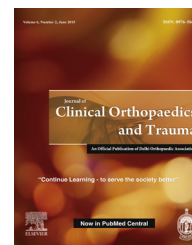


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## Case Report

# Snake bite induced cellulitis leading to infected open dislocation of the first metacarpophalangeal joint – A rare complication

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## ABSTRACT

Non-traumatic open dislocation of the first metacarpophalangeal joint is a rare phenomenon. We present a rare such occurrence secondary to snake bite induced cellulitis. A 22-year-old girl presented with pain and instability of her right thumb two months. She had snake bite two months back following which she developed cellulitis which gradually became infected. She presented with raw area over her dorsal aspect of the thumb with active infection. Radiographs revealed metacarpophalangeal joint dislocation. She underwent debridement, stabilisation and soft tissue coverage. At final follow up, she was pain free and the wound healed completely.

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## 1. Introduction

Traumatic dislocation of the first metacarpophalangeal joint is known to occur. Non-traumatic causes are very rare. We present a rare complication of first metacarpophalangeal joint dislocation following infection secondary to snake bite induced cellulitis.

## 2. Case report

A 22-year-old female presented with pain and instability of the right thumb since one month. Patient had a Viper snake bite on her right thumb region two months back. She was immediately treated with antsnake venom elsewhere. One week later, she was referred to our hospital for pain and swelling in the

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right thumb region with no systemic findings. She was diagnosed to have cellulitis and was treated with parenteral Cloxacillin and Metronidazole along with Magnesium sulphate dressing by general surgery department. Two weeks later, she presented with increase in pain and had a 2 × 2 cm necrotic patch on the dorsum of the base of the right thumb. Culture sensitivity showed *Pseudomonas aeruginosa* sensitive to Ciprofloxacin. She was treated with regular dressings and antibiotics. The patch peeled off with subsequent dressings.

She was referred to our department two months post snake bite for the wound in her right thumb and instability at first metacarpophalangeal joint. On examination, she had 4 × 3 cm raw area over the dorsoradial aspect of the base of the right thumb exposing the first metacarpophalangeal joint [Fig. 1]. There was purulent discharge from the wound with granulation tissue. The joint was dislocated and both the articular surfaces were exposed through the wound. The skin around the wound was hyperpigmented. The thumb interphalangeal joint was stiff.

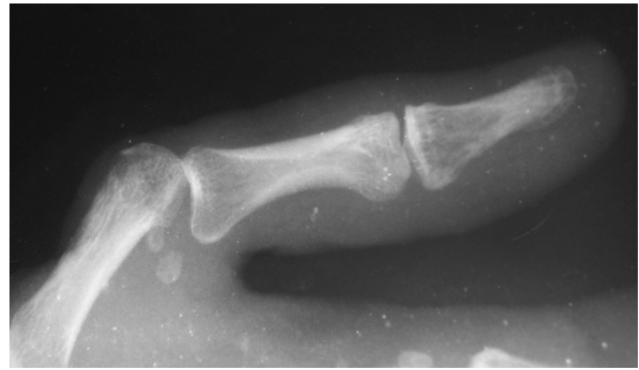
Plain radiograph of the right hand showed dorsal dislocation of the first metacarpophalangeal joint [Fig. 2].

The patient was taken up for immediate debridement, reduction and stabilisation of the first metacarpophalangeal joint. Under general anaesthesia, the wound was debrided. The dorsal capsule and radial collateral ligament were damaged. First metacarpophalangeal joint was reduced and stabilised with two crossed Kirschner (K) wires [Fig. 3]. Postoperatively she was treated with parenteral antibiotics for five days and she underwent regular wound dressing. Ten days later she underwent split thickness skin grafting for the raw area. Wound healed after two weeks [Figs. 4 and 5]. Kirschner wires were removed at the end of six weeks. The K wires were kept longer than usual because the collateral ligament and the capsule were damaged and could not be reconstructed primarily due to infection.

At the end of six months follow up, patient was pain free and the wound healed completely with no signs of infection. She had terminal restriction of abduction and adduction along



**Fig. 1 – Clinical photograph of the right hand showing the infected raw area with granulation tissue and exposing the metacarpophalangeal joint.**



**Fig. 2 – Plain radiograph of the right thumb showing dorsal dislocation of the metacarpophalangeal joint.**

with weak grip strength but she was able to do all her activities of daily living without any difficulty. She was lost to follow up after that.

### 3. Discussion

Thumb is the key structure of the hand essential for pinch, grasp and power. The metacarpophalangeal joint of the thumb is unique in that it performs the action both as a hinge and condyloid joint. The stability of the joint is provided by the soft tissues around it. Dynamic stability is provided by the muscles of the thumb whereas static stability is provided by the radial and ulnar collateral ligaments.<sup>1</sup> Damage to any of these vital structures results in instability.

Metacarpophalangeal joint injuries and dislocations of the thumb are not uncommon. Dislocations of the metacarpophalangeal joint usually occurs as a result of trauma or fall on outstretched hand. Dorsal dislocation is uncommon but volar dislocation is very rare. Dorsal dislocation of the thumb is less common compared to the index finger.<sup>2</sup> The mechanism of injury for dorsal dislocation is usually hyperextension injury. Abduction injury to the thumb causes skier's thumb.<sup>3</sup> Few cases have been reported on late presentation.<sup>4</sup> Thumb metacarpophalangeal joint dislocation in children is also described in literature.<sup>5</sup>

We have described a rare complication following snake bite induced cellulitis. Snake bite is a life threatening emergency which poses a major concern in tropical and subtropical countries. About five million snake bites occur each year, accounting for 1,00,00 deaths per year worldwide.<sup>6</sup> Snake bite causes both local and systemic effects. Among the five families of venomous snakes, Viperidae, Crotalidae and Colubridae bites cause local complications primarily.<sup>7</sup> Local envenoming of snake bites produce soft tissue problems. The common local problems associated with snake bites are pain, oedema, ecchymosis, blisters and cellulitis. Snake venom has proteolytic properties that results in extensive tissue necrosis. Viper venom (Our scenario) has platelet aggregating activity and also thrombin like effect which produce thrombocytopenia and hypofibrinogenemia.<sup>8</sup> As a result, they cause local vasculopathy causing swelling, blisters and

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