



# Malignant fibrous histiocytoma, case report

## Histiocitoma fibroso maligno, reporte de caso

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**ABSTRACT.** The term malignant fibrous histiocytoma was introduced by O'Brien and Stout for tumors of fibrocystic lineage. Malignant fibrous histiocytoma is the second most common soft tissue sarcoma of the musculoskeletal system after liposarcoma. The treatment of choice is surgery with wide resection margins, with radiotherapy and chemotherapy being complementary treatments to surgery. Study of a 68-year-old female patient in a Thoracic Surgery Service. Patient with malignant fibrous histiocytoma, observation and detailed description of the patient's clinical history, evolution of the disease, treatment and results obtained in the patient. Risk factors, such as exposure to biomass. Multidisciplinary management allows a timely approach and benefit in the result of long-term treatment for the patient. The use of the VAC system and thoracoscopy, to work together in the surgical approach, allow the reduction of wound healing and closure time, together with a reduction in the days of hospital stay, while also reducing hospital costs inherent to these pathologies.

**Keywords:** case report, thorax surgery, plastic surgery, VAC system, malignant fibrous histiocytoma.

## INTRODUCTION

Malignant fibrous histiocytoma is the most common soft tissue tumor in adults, the term was first introduced in 1963. O'Brien and Stout introduced the term malignant fibrous histiocytoma for tumors of fibrocystic lineage. Weiss and Enzinger described myxoid malignant fibrous histiocytoma, which shares several features with myxofibrosarcoma; and classified it into grades, according to its histology: low grade

**RESUMEN.** El término histiocitoma fibroso maligno fue introducido por O'Brien y Stout para tumores de linaje fibroquístico. El histiocitoma fibroso maligno es en nuestro medio el segundo sarcoma de partes blandas más frecuente del sistema musculoesquelético después del liposarcoma. El tratamiento de elección es la cirugía con márgenes de resección amplios, siendo la radioterapia y quimioterapia tratamientos complementarios de la cirugía. Estudio de tipo observacional que presenta detalladamente el reporte de un caso de paciente femenino de 68 años en un servicio de cirugía de tórax. Paciente con histiocitoma fibroso maligno, observación y descripción detallada sobre historia clínica, evolución de la enfermedad, tratamiento y resultados obtenidos en la paciente. Factores de riesgo como la exposición a biomasa que propiciaron esta condición de forma crónica. El manejo multidisciplinario permite un abordaje oportuno y beneficioso en el resultado del tratamiento a largo plazo para la paciente. El uso del sistema VAC y la toracoscopia para un trabajo en conjunto en el abordaje quirúrgico permiten la reducción del tiempo de cicatrización y cierre de heridas, en conjunto a una reducción en los días de estancia intrahospitalaria, mientras que también reduce costos hospitalarios inherentes a estas patologías.

**Palabras clave:** reporte de caso, cirugía de tórax, cirugía plástica, sistema VAC, histiocitoma fibroso maligno.

(myxoid predominant), intermediate grade (mixed: myxoid and cellular) and high grade (predominantly cellular).<sup>1</sup> However, in 2002 the World Health Organization classified malignant fibrous histiocytoma as an entity and determined that the myxoid type without myogenic, lipoblastic and chondrogenic factors is classified as myxofibrosarcoma.<sup>2</sup>

Malignant fibrous histiocytoma is the second most frequent soft tissue sarcoma of the musculoskeletal system after liposarcoma. It arises from pluripotential mesenchymal

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cells capable of differentiating from histiocytes, fibroblasts and myofibroblasts found in connective tissue.<sup>3</sup>

Macroscopically, malignant fibrous histiocytoma appears as a large tumor with multiple areas of necrosis on the cut surface. Microscopically the tumor shows a disorderly proliferation of spindle cells with occasional stellate or swirling pattern, presence of multinucleated cells with large nuclear atypia, bizarre shapes, frequent atypical mitosis figures, and a stroma showing a large amount of collagen, as well as a variable number of mononucleated inflammatory cells and foamy histiocytes. Its diagnosis is clinical and paraclinical. Cruz states that in 74% of cases it is made on the basis of macroscopic and microscopic morphology, but even so he recommends the use of immunohistochemistry, which is considered fundamental by Miettinen because of the heterogeneity of these lesions.<sup>4</sup>

Multidisciplinary treatment is essential for two reasons: 1) because the prognosis of these neoplasms is determined by the histological grade and size of the tumor; and 2) because up to 22% of cases present clinical metastatic disease from the outset.<sup>4</sup>

## CASE PRESENTATION

Female patient aged 68 years with primary school education, originally from Guanajuato, occupation: flower trader and exposure to fertilizers for 11 years. Allergies to contrast medium, allergy to drugs: trimethoprim-sulfamethoxazole, omeprazole, gentamicin and metamizole.

Diagnosed with type 2 diabetes mellitus for 11 years, on treatment with metformin 850 mg every 24 hours and insulin lispro 50 IU in the morning and 30 IU at night every 24 hours. History of systemic arterial hypertension in treatment with losartan 50 mg every 12 hours, since 11

years ago. Diabetic neuropathy in treatment with pregabalin 75 mg every 24 hours for the last five years.

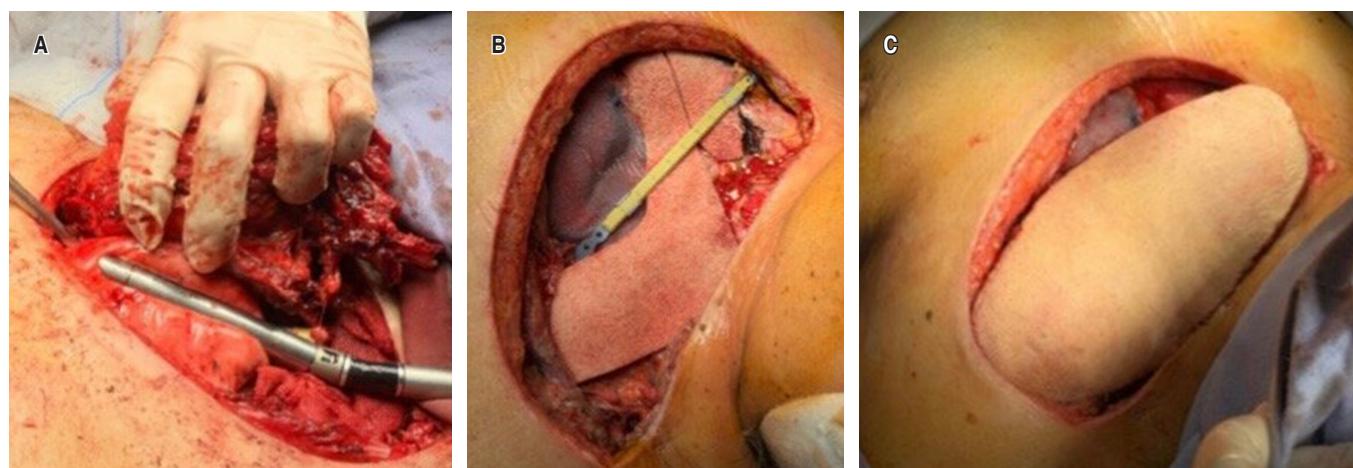
Surgical history: a cesarean section 32 years ago without complications, a laparoscopic fundoplication in 2001 secondary to gastroesophageal reflux disease without complications, a total abdominal hysterectomy secondary to uterine myomatosis 15 years ago with need for blood transfusion (type and amount of blood products transfused are unknown). A laparotomy for intestinal occlusion 15 years ago without complications and an open cholecystectomy 13 years ago, without complications.

She started her current condition in November 2021 with pain in the left hemithorax and shoulder, pulsating, with intensity 5/10 VAS (visual analog scale), intermittent, accompanied by weight loss of 5 kg in the last month, fever and nocturnal diaphoresis. She consulted a physician and received multiple treatment with non-steroidal anti-inflammatory drugs (NSAIDs), without improvement.

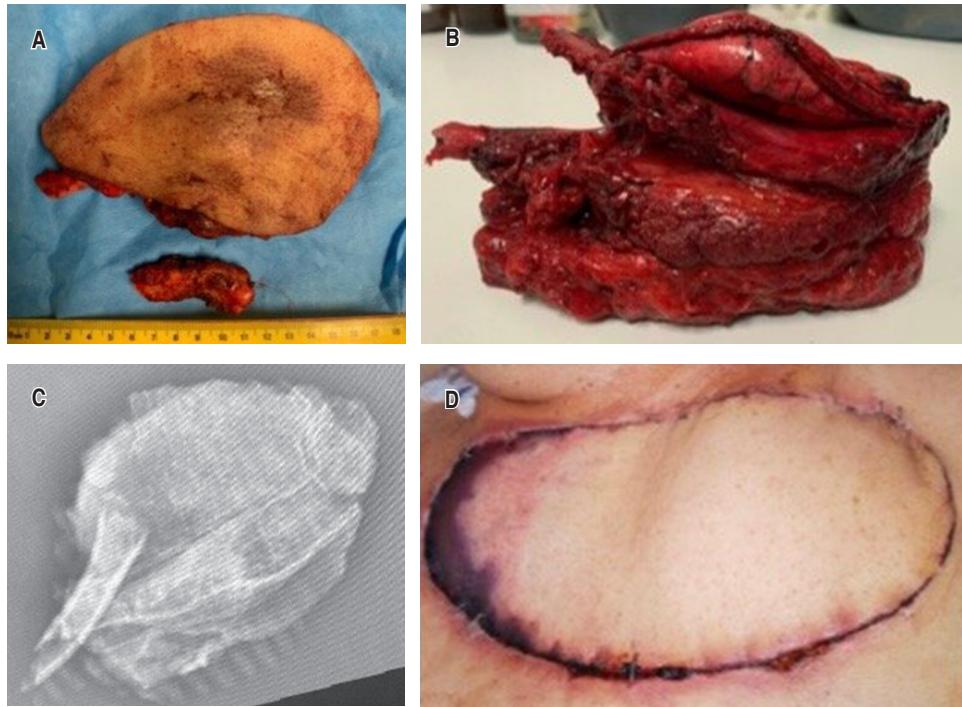
From day one of hospital stay, she started with antibiotic therapy with ceftriaxone 1 g every eight hours, her control medications metformin, losartan and insulin lispro. On her fourth day analgesia with paracetamol and ketorolac was added, as she began to report pain of intensity 6/10 VAS.

On his fifth day of in-hospital stay he presented dyspnea and hypertensive crisis, enoxaparin 60 mg every 24 hours, nifedipine 30 mg every 24 hours and oxygen with nasal prongs 3 L × min were added to his treatment regimen.

On his seventh day of stay, he underwent radiography of the shoulder and left arm, with no abnormal radiological data, only with increased volume in the soft tissues of the left arm. An axial, coronal and sagittal computerized tomography was also performed, showing a hypodense area at the level of the left costoclavicular joint, and a central venous catheter was placed.



**Figure 1:** **A)** Tumor resection with linear stapler, lung segment is taken. **B)** Titanium prosthesis that maintains the structure of the thoracic cage in resection sites. **C)** Pedicled latissimus dorsi and skin flap at the resection site.



**Figure 2:**

**A)** Resected tumor with free borders of approximately 16 cm in its longitudinal axis. **B)** Resected tumor with lateral view of its layers, from inferior to superior, skin and subcutaneous tissue, pectoral muscles, costal arches, lung. **C)** X-ray of tumor with presence of calcification in layer in all its morphology. **D)** Flap two weeks after surgery, peripheral necrosis towards medial thorax.

On the tenth day of her stay, she received a consultation from the psychology department, which showed improvement in her mood. On this day she was admitted to the operating room, and on 03/24/2022 a malignant tumor of the thorax was excised. Surgical findings showed an 8 cm diameter tumor in the anterior sternal face and left hemithorax with undefined borders, indurated, fixed to deep planes, with fatty infiltration, erythematous changes and presence of erosion at cutaneous level, with left pleuropulmonary invasion in the upper lobe, very friable tissue of petrous consistency, without invasion of vessels.

Technique: a spindle incision is made at the level of the anterior wall leaving a 4 cm border peripheral to the lesion and block resection is performed with exeresis of the left clavicle, first and second ribs, as well as partial sternotomy of the manubrium and upper third of the sternal body to the cartilage of the first and second right costal arches, as well as the clavicular union, identifying without invasion of the subclavian vein and artery, innominate vein and large vessels. Non-anatomic resection of the anterior wall of the upper pulmonary lobe infiltrated by tumor was performed with a stapler, with no evidence of leakage (Figure 1A). Hemostasis was verified and DualMesh was placed in the pleuropulmonary resection site, as well as StraTos system bar placement in the second costal arch, bilaterally (Figure 1B). White sponge is placed to cover large vessels and then VAC system (vacuum-assisted closure) is placed with gray sponge at a continuous suction of 50 mmHg, left endopleural probe is placed under direct

vision with thoracoscope, seal is placed with continuous suction at 20 cm<sup>3</sup>.

Plastic surgery (25/03/2022): incision on previously marked cutaneous island at the level of the left lumbar region, 19 × 9 cm, spindle-shaped, cutting dissection is performed until reaching the aponeurosis of the latissimus dorsi to its anatomical limits, disinsertion of the latissimus dorsi muscle from lateral, medial and inferior end is performed, disinserting the muscle with superior pedicle up to 3 cm below the axillary hollow. Hemostasis is verified. Biovac drainage is placed in the left lumbar region. A suprafascial tunnel was made at the left axillary level towards the cruciate area in the anterior hemithorax measuring 19 × 9 cm. Wound plane closure was performed on the dorsum, SCT (subcutaneous cellular tissue) with 2-0 vicryl inverted in deep plane, 3-0 vicryl in dermis and skin with staples. BIOVAC type drainage is fixed with 3-0 nylon. The patient is placed in dorsal decubitus and the VAC system is removed, gray sponges and white sponge are removed, showing bone exposure with loss of clavicular segments and first and second ribs resected in the previous procedure with StraTos system bar in bilateral second costal arch, pulmonary exposure with DualMesh, exposure of great vessels, pectoralis major segments and adjacent nerves. We proceed to externalize the previously tunneled flap and fix the wide dorsal flap to the deep tissue, place the cutaneous island in its final position (Figure 1C), place a superolateral Penrose drain and another inferolateral Penrose drain. After hemostasis, closure is performed by planes, 2-0

vicryl inverted stitches for SCT and then 3-0 vicryl inverted stitches, the skin is faced with cardinal staples.

The surgical specimen is shown with respected edges (*Figure 2A and B*), of which radiography is taken (*Figure 2C*). Follow-up image is shown two weeks after surgery (*Figure 2D*).

## DISCUSSION

Secondary to a multidisciplinary management between surgical services such as thoracic surgery (resection) and plastic and reconstructive surgery (reconstruction), it was possible to obtain beneficial results and survival for the patient, and the patient has been continuously followed up by both services until today.

## CONCLUSION

Multidisciplinary management is of utmost importance to ensure the patient's well-being. The joint management allowed a timely and beneficial approach in the outcome of long-term treatment for the patient. The use of the VAC system and thoracoscopy to work together in the surgical approach allows a reduction of the healing time and wound closure, a shortening of the days of hospital stay and also a reduction of hospital costs inherent to these pathologies.

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**Conflict of interests:** the authors declare that they have no conflict of interests.