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RESEARCH ARTICLE

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A RARE PRESENTATION OF ANKLE ARTHROPATHY COMPLICATED BY TUMORAL CALCINOSIS AND OSTEOMYELITIS

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Abstract

Background: Ankle arthropathy can lead to joint deformity and functional impairment, and its progression may be complicated by rare conditions like tumoral calcinosis, characterized by periarticular calcium deposits. When associated with osteomyelitis, it poses significant diagnostic and therapeutic challenges. The simultaneous occurrence of these three conditions is extremely uncommon, warranting early recognition and careful management.

Case report: A 55-year-old female presented with left ankle and foot pain, swelling, and difficulty walking. Imaging revealed severe ankle arthropathy with multiple periarticular calcific deposits suggestive of secondary tumoral calcinosis. MRI confirmed extensive erosive changes, and the patient was planned for triple arthrodesis. Intraoperatively, purulent material was noted, and histopathology confirmed osteomyelitis. Due to persistent infection and proximal spread, a below-knee amputation was performed to control the infection and prevent systemic complications.

Conclusion: The coexistence of ankle arthropathy, tumoral calcinosis, and osteomyelitis is rare and can lead to severe joint destruction. Early recognition and aggressive management are essential to prevent complications, and in advanced cases, amputation may be necessary to control infection and protect patient health.

Keywords: foot and ankle; malignant tumours; diagnosis; osteomyelitis

INTRODUCTION

Tumoral calcinosis (TC) is an uncommon disorder characterized by large peri-articular soft-tissue calcium phosphate deposits that can mimic neoplastic, infectious, or other calcific conditions [1]. TC occurs in primary forms (familial hyperphosphatemic or normophosphatemic) and secondary forms (most commonly in the setting of chronic kidney disease/uremia), and its clinical presentation ranges from painless enlarging masses to inflammatory or symptomatic lesions that cause functional impairment [2].

Peri-articular calcific masses most frequently involve the hip, shoulder, and elbow; involvement of the ankle and hindfoot is distinctly uncommon and may be overlooked on initial assessment. When present around the ankle, large deposits can produce mechanical restriction, skin compromise, secondary

ulceration, and can obscure or mimic underlying joint pathology [3].
Accurate diagnosis requires integration of biochemical profiling (serum phosphate, calcium, and renal function), plain radiography and advanced imaging (CT/MRI) to define the distribution and internal architecture of calcified masses, and when the diagnosis remains uncertain tissue sampling for histopathology and microbiology [4]. Management is individualized and may combine medical measures aimed at correcting metabolic abnormalities with surgical excision and targeted antimicrobial therapy when infection is documented. Outcomes depend on the underlying aetiology, extent of disease, and timeliness of combined medical surgical care [4].
Here we present a rare case of 55 year old female with severe ankle arthropathy with extensive periarticular calcific deposits complicated by superadded osteomyelitis.

CASE PRESENTATION

A 55-year-old female presented with pain and swelling in her left ankle and foot, along with difficulty in walking. She had no known history of diabetes, hypertension, or other chronic illnesses and was not on any medications.
On examination, the left ankle and foot showed diffuse swelling and marked tenderness, with severely restricted ankle movements.
Initial radiographs revealed severe arthritic changes in the ankle joint along with multiple calcific deposits around the hindfoot and midfoot. A CT scan of the foot and ankle further demonstrated extensive erosive changes in the ankle joint bones, accompanied by multiple rounds to oval heterogeneous cystic calcified lesions over the dorsum of the midfoot, hindfoot, and posterior aspect of the ankle. These findings were suggestive of secondary tumoral calcinosis. MRI confirmed extensive erosive arthropathy with associated secondary tumoral calcinosis.
Based on the clinical and radiological findings, the patient was planned for triple arthrodesis using a Charney frame. During the procedure, a significant amount of purulent material was noted emerging from the bone. Bone samples were collected and sent for histopathological examination. Postoperatively, the patient continued to have persistent pus discharge from the operative site.
The histopathology report confirmed osteomyelitis involving the ankle joint bones. Given the progression of infection and evidence of proximal spread into the leg, a below-knee amputation was advised to prevent further extension of the infection.
Ultimately, a below-knee amputation was performed to control the infection and avoid potential systemic complications.





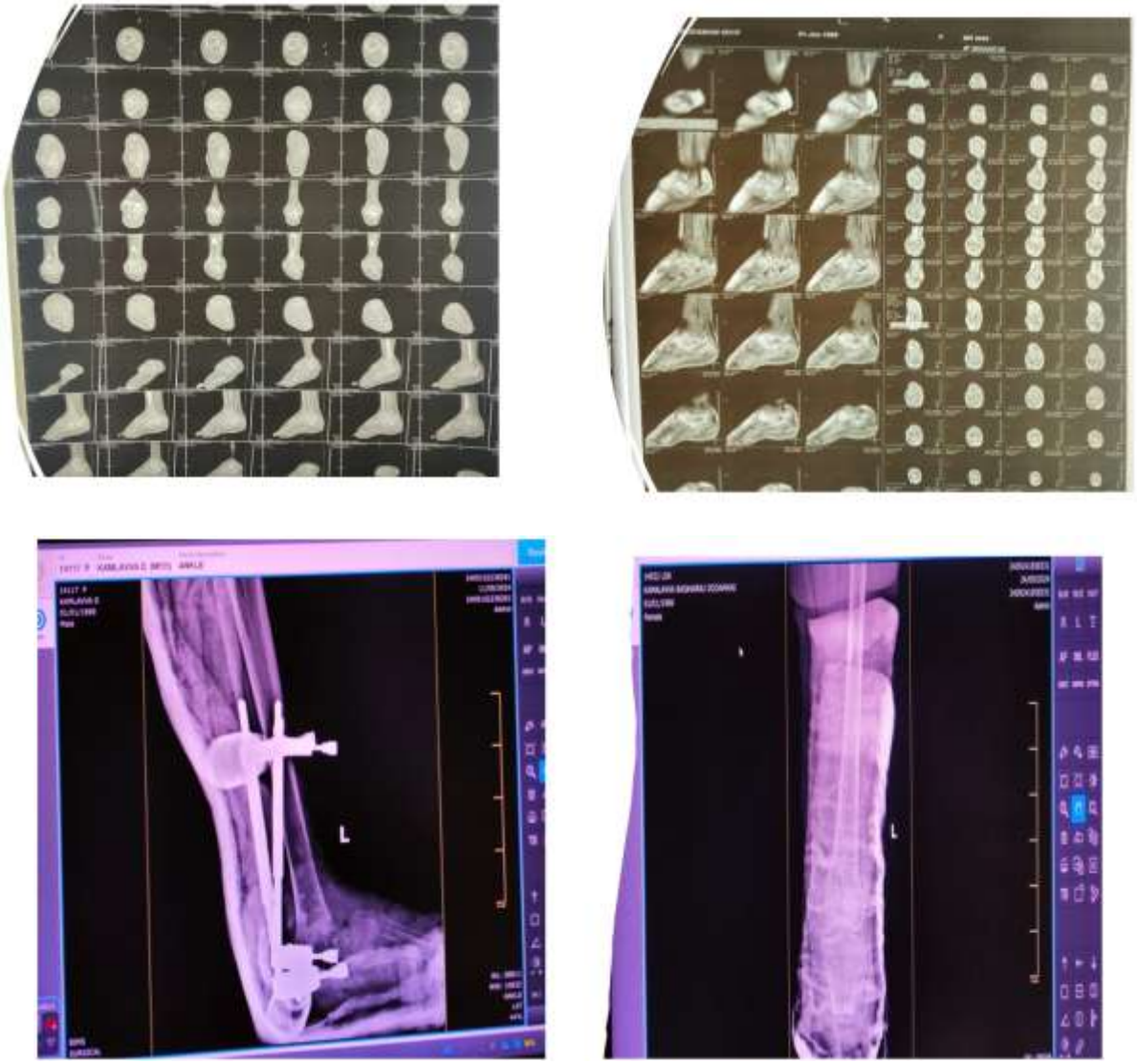


Fig 1: Fixation done with delta frame



Fig2: Wound after removing localised collection of pus



Fig 3: Post amputation wound

DISCUSSION

Pain around the ankle is a common clinical complaint, affecting nearly 30% of individuals who participate in sports activities. Osteomyelitis, an infection of bone, may arise through traumatic or non-traumatic mechanisms and may be hematogenous, contiguous, or related to direct inoculation [5]. It frequently results from bloodstream infections, chronic ulcers, or contamination associated with open fractures. Staphylococcus aureus remains the most frequently implicated pathogen. Clinically, ankle osteomyelitis presents with localized warmth, swelling, tenderness, and significant pain that worsens with weight bearing. Standard management typically requires a prolonged course of antibiotics, often for a minimum of six weeks [6].

In contrast, tumoral calcinosis is an uncommon condition characterized by periarticular calcium salt deposition, usually presenting as a slow-growing, painless mass. Most cases follow a benign course without joint destruction or systemic symptoms[7]. The present case is therefore highly unusual, as the patient exhibited secondary tumoral calcinosis coexisting with severe erosive ankle arthropathy and histopathologically confirmed osteomyelitis, ultimately necessitating a below-knee amputation. This combination of destructive joint disease, extensive calcific deposition, and superimposed purulent infection is exceptionally rare and not typical of the previously reported clinical spectrum of tumoral calcinosis.

Eldirdiri S et al. [8](2025) described a 38-year-old woman with a painless, well-circumscribed thigh mass exhibiting the classic “chicken-wire” pattern on imaging. Histology demonstrated lobulated

calcified deposits surrounded by fibrous tissue and foreign-body giant cells, with no evidence of infection or malignancy. The lesion was managed successfully with complete excision, and the patient recovered without complications. Unlike the present case, there was no joint involvement, inflammation, or infectious process, reflecting the characteristic indolent nature of idiopathic tumoral calcinosis.

Similarly, **Li X et al. [9](2025)** reported two cases of tumoral calcinosis, both demonstrating slowly enlarging periarticular masses. The first patient, a healthy 44-year-old woman, presented with an asymptomatic soft-tissue mass near the hip, with normal imaging and laboratory profiles. Surgical excision confirmed tumoral calcinosis without bone erosion or systemic effects. The second patient, with long-standing chronic kidney disease, developed secondary tumoral calcinosis affecting the shoulder and hip. Although this case demonstrated more aggressive imaging features, including heterogeneous calcification and focal bone destruction, the underlying process remained metabolic rather than infective, and there was no evidence of purulence, osteomyelitis, or rapidly progressive joint destruction.

Janardhanan et al. [10](2023) reported a 10-year-old girl who presented with clinical features mimicking osteomyelitis, including swelling over the right gluteal region, and was later diagnosed with hyperphosphatemic familial tumoral calcinosis due to a homozygous *GALNT3* mutation (c.1097T>G, p.Leu366Arg). She was managed with a low-phosphate diet, sevelamer, acetazolamide, and surgical excision of the gluteal mass. This case underscores that tumoral calcinosis can closely resemble osteomyelitis, potentially leading to delayed diagnosis, and highlights the need for heightened clinical awareness to ensure timely identification and appropriate management.

The present case shows the rare involvement of the ankle, the unusual coexistence of tumoral calcinosis with superimposed osteomyelitis, and an aggressive disease course that led to extensive bone destruction and below-knee amputation. Unlike previously reported benign, noninfective cases, this presentation shows that calcific periarticular lesions may mask severe underlying infection, highlighting the need for early recognition of atypical features to prevent serious complications.

CONCLUSION

This case highlights an exceptionally rare presentation in which secondary tumoral calcinosis coexisted with severe erosive ankle arthropathy and underlying osteomyelitis an atypical combination not commonly reported in the literature. Unlike the typically benign, painless, and noninfective nature of idiopathic or metabolic tumoral calcinosis described in previous studies, the present case demonstrated rapid progression, extensive bone destruction, persistent purulent infection, and ultimately required below-knee amputation. This report highlights the importance of maintaining a high index of suspicion for superimposed infection when calcified periarticular lesions are accompanied by pain, joint dysfunction, or soft-tissue inflammation. Early identification and timely intervention are essential to prevent advanced complications and to improve patient outcomes.

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