

“A Rare Case Of Multitarsal Osteomyelitis Involving The Navicular, Cuneiform, And Cuboid Bones In An Adult Without Trauma: A Case Report”

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Abstract

Osteomyelitis of the mid-foot tarsal bones is uncommon, particularly in the absence of trauma or systemic predisposing factors. We report a rare case of osteomyelitis involving the navicular, cuneiform, and cuboid bones in a 50-year-old male who presented with insidious onset pain of two months' duration. Radiographs, CT, and MRI confirmed destructive changes suggestive of chronic osteomyelitis. The patient underwent surgical debridement with autologous bone grafting of the defect and platelet-rich plasma (PRP) augmentation. Histopathological examination confirmed chronic osteomyelitis. The patient demonstrated satisfactory postoperative recovery with resolution of symptoms. This case emphasizes the importance of early imaging and timely surgical management in atypical presentations of tarsal osteomyelitis.

Osteomyelitis; Navicular bone; Cuneiform; Cuboid; Midfoot infection; Chronic osteomyelitis; Debridement; Bone graft; Platelet-rich plasma (PRP); Tarsal bones;

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I. Introduction

Osteomyelitis of the foot is most commonly associated with trauma, diabetic foot infections, or contiguous spread from adjacent soft-tissue pathology. In adults, isolated hematogenous osteomyelitis is relatively uncommon, and involvement of the mid-foot tarsal bones—namely the navicular, cuneiform, and cuboid—is particularly rare. These bones possess a complex vascular network and articulate closely, making early detection clinically challenging. Symptoms are often non-specific, including insidious onset of pain, swelling, and difficulty bearing weight, which can delay diagnosis.

The rarity of mid-foot osteomyelitis without predisposing factors such as diabetes, peripheral vascular disease, immunosuppression, or injury makes such cases clinically significant. Early recognition through appropriate imaging and timely intervention is essential to prevent progressive bone destruction, deformity, and functional impairment. This case highlights an unusual presentation of multifocal osteomyelitis in an adult with no history of trauma, treated successfully with surgical debridement, autologous bone grafting, and platelet-rich plasma (PRP) augmentation.

II. Case Presentation

A 50-year-old male presented with gradually progressive pain and swelling in the right mid-foot for the past two months. There was no history of trauma, open wounds, diabetes, peripheral vascular disease, or immunosuppression. The patient reported difficulty bearing weight and localized tenderness over the medial and lateral mid-foot.

Clinical examination revealed:

- Mild swelling over the navicular–cuneiform–cuboid region
- Localized warmth and deep tenderness
- No sinus tract or ulceration
- Distal pulses intact

INVESTIGATIONS

X-ray (Pre-operative)

- Irregularity and sclerosis of the navicular, cuneiform, and cuboid bones
- Subtle cortical erosions

CT Scan

- Better delineation of cortical breaches
- Presence of intraosseous lytic areas
- Early sequestrum formation

MRI

- Diffuse marrow edema
- Hypointense signals on T1 and hyperintense signals on T2/STIR
- Enhancement post-contrast indicating active osteomyelitis
- No obvious abscess or soft-tissue collection

Laboratory investigations showed:

- Mildly elevated ESR and CRP
- Normal leukocyte count and metabolic profile



Fig1: X-RAY FOOT AP AND OBLIQUE: Irregularity and sclerosis of the navicular, cuneiform, and cuboid bones

Fig2: SHOWS SWELLING OVER FOOR

MANAGEMENT

The patient underwent:

1. Surgical debridement of necrotic bone from the navicular, cuneiform, and cuboid regions
2. Cavity reconstruction using autologous cancellous bone graft
3. Platelet-rich plasma (PRP) injection to enhance osteogenesis and local healing
4. Postoperative antibiotic therapy based on culture sensitivity
5. Protected weight-bearing during the healing phase

The patient recovered well with gradual resolution of pain and improved functional mobility.

Histopathology Report:

Gross Examination: Specimen consists of single container containing multiple grey white to grey brown soft tissue bits largest measuring 0.9x0.4x0.1 cm, smallest measuring 0.4 cm across

Microscopic Examination: Section studied shows fibrocollagenous tissue with dense mixed inflammatory infiltrate comprising of predominantly lymphocytes, plasma cells and neutrophils.

Necrotic bony fragments surrounded by inflammation and cartilagenous areas noted. Areas of hemorrhage is evident.

No evidence of granulomas or atypia in the section studied.

Impression: Features are suggestive of Chronic Non-specific Osteomyelitis



Fig 3: Shows Intra Operative Cavity Of Navicular Bone
Fig 4: Shows Intraoperative Dead Bone Sent For Histopathology Examination

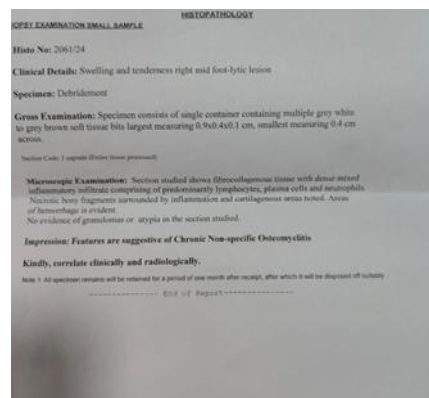


Fig 6: Shows Histopathology Report

III. Discussion

Osteomyelitis of the mid-foot tarsal bones is rare owing to relatively limited vascular compromise and low frequency of direct trauma in this region. In adults, osteomyelitis typically occurs secondary to trauma, contiguous infection, or systemic bacteremia; however, hematogenous osteomyelitis without clear predisposing factors, as seen in this case, is unusual.

The navicular, cuneiform, and cuboid bones are anatomically compact and share complex articulations, making early radiographic detection difficult. MRI remains the most sensitive modality for early diagnosis. CT helps assess cortical integrity and guides surgical planning.

Surgical treatment is indicated when:

- There is sequestrum formation
- Failure of medical therapy
- Extensive cortical destruction
- Need for biopsy or decompression

Use of autologous bone graft provides structural support and osteogenic potential, while PRP may enhance healing through concentrated growth factors. Histopathology remains the gold standard for confirmation.

IV. Conclusion

This case highlights a rare presentation of multifocal tarsal osteomyelitis in an adult without trauma or systemic risk factors. Early multimodal imaging and prompt surgical debridement with biological augmentation (bone graft + PRP) led to effective resolution. Clinicians should maintain a high index of suspicion for chronic osteomyelitis in patients with persistent mid-foot pain even in the absence of obvious etiological factors.

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