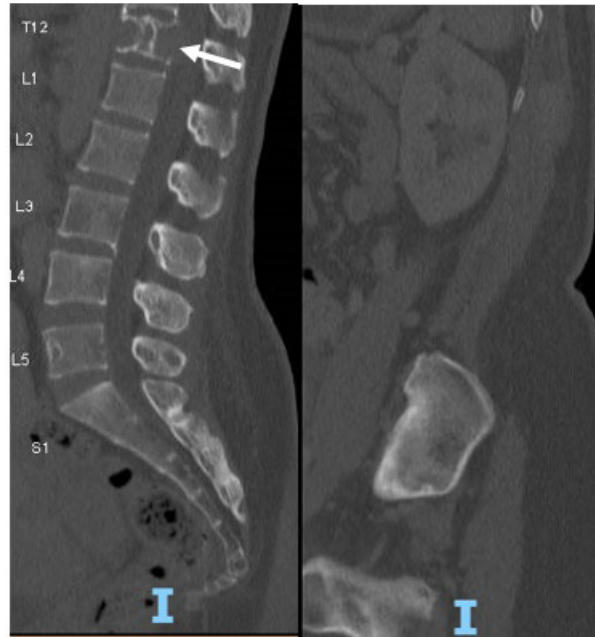
There is suggestion of a soft tissue bulge of muscle density at the anterior aspect of the flexed elbow on the lateral view.

**Figure 3:** Right Anterior Posterior /Lateral radiograph



Lobulated 2.6 x 4.2 cm radiopacity is seen in the periphery of the left lower zone. T12 vertebral fracture is again noted.

**Figure 4:** Chest Radiograph



The large lobulated abdominopelvic mass is likely of gynecological origin. Given the presence of large fibroids in the previous ultrasound studies, possibility of leiomyosarcoma needs to be considered. Histological assessment is suggested.

Peritoneal, subcutaneous, muscular and skeletal metastases. The small pulmonary nodules are also suspicious for metastases.

**Figure 5:** Computed Tomography Chest Abdomen and Pelvis

## 5. Surgical Intervention

The patient was counselled for posterior decompression laminectomy T10 –L2 instrumentation and stabilization and excision of left paravertebral mass. The surgery was uneventful however was complicated by cement extravasation. Subsequently she was planned for T1 Vertebroplasty and angioembolisation of psoas mass. The specimen was sent off for formal histopathology. (Figure 6)

The patient's postoperative course was uneventful except she developed a fever on 8 postoperative day. Septic workout was done but no underlying source of infection was found. Patient fever settled after 5 days of intravenous Tazocin. She was taking her diet

well and was ambulating with a walking frame. She was given a thoracic lumbar sacral orthosis for support. (Figure 7)

Histopathology revealed as leiomyoma (Figure 8). The samples demonstrated spindle cell proliferation. There are no treatment guidelines. After tumor board discussion, it was concluded leiomyoma would not respond to radiation therapy. Potentially may respond to ovarian suppression as patient was premenopausal especially since the musculoskeletal lesions are of same nature as uterine leiomyoma. It was concluded there was no role for radiation therapy for the spine. It was recommended to monitor response to GnRH (letrozole) for 4months and then evaluate with repeat computed tomography of thoracic abdomen pelvis.



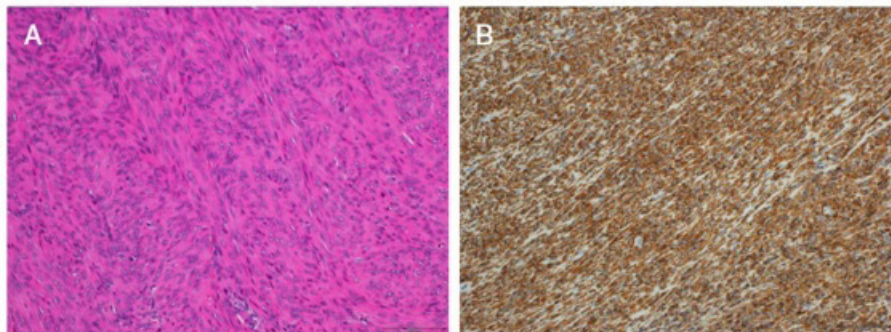
There is a lytic lesion seen in the left transverse process of L5 involving the left pedicle.

**Figure 6:** Thoracic Spine Radiograph Anterior Posterior/ Lateral Radiograph



There is a lytic lesion seen in the left transverse process of L5 involving the left pedicle.

**Figure 7:** Thoraco Lumbar Spine Radiograph Anterior /Posterior/Lateral Post Surgery



Histologic examination of the surgical specimen revealed a benign leiomyoma with spindle cell proliferation. B: The neoplastic cells immunexpressed smooth muscle actin.

**Figure 8:** Histology

## 6. Discussion

Leiomyomas rarely metastasize. Most common site of involvement are the lungs, lymph nodes, abdomen/pelvis, nervous system and bone [2]. Leiomyoma metastasis to the spine is rare. The pathogenesis of leiomyoma in spine is poorly understood [2]. They are most encountered in menopausal women [2]. The etiology of leiomyomas in adults are generally unknown, but it is known that leiomyoma grows in response to both estrogen and progesterone stimulation [3]. The prevalence increases throughout the reproductive years [3, 4]. It was also reported that early menarche, exposure to exogenous estrogen, obesity and pregnancy influence fibroid growth. [5, 6]. It was also suggested that Epstein –Barr virus may be also co factors in benign mastering leiomyoma [7, 8]. Benign

metastasizing leiomyomas represent a rare phenomenon consisting of the extrauterine spread of smooth muscle cells with similar histological, immunological, and molecular patterns to those of benign uterine leiomyomas [1]. They are considered benign based off their low mitotic activity, lack of anaplasia or necrosis, and limited vascularization [2]. It is indeed challenging to treat as it is rare [1].

The clinical presentation of spinal leiomyoma can include radicular pain, progressive or weakness of limbs or saddle anesthesia involving the cauda equina. [8, 9]. For the imaging findings, posterior vertebral body invasion with bony destruction, neural foramen invasion, and canal encroachment were shown as common denominators [3]. Especially in MRI findings, low T1 and T2 sig-

nal intensities with strong homogeneous enhancement were their common features [3]. In this case study a histology was need to evaluate between leiomyoma and leiomyosarcoma. Total resection would be the optimal treatment however the possibility of nerve damage will be high in this case. Hormonal therapy was considered for the following patient. It inhibits estrogen secretion. In conclusion, leiomyoma in spine is rare but it is should be considered in the differential diagnosis.

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