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# Primary liposarcoma of the fibular head: A rare location for a rare tumor: A case report

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## ABSTRACT

**INTRODUCTION:** Primary bone liposarcoma are extremely rare tumors and their location in the fibular head is exceptional.

**CASE REPORT:** A 19 year-old patient with a pain on the lateral of the proximal leg. The X-ray found an osteolytic lesion; MRI of the knee revealed a proximal epiphyseal-metaphyseal lesion process of the right fibula contours with cortical lysis and local medullary damage. The pathological study, follow by the immunohistochemical exam and the FISH concluded in an amplification of MDM2 (Murine double minute 2) confirming the presence of a liposarcoma.

**DISCUSSION:** The primary bone localization of liposarcomas remains rare. Their localization at the level of the fibular head is exceptional. The proximal fibula is mainly affected by benign tumors, in particular giant cell. Malignant tumors localized to the head of the fibula as well as aggressive benign tumors most often require en bloc resection.

**CONCLUSION:** Although rare, primary liposarcomas can localize to the head of the fibula. It is necessary to establish a clinical, radiological and histological diagnosis for adequate management.

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## 1. Introduction

Primary bone liposarcomas are extremely rare malignant tumors, very few cases have been reported in the literature. In the peroneal head, the presence of a malignant tumor is rare, and the presence of a liposarcoma is exceptional. The diagnosis of this tumor requires specific histological techniques and its management requires regular monitoring to watch for complications that may arise.

We report the case of a 19-year-old patient presenting with primary liposarcoma of the fibular head that has progressed for 5 months. This report has been written in line with the SCARE criteria [1].

## 2. Clinical case

We report the case of a 19-year-old female patient, student, originated from West Africa with no particular pathological history, presenting to the orthopedic emergency room for pain on the lateral face, in the proximal part of the right leg, evolving for 5 months, following a minimal shock against a table. On examination, the patient presented with normal walking, no steppage gait; swelling of the proximal and lateral part of the right leg, no skin

changes. On palpation, a homogeneous, firm and painful mass was found, measuring approximately 6 cm in length and 3 cm in width, fixed in relation to the deep plane, non-pulsatile. The neurovascular examination was without abnormality.

X-ray of the leg, performed as a first line, found an osteolytic lesion of the proximal epiphyseal-metaphyseal region of the fibula, with blistering of the cortices, with blurred outlines (Fig. 1); suggesting a giant cell tumor.

Complement by MRI of the knee revealed a proximal epiphyseal-metaphyseal lesion process of the right fibula measuring 38 × 41 × 58 mm of irregular contours with cortical lysis and local medullary damage and infiltration of the peri-lesional soft parts, in contact with the popliteal pedicle, possibly related to a giant cell tumor (Fig. 2).

The next step was to perform a biopsy and a pathological study which revealed a spindle-cell tumor lesion, made up of fusiform, oval or ribbon elements of a Schwannian nature, first suggesting a remodeled schwannoma. The immunohistochemical complement was in favor of a myxoid tumor not taking the Schwannian, melanic, epithelial or sarcomatous markers, and finally the FISH examination concluded in an amplification of MDM2 (Murine double minute 2) confirming the presence of a liposarcoma.

We performed the surgery 4 months after the patient first consultation due to the covid-19 pandemic. Before the surgery a thoraco-abdominal-pelvic CT was performed as part of the extension workup and did not reveal any abnormalities.

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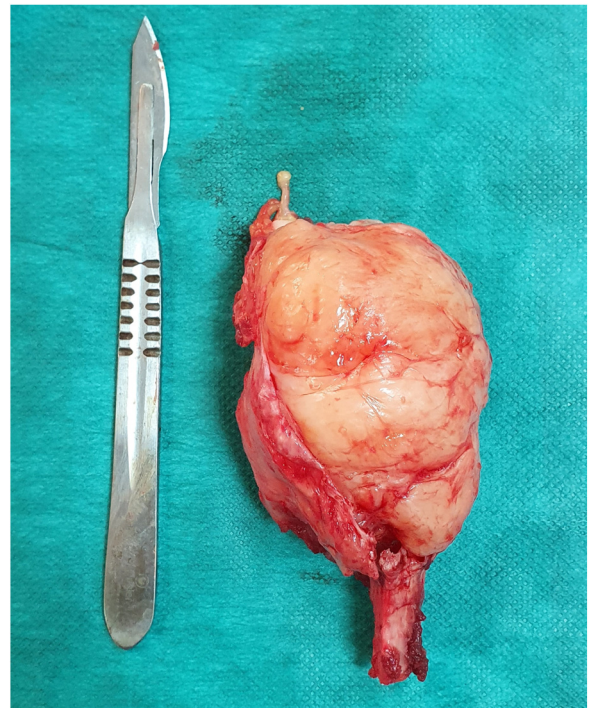
E-mail address: [baudouinbb@gmail.com](mailto:baudouinbb@gmail.com) (B. Boanimbek).



**Fig. 1.** X-ray of the leg showing an osteolytic lesion of the proximal epiphyseal-metaphyseal region of the fibula.

**2.1. Surgical procedure**

The patient was installed in the supine position, with a cushion under the buttock. The lower limb placed in internal rotation and adduction, the knee flexed at 30°. The skin incision extended 6 cm above the head of the fibula and descended along the fibular shaft for 12 cm. The main difficulty here has been the neurolysis of the external popliteal sciatic nerve in close contact with the tumor. Once the nerve was identified and isolated, the tendon insertions

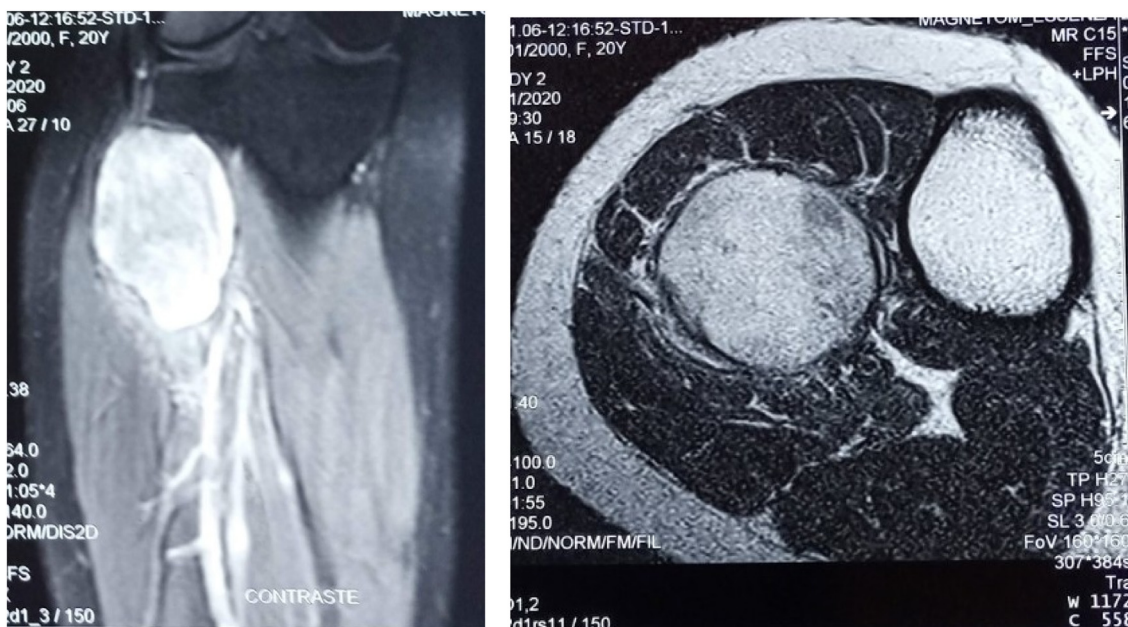


**Fig. 3.** En bloc resection of the tumor.

were exposed, as well as the lateral collateral ligament termination of the head of the fibula, then they were cut away from their insertions to pass into healthy edges. Distally, the muscle insertions on the fibular diaphysis were roughened and a peroneal osteotomy was made with a saw about 4 cm from the tumor, thus achieving an « en bloc resection of the tumor (Fig. 3). We did not reinsert the collateral ligament.

**2.2. Post operative care**

The patient's postoperative course was uneventful. A sensory and motor examination of the territories of the external popliteal



**Fig. 2.** Proximal epiphyseal-metaphyseal lesion process of the right fibula.



Fig. 4. Post-operative X-ray.

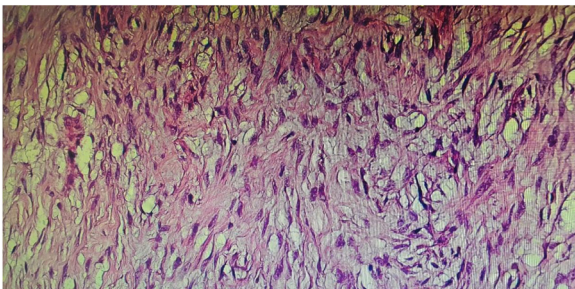


Fig. 5. Dedifferentiated liposarcoma with spindle-shaped and myxoid cells.

sciatic nerve carried out 24 h after the operation was found to be normal. The patient kept a Zimmer knee brace for six weeks, and began rehabilitation of the knee after removal of the brace; She was seen again six months later with a knee examination without signs of instability and a new X-ray workup still showing no abnormality (Fig. 4).

The anatomopathological study of the operative specimen confirmed an amplification of MDM2 and demonstrated a dedifferentiated liposarcoma with spindle-shaped and myxoid cells (Fig. 5), and healthy excision margins extending to 3.5 cm from the tumor area.

### 3. Discussion

Liposarcomas are classically soft tissue tumors. They are most often found in the soft parts of the upper and lower limbs, the

abdomen, the thorax, the retro peritoneum and the mediastinum, the head and the neck [2]. Their diagnosis is based on clinical and radiological elements and is confirmed by anatomopathology, to which we must add immunohistochemistry and molecular biology techniques, in particular the amplification of MDM2 and CDK4 [3]. The primary bone localization of liposarcomas remains rare; in fact, liposarcomas represent only less than 0.1% of primary bone cancers [4,5].

Their localization at the level of the fibular head is exceptional; In fact, the fibular head is a rare location for tumors, it only accounts for 2.5% of primary bone tumors [6]. The most frequently encountered malignant tumors in the fibular head are above all osteosarcomas and chondrosarcomas [7,8]. The proximal fibula is mainly affected by benign tumors, in particular giant cell tumors which represent almost a quarter of tumors found at this level [9], hence our erroneous differential diagnosis at the radiological stage. Malignant tumors localized to the head of the fibula as well as aggressive benign tumors most often require en bloc resection [10]. This en bloc resection most often raises the question of the stability of the knee due to the resection of the lateral collateral ligament which is inserted into the head of the fibula. Although reconstruction is not unanimous in the literature [11], some authors recommend reconstruction of the lateral collateral ligament after tumor resection [12].

We opted for tumor resection without reconstruction of the lateral collateral ligament, with preserved knee function and absence of instability after a follow-up of 6 months.

### 4. Conclusion

Although rare, primary liposarcomas can localize to the head of the fibula. It is necessary to establish a clinical, radiological and histological diagnosis for adequate management. Tumor resection can pose a problem with knee stability, hence the need for regular postoperative follow-up to watch for any complications.

### Declaration of Competing Interest

The authors declare that there is no conflict of interest.

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### Ethical approval

Case report publication does not require an ethical approval at our institution, however informed written consent was taken from the patient and his family. It was made sure that his identity will be kept a secret at all levels.

### Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

### Author's contribution

Operators:

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Acquisition of data: **AZNAGUE Y, EL MOULA A.**

Analysis and interpretation of data: **BOANIMBEK B, BENHIMA M A.**

Drafting of manuscript: **BOANIMBEK B, ABKARI I.**

Critical revision: **SAIDI H, ABKARI I.**

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