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Case Report

Radiology Section

Incidental Diagnosis of Myositis Ossificans in a Neglected Hip Fracture: A Case Report

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ABSTRACT

Myositis Ossificans (MO) is a condition characterised by the formation of heterotopic bone that typically occurs following trauma. Location around the hip is rare, and it can imitate malignant bone tumours, which can make diagnosis challenging. We discuss the incidental discovery of MO in a patient with a neglected hip fracture and the implications of delayed imaging and prolonged immobilisation. We describe a male, aged 71 years, who presented with an inability to walk associated with recurrent episodes of left hip pain for eight months, with acute worsening over two days. Twelve months earlier, he had undergone surgery, and two months after the surgery, he fell from a height, which left him with unrelenting hip pain and a state of immobilisation. Despite this, he did not undergo imaging studies or receive definitive management. The patient presented to a tertiary care hospital after eight months for persistent hip symptoms and imaging revealed an old femoral neck fracture with incidental MOs in the adjacent soft-tissue. The patient was conservatively managed for MO with analgesia and physiotherapy. Here, we emphasise the importance of early diagnosis and proper treatment of incidental MOs discovered during cases of delayed trauma. The potential for MO should be considered as a diagnosis when clinicians evaluate their post-trauma patients to decrease the possibility of misdiagnosis and ultimately provide optimal care for the patients.

Keywords: Conservative management, Heterotopic ossification, Immobilisation, Trauma, Ultrasonography

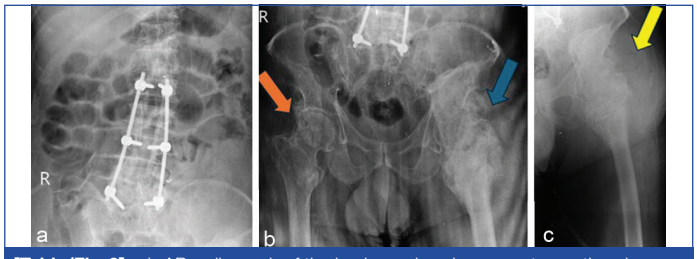
CASE REPORT

A male, aged 71 years, presented with an inability to walk associated with recurrent episodes of left hip pain for eight months, with acute worsening over two days. He had also visited other hospitals for treatment. Although initial measures provided some relief, the hip pain recurred frequently.

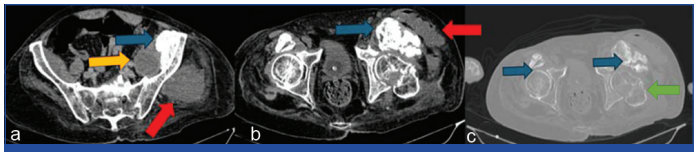
Twelve months earlier, the patient had presented with bilateral lower limb weakness, swelling, and tingling numbness. He was finally diagnosed with a Prolapsed Intervertebral Disc (PIVD) after clinical evaluation and imaging, with compression of the right nerve root. The patient had L1, L2, and L5 pedicle screw fixation and L1, L2, L3, L4, and L5 laminectomy. The patient began physiotherapy, showing considerable improvement, two months postoperatively. Unfortunately, in the second month of rehabilitation, he fell from a height. Six hours later, there was swelling [Table/Fig-1] and localised tenderness around the left hip, but no visible bruising or lacerations to the skin. After the injury, the patient was non-weight-bearing and unable to ambulate. Due to financial and logistical limitations, he was managed conservatively at a village clinic without undergoing imaging studies. He stayed bedridden since the event, despite long immobilisation and symptomatic management. The patient presented to a tertiary care hospital after eight months for persistent hip symptoms and underwent pelvic CT, MRI, X-ray, and ultrasound for further evaluation.

Pelvic radiographs showed bilateral femoral head and neck destruction with acetabular osteolysis, indicating advanced avascular necrosis or septic arthritis sequelae. A curvilinear calcific opacity lateral to the left femur was demonstrated, a characteristic of mature MOs [Table/Fig-2]. Axial CT showed bridging ossifications in the left iliopsoas and lateral thigh muscles, with a psoas abscess, a complex abscess in the gluteal region, and a fracture of the left femoral neck [Table/Fig-3]. Ultrasonography identified a well-defined hypoechoic collection in the left hip joint and a gluteal abscess [Table/Fig-4]. MRI further demonstrated a peripherally enhancing, diffusion-restricting abscess with haemorrhagic or calcified components, as well as a lesion consistent with mature MOs [Table/Fig-5]. The patient was treated conservatively for MO, as surgical excision was not indicated because of the maturity of the ossified lesion. Analgesia, physiotherapy, and early mobilisation were started. His mobility improved over subsequent follow-ups. At two months of follow-up, the patient was able to stand with support. By the 4th month, He was able to walk approximately 10 steps. His walking ability improved gradually, but his long-term functional prognosis was guarded.

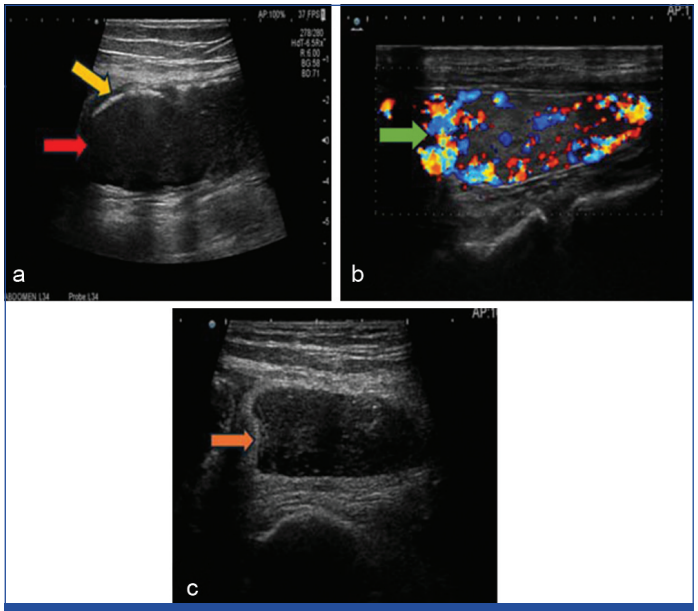
[Table/Fig-1]: Clinical photograph shows the patient's left hip and upper thigh region demonstrating a firm, visibly swollen (black arrow) area over the antero-lateral aspect of upper thigh; b) The overlying skin, just below the hip crease and anterior superior iliac spine, shows dusky discoloration (blue arrow), suggesting an underlying soft-tissue pathology.



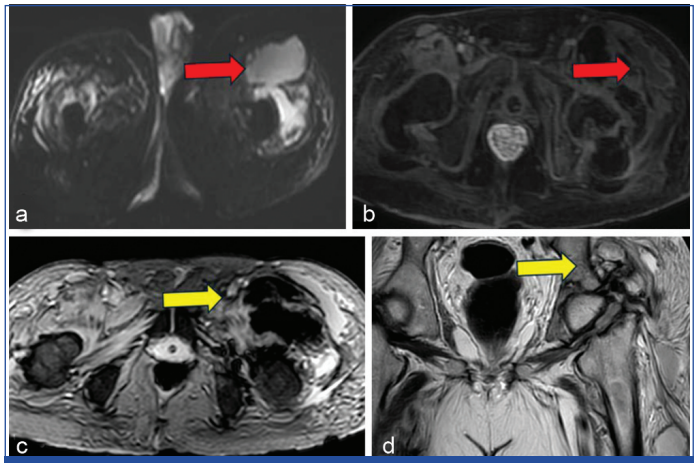
[Table/Fig-2]: a): AP radiograph of the lumbar spine shows postoperative changes with laminectomy and transpedicular screw fixation at L1, L3, and L5 levels; b) AP pelvis radiograph demonstrates fracture at the right femoral neck (orange arrow) and destruction of left femoral head and neck (blue arrow); c) AP radiograph of the left hip reveals a curvilinear soft-tissue calcific opacity lateral to the left femur, characteristic of mature-stage Myositis Ossificans (MO) (yellow arrow).



[Table/Fig-3]: Axial CT images in venous phase – soft-tissue window (a, b) and bone window (c) - show bridging ossifications within the left iliopsoas muscle and calcific foci in the lateral thigh muscles on the left, with additional foci in the right quadriceps, consistent with Myositis Ossificans (MO) (blue arrows). A hypodense collection within the left psoas muscle represents a psoas abscess (yellow arrow, A). A larger complex collection with internal air foci is noted in the anterolateral left thigh and gluteal region, suggestive of an infective abscess (red arrows, a, b). Fracture of the left femoral neck is also evident (c, green arrow).



[Table/Fig-4]: Grayscale (a) and Colour Doppler (b) ultrasonography images of the left hip region. a shows a well-defined hypoechoic collection within the left hip joint (Red arrow) with overlying soft-tissue changes (yellow arrow). (b) demonstrates peripheral vascularity around the collection on Doppler (Green arrow), findings suggestive of a left hip joint abscess. Additionally (c), a hypoechoic collection with irregular margins is seen in the left gluteal region, consistent with a gluteal abscess (Orange arrow).



[Table/Fig-5]: Axial DWI (a), post-contrast T1-weighted axial (b), GRE axial (c), and T2-weighted coronal (d) MR images demonstrate: an ill-defined, peripherally enhancing collection in the anterolateral aspect of the left thigh and gluteal region, exhibiting diffusion restriction (a) and peripherally enhancing on T1 post contrast (b), suggestive of a loculated abscess (red arrows) with haemorrhagic or calcified components. A soft-tissue lesion with a peripheral hypointense rim and central heterogeneous signal on T2 weighted image (c) and showing blooming on GRE (d), consistent with mature-stage Myositis Ossificans (MO) (yellow arrows).

DISCUSSION

Heterotopic non-neoplastic bone or cartilage growth in or around muscle and bone is known as MO, typically occurring secondary to trauma [1]. The definite prevalence of it is not well recognised, but post-traumatic MO is documented in approximately 9-17% following muscle hematomas [2] and in 20% after neurologic injury like trauma to spinal cord [3]. In India, the condition remains under-reported, with only isolated case reports available in the literature. For instance, Shah KA et al., reported complete extra-articular ankylosis of the hip and stiffness of the elbow in an Indian patient with post-traumatic MO [4].

It often affects the quadriceps and biceps, but its occurrence in the hip joint is relatively rare, presenting a unique set of diagnostic challenges [5]. Several recent international reports support this rarity: for example, Bai Q et al., described MO in the pectineus muscle after pelvic fracture, and Tlaite O et al., reported neurogenic MO of the hip in a patient with axonal polyneuropathy [6,7].

The incidental discovery of MO, as demonstrated in this case, is even less common and highlights the consequences of untreated trauma and prolonged immobilisation, which in this patient likely contributed to heterotopic ossification.

MO typically progresses through three stages: In the acute inflammatory phase (the first week), fibroblastic proliferation, oedema, and neovascularisation are characteristic of the soft-tissue response. This is followed by the reparative (second to fourth week) stage, during which osteoid production and early calcification begin. Mature lamellar bone is finally formed at the edges in the maturation stage and usually occurs at 6-8 weeks. This cascade of pathophysiology underscores the critical issue of timing, particularly in relation to both diagnosis and the approach to imaging [8].

Diagnosis of MO can be challenging, especially in the early stages, as its appearance on radiographic assessment may be mistaken for that of malignant tumours, such as osteosarcoma or other mineralising soft-tissue sarcomas [9,10]. CT imaging is beneficial in highlighting these features [8,11]. The differential diagnosis of MO involves not only malignancies but also conditions such as muscle abscess, isolated myositis, rhabdomyolysis, and fibro-osseous pseudotumours [10]. In our patient, delayed imaging not only resulted in late diagnosis of femoral neck fracture, but also missed the opportunity to diagnose evolving MO at a stage that could potentially be reversible. Long-term immobilisation is a well-recognised risk factor for MO, with previous trauma or surgery the other significant risk factor [12]. Furthermore, the history of spinal surgery and neurologic deficit of our patient were particularly conducive to secondary ectopic ossification.

The management of MO is generally conservative, as in our case. Standard treatment consists of rest, analgesics, NSAIDs, and physical therapy to preserve the range of motion in the joints [13]. Surgical excision is typically indicated for patients with severe pain, restricted range of motion, or evidence of neurovascular compromise. It is best deferred until the lesion has fully matured, usually at 6 to 12 months following insult, to eliminate the chance for recurrence [8,13]. Conservative treatment was adequate due to the mature appearance of the lesion and the lack of marked functional impairment caused solely by MO in our case. Our results corroborate the earlier findings. Ragunanthan N and Sugavanam C reported the same presentation and diagnosis of treating such a case as osteosarcoma, emphasising diagnostic confusion [9]. However, whereas in that case surgery was necessary, our patient had complete resolution with conservative management.

This case serves as a reminder that diagnosis requires a high-index of suspicion by clinicians, especially in resource-limited settings, where imaging may not be readily available.

CONCLUSION(S)

The unexpected finding of a MO in this patient highlights that overlooked damage and prolonged immobilisation can lead to MO, complicating both clinical and radiographic assessments. A better understanding of the early imaging findings and the clinical course of MO may help avoid misdiagnosis and select the most effective therapeutic approach.

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