

**A Case Report: Osteomyelitis of right proximal phalynx of index finger managed with Sauserization**

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**Conflicts of Interest:** Nil

**Abstract**

We are presenting a case of a 32-year-old female patient presented in opd with pain, swelling, and limited range of motion. On examination, the affected finger was swollen, erythematous, and tender to touch, with limited range of motion at pip and mcp joint. X-Ray of hand identified periosteal reaction and lytic lesions with bone erosion and marrow edema in the proximal phalanx. MRI imaging confirmed osteomyelitis, and treatment involved surgical intervention with saucerization, followed by antibiotics showed significant improvements in range of motion and pain allevition

**Keywords:** MRI Imaging, Osteomyelitis, Radiography.

**Introduction**

Osteomyelitis is an infection of bone sustained most commonly by bacteria, although fungal etiology is rarely described, particularly in immunocompromised children<sup>1</sup>. According to the time period between diagnosis and symptom onset, osteomyelitis is classified as acute (<2 weeks), sub-acute (2 weeks–3 months), or chronic (>3 months). Bacteria may reach bone marrow

through the bloodstream, or spreading from nearby tissue. Infection can also be subsequent to an injury that exposes bone to a contaminated environment<sup>1</sup>.

Osteomyelitis of the hand is relatively uncommon, representing 1%–6% of all hand infections, and only 10% of all cases of osteomyelitis<sup>2</sup>. Patients with hand infections are usually manual workers such as farmers, breeders, builders, fishermen, and athletes of water sports. Medical professionals such as dentists and surgeons are also exposed to hand infections, as well as manual workers with inappropriate protection of their hands with poor quality equipment<sup>3</sup>. Osteomyelitis is an inflammatory process accompanied by bone destruction and caused by an infecting microorganism. The infection can be limited to a single portion of the bone or can involve several regions, such as marrow, cortex, periosteum, and the surrounding soft tissue. From a practical viewpoint, distinction of three types of osteomyelitis is useful<sup>4</sup>. The incidence of chronic osteomyelitis is increasing because of the prevalence of predisposing conditions such as diabetes mellitus and

peripheral vascular disease. The increased availability of sensitive imaging tests, such as magnetic resonance imaging and bone scintigraphy, has improved diagnostic accuracy and the ability to characterize the infection. Plain radiography is a useful initial investigation to identify alternative diagnoses and potential complications. Direct sampling of the wound for culture and antimicrobial sensitivity is essential to target treatment<sup>5</sup>. Appropriate therapy includes adequate drainage, thorough debridement, dead space management, wound protection, and specific antimicrobial coverage. If the host is compromised, an effort is made to correct or improve defects. Of particular significance are good nutrition and, if applicable, a smoking-cessation program in addition to dealing with specific abnormalities, such as diabetes. An attempt is made to improve the nutritional, medical, and vascular status of the patient and to provide optimal care for any underlying disease<sup>6</sup>. The key to successful management is early diagnosis, including bone sampling for microbiological and pathological examination to allow targeted and long-lasting antimicrobial therapy. The various types of osteomyelitis require differing medical and surgical therapeutic strategies<sup>7</sup>.

### Case Presentation

32 years old Female Farmer patient presented to opd with Complaints of pain, swelling, and redness in the index finger of her right hand for the past three weeks. She reported difficulty in moving the affected finger and noted the gradual worsening of her symptoms.

The patient noticed the initial symptoms after sustaining a minor puncture wound to her right index finger while working on her farm. The wound was caused by a thorn while handling crops. Initially, she treated the injury at home with basic wound care, but over the next several

days, the pain and swelling increased. She also reported intermittent fever and malaise. Despite using over-the-counter pain relievers, her symptoms persisted, leading her to seek medical attention.

Patient did not had any significant medical history. No history of diabetes or immunosuppression.

Patient Lives on a farm and is actively involved in farming activities.

Patient is Non-smoker, non-alcohol user On General examination The patient appeared uncomfortable due to pain but was afebrile on Local Examination There was visible swelling, erythema, and warmth over the proximal phalanx of the right index finger. The skin appeared shiny and tense. The area was tender to touch, with the point of maximum tenderness over the proximal phalanx. Mild fluctuation was noted, indicating possible underlying abscess formation also the Movement of the index finger was severely restricted due to pain at PIP and MCP joints.

X-ray of the Right Hand identified periosteal elevation, cortical irregularities, and lytic lesions suggestive of osteomyelitis of the proximal phalanx of index finger (fig.1,2 ).



Fig. 1,2: X-ray of the Right Hand identified periosteal elevation, cortical irregularities, and lytic lesions suggestive of osteomyelitis of the proximal phalanx of index finger.

## Index Finger

Blood investigations like Complete Blood Count (CBC) is having Elevated white blood cell count with a left shift, indicating infection, Erythrocyte Sedimentation Rate (ESR) Elevated, C-Reactive Protein (CRP) Elevated.

Wound Culture and Sensitivity: \* Pending results, empirical antibiotics were started.

MRI imaging confirms the diagnosis of osteomyelitis of right proximal phalanx of index finger by showing erosion with marrow edema at proximal phalanx region with soft tissue edema -which appears hyper intense on STIR images, hypo intense on T1 wi. Periosteal reaction seen.

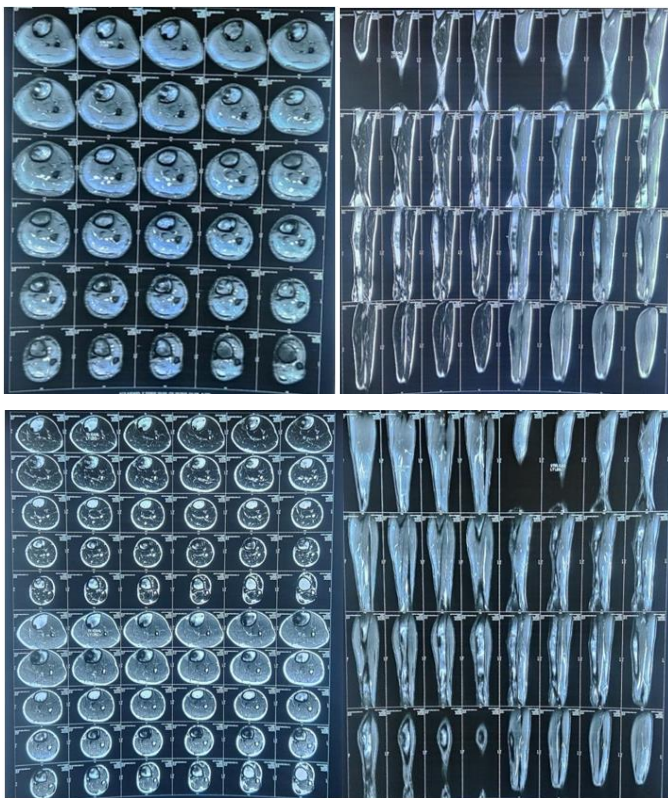


Fig. 3,4,5,6: MRI imaging showing erosion with marrow edema at proximal phalanx region with soft tissue edema -which appears hyper intense

## Management

Adequate medical management for pain and inflammation, With Empirical IV antibiotics NSAIDS were initiated, tailored later based on culture sensitivity results. A combination of broad-spectrum antibiotics was used initially, including coverage for Staphylococcus aureus, the most common causative organism.

Surgical intervention by Saucerization- The patient underwent saucerization of the affected bone to remove necrotic tissue and reduce the bacterial load. This procedure involved creating a shallow concave surface on the bone to facilitate drainage and allow for better antibiotic penetration.

## Post-Operative Care

Following surgery Continued IV antibiotics for 4-6 weeks, transitioning to oral antibiotics based on clinical improvement and normalization of inflammatory markers. Immobilization of the finger with a splint during the acute phase. After suture removal she began physical therapy to regain normal range of motion of finger (fig 5) Regular monitoring of inflammatory markers (ESR, CRP) and serial X-rays to assess bone healing. Gradual reintroduction of finger movements with the help of a hand therapist to prevent stiffness and preserve function.



Fig. 7,8: follow up x rays after 4 weeks showing healing bone without any sign of infection.



Fig. 9,10,11,12: Clinical pictures of post-operative follow up

### Discussion

Osteomyelitis often occurs in long bones and rarely occurs in the bones of the fingers. In addition, osteomyelitis of the finger occurs frequently after trauma or surgery<sup>8</sup>. Patients usually have a history of prolonged debilitation and multiple surgical procedures. Treatment of osteomyelitis has improved considerably over the past quarter-century because of advances in diagnostic, surgical, and therapeutic techniques<sup>6</sup>. The sensitivity and specificity of MRI in the diagnosis of osteomyelitis may be as high as 90 percent. Because MRI can also detect necrotic bone, sinus tracts, or abscesses, it is superior to bone scintigraphy in diagnosing and characterizing osteomyelitis<sup>5</sup>. Treatment of osteomyelitis depends on appropriate antibiotic therapy and often requires surgical removal of infected and necrotic tissue<sup>5</sup>. Osteomyelitis entails a major financial burden and substantially affects quality of life. An open dialogue between patient and doctor is essential in the treatment of this disease, based

on a clear medical understanding<sup>4</sup>. Although some authors suggest that osteomyelitis, in its very early stages ('cellulitis of the bone'), can be managed with antibiotics alone, surgical management undoubtedly plays a major role in its management for two main reasons: to obtain specimens for microbiological culture; and to debride infected and necrotic tissue<sup>2</sup>.

### Conclusion

This case highlights the importance of considering management of osteomyelitis in patients with persistent finger pain and swelling, particularly in high-risk occupations like farmers with Surgical intervention with saucerization and targeted antibiotic therapy leads to successful outcomes.

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