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CASE REPORT

# Myositis ossificans in a 29 years old athletic female

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## Abstract

Myositis ossificans (MO) is a rare group of diseases in which heterotopic ossification occurs in muscles, tendons, nerves, or even subcutaneous fat. MO can occur in patients of all ages, but usually appears in young adults who practice sports or have a history of mechanical trauma, burns, infections or drug abuse.

The article highlights the case of a 29-year-old athletic female who noticed, by random palpation, a small lump in her left biceps, near the radial insertion. The lump was not painful and noticeable with the naked eye.

Rest and NSAIDs were recommended and all went well for about 3 months.

However, after almost a week from that moment, the pain was excruciating, inflammation extend on the arm and forearm, she could not extend her arm anymore and its circumference was 30 cm from 24 initially.

A biopsy was performed and the result was calcified fibrous tissue with suggestive aspect of myositis ossificans.

Surgery was planned with reconstruction of the biceps tendon in mind.

After surgery, the elbow was splinted at 90 degrees for two weeks, then dynamic splinting was performed with increasingly wider range of motion until full recovery was achieved.

MO is a rare disease that involves many differential diagnoses, some of which are deadly and each with its own particularities, different imaging aspects and different treatments.

**Keywords:** myositis, athletic woman, reconstruction, myositis ossificans trauma

## Introduction

Myositis ossificans (MO) is a rare group of diseases in which heterotopic ossification occurs in muscles, tendons, nerves, or even subcutaneous fat. MO can be divided broadly into myositis ossificans progressiva (MOP), which is an autosomal dominant disease that can be deadly and myositis ossificans

traumatica (MOT), or simply called myositis ossificans, which can be confusing. Other names for MOT are myositis ossificans circumscripta, localized myositis ossificans, or fibrodysplasia ossificans circumscripta.

MO can occur in patients of all ages, but usually appears in young adults who practice sports or have a history of mechanical trauma, burns, infections or drug abuse. In most cases,

inflammation, ischemia, or repetitive mechanical injuries have been cited as possible factors. Non-traumatic cases are reported in literature and are usually suited to neurogenic conditions such as spinal cord injuries, strokes, brain tumors and other neurological conditions [1-11].

## Case report

A 29-year-old athletic female noticed, by random palpation, a small lump in her left biceps, near the radial insertion. The lump was not painful and noticeable with the naked eye, no limiting of motion or loss of strength was noted. The patient ignored the lump thinking it will disappear. 6 months later, the lump was still present, so she underwent a consultation and an ultrasound, which revealed a 1,9 x 1,7 cm partial tear of the biceps brachii at the muscle-tendon junction. Rest and NSAIDs were recommended and all went well for about 3 months, then, signs of inflammation and pain that did not go away with medication appeared around the lump. In almost a week, the pain was excruciating, inflammation extend on the arm and forearm, she could not extend her arm anymore and its circumference was 30 cm from 24 initially. A biopsy was performed and the result was calcified fibrous tissue with suggestive aspect of myositis ossificans. In the meantime, another ultrasound was performed, which revealed that the calcified mass was measuring 10 x 3 cm. An X-ray and an MRI reaffirmed the diagnosis, to see also the extension of the lesion in the biceps tendon (Fig. 1 A-D).

Surgery was planned with reconstruction of the biceps tendon in mind. MRI and ultrasound could not identify the exact extension of the calcified tendon and resection limits, so the team also prepared an anchor fixation screw for the radial insertion, which was fortunately not necessary and the tendon reconstruction was performed only with

tensor fasciae latae harvested from the contralateral side. This was possible because approximately 3 cm of tendon from the insertion point on to the radius were intact and this allowed a good anchorage point of the newly reconstructed tendon; proximally enough muscle was left for a good integration of the tendon all along the belly of the biceps (Fig. 2 A-C). After surgery, the elbow was splinted at 90 degrees for two weeks, then dynamic splinting was performed with increasingly wider range of motion until full recovery was achieved.

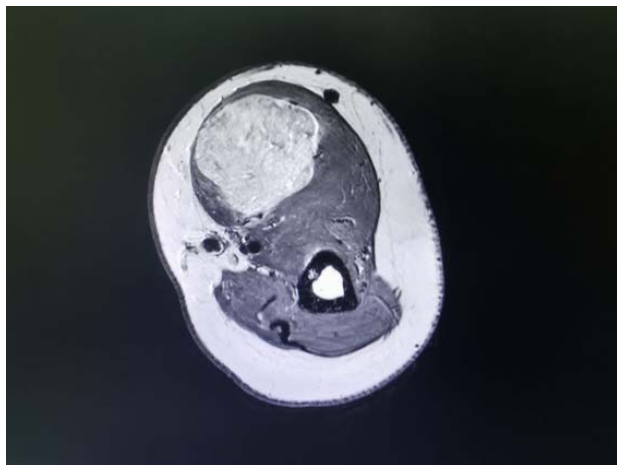
The fully excised mass measured around 12 cm in length and about 4 cm in its widest point. Pathology report confirmed the diagnosis of myositis ossificans excised "en bloc" (Fig. 3 A, B).



A



B



C

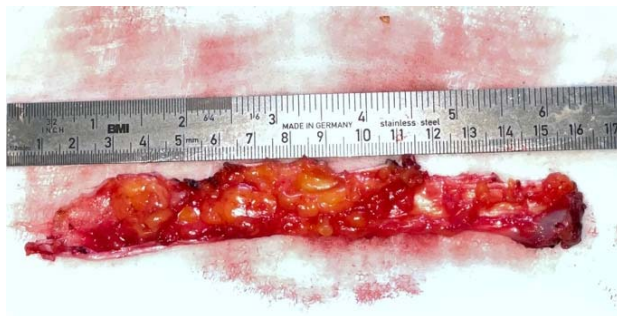


D

**Fig. 1 A-D** X-ray and an MRI reaffirming the diagnosis of myositis ossificans and the extension of the lesion in the biceps tendon



A



B



C

**Fig. 2 A-C** Tendon reconstruction performed only with tensor fasciae latae harvested from the contralateral side; proximally enough muscle was left for a good integration of the tendon all along the belly of the biceps



A



B

**Fig. 3 A, B** Fully excised mass measuring around 12 cm in length and about 4 cm in its widest point; myositis ossificans excised "en bloc"

## Discussions

In early stages, MO has a nonspecific imaging appearance and can be confused with several pathologies like intramuscular abscess, hematomas and osteomyelitis. Usually, a history of trauma is noted in hematoma and MO. Intramuscular abscess and osteomyelitis are most of the time accompanied by fever and tender swelling. Increased inflammatory bio markers like C reactive protein and erythrocyte sedimentation rate can be found in all the above lesions.

Depending on the healthcare system of different countries, a series of first line imaging options are available. In our patient's case, because radiology and ultrasound devices are broadly available in our country, a soft tissue ultrasound was performed, which showed a tendon tear. This, combined with the partial remission under rest, ice and anti-inflammatory medication eliminated most of the diseases cited above. In the second stage of the disease, ultrasound guided the diagnosis to MO, but, for differential diagnosis, X-rays and MRI were also performed [12-15].

Treatment options vary, but usually conservative management consisting of the

"RICE" principle (rest, ice, compression, elevation) and NSAIDS are the first line options.

With this type of treatment, many lesions diminish in size and some of them disappear completely [16]. If these first options fail, like in our patient's case, surgery is suggested, reinforced by the fact that the mass seemed to be mature and well defined, except for the distal part that merged into the tendon, and even with different imaging options, the surgeons could not see exactly the degree of invasion towards the insertion point onto the radius [17]. All these taken into account, the reconstruction with tensor fasciae latae of the biceps tendon was planned and a tendon anchor with screw was prepared in case not enough healthy tendon remained after the excision of the mass.

## Conclusions

MO is a rare disease that involves many differential diagnoses, some of which are deadly and each with its own particularities, different imaging aspects and different treatments. Because of the great variability of the occurrence site, treatments and surgery have to be tailored specifically to each case: some of them disappear with conservative treatment, some with surgical excision and no need for reconstructive surgery, and some cases, like the one presented in this article, are easy and straightforward to diagnose, but because the location and the size of the mass excision alone are not enough, the reconstruction of the tendon is imperative for a good functional outcome.

## Conflicts of interest

The authors state no conflict of interest.

## Informed Consent and Human and Animal Rights statements

An informed consent has been obtained from the individual included in this study.

## Authorization for the use of human subjects

Ethical approval: The research related to human use complies with all the relevant national regulations, institutional policies, is in accordance with the tenets of the Helsinki Declaration, and has been approved by the review board of "Prof. Dr. Agrippa Ionescu" Emergency Hospital, Bucharest, Romania.

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## Disclosures

None.

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