



An Unusual Wrist Swelling in an Elite Indian Boxer - A Case Report

KEYWORDS

dorsal wrist mass, carpal boss, boxing

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ABSTRACT A protruding dorsal wrist mass is not an uncommon finding in boxers. The most common diagnosis in clinical practice is ganglion whereas carpal boss is an overlooked condition of unclear etiology. Minor trauma and persisting os styloideum are among the suspected causes of the condition. Long-standing carpal boss can lead to osteoarthritic damage in some patients. Currently very few sport specific literature exist focusing the condition. Many diagnostic tools, such as X ray or CT scan, are available to help differentiate carpal boss from other more common masses of the dorsal aspect of wrist. For years, excision of the mass has been a commonly described treatment, but conservative treatment should always be first choice. However, the benefits of wide excision must be balanced by the risks of instability at the involved joints, leading to persistent and potentially worsened symptoms.

INTRODUCTION

Wrist pain is a common complaint in athletes. Although the most frequent cause of wrist mass is a ganglion cyst, other etiologies should also be considered. Carpal boss was first described by Fiolle (1931) as a fixed dorsal protuberance at the base of the second and third metacarpals¹. The condition may represent degenerative osteophyte formation, the presence of an os styloideum or both². Persistent os styloideum at the area of the quadrangular trapezoid-capitate-metacarpal joint can interfere with the normal biomechanics of the surrounding joints, leading to degenerative osteoarthritis. The lesion is mostly asymptomatic with complaints if any due to degeneration or extensor tendon slip. Available data suggests that symptomatic carpal boss is more likely to be present on the dominant hand³. Affected individuals are often in their early 30s, but symptomatic cases have been reported from 11 to 75 years of age³. Limited literatures showed the association with racquet sports or golf⁴. To the best of our knowledge, this is the first case report of this type in boxing.

CASE REPORT

A 23 year old male elite Indian boxer presented with pain and swelling over the dorsum of left hand immediately distal to wrist sustained during boxing competition in the second round of bout. He completed the entire bout and noticed the swelling after the fight. The pain was dull aching and poorly localized. The swelling was present over the second and third carpometacarpal joints and base of second and third metacarpals (Figure 1). There was no previous history of any fracture or similar swelling in the affected hand. The athlete has been practicing boxing since last 8 years and predominantly right handed.

Physical examination revealed an 8 mm tender, hard, fixed mass on the dorsal aspect of the hand along the base of 2nd and 3rd metacarpals. The skin over the swelling was normal. The swelling was even more prominent with extreme flexion of wrist. Flexion and end range of wrist extension were painful though radial and ulnar deviation were normal. Examination of metacarpophalangeal (MCP) joints, interphalangeal and elbow joint were also normal. The neurovascular evaluation was within normal limits.

There was normal MCP joint contour with a clenched fist and no snuffbox tenderness. Special tests like malalignment test⁵ aggravated the symptoms and stress test⁶ was negative.

A standard A-P view and a modified lateral view (carpal boss view) of the left wrist were taken. The later showed typical "volcano" type appearance (Figure 2). Computerized Tomography (CT) scan revealed no fracture and no joint space narrowing or any accessory bony prominence.

Patient was advised initial immobilization with bracing along with activity modification for 4 weeks. He was prescribed oral non-steroidal anti-inflammatory medication for one week. He was followed up weekly and after 6 weeks he was pain-free with normal range of motion of the affected wrist. Return to full training was achieved after 8 weeks and the boxer started sparring after 10 weeks. He was explained about the possible need of steroid injection or surgery in future if the symptoms recur. During 6 months follow-up period patient's symptoms did not recur.

DISCUSSION

The prevalence of carpal boss is high, reported with up to 19% in cadaver studies⁷. Nevertheless most of the carpal bosses do not cause any symptom. It can occur posttraumatic in nearly 40% of patients. The association of carpal boss in boxers may be because of direct trauma or inability of carpo-metacarpal joints to withstand repetitive stress and contact during punching. Repeated trauma to the hand can cause bone spurs which may lead to this lump. Moreover first and second knuckles receive large proportion of impact forces during punching⁸ which could explain the carpal boss in boxing.

Degenerative aetiology has been assumed, but remains controversial, since reports about joint space narrowing and subchondral sclerosis are rare in the specific literature.

Clinically it is best seen in wrist flexion and ulnar deviation. X-ray as the initial modality is best conducted using the "carpal boss view", a lateral projection of the wrist with flexion and supination of 30-40° and ulnar deviation of 20-

30°. The most common differential diagnosis is a ganglion cyst, which is often located at the carpometacarpal joints. On clinical examination, it is softer than carpal boss and movable. Hence a dorsal wrist swelling in a boxer should always raise suspicion about carpal boss. Though conservative therapy is recommended as the initial treatment with excellent prognosis, wedge resection is the most commonly preferred surgery for non-responders after 6 weeks.

CONCLUSION

In summary, carpal boss is a mostly asymptomatic entity, which may become symptomatic due to direct trauma or repetitive stress, especially in competitive boxers. It can be diagnosed by thorough clinical examination and multimodal diagnostic imaging. Conservative treatment comprises an excellent prognosis, however surgery, either wedge resection or arthrodesis, must be considered if the response is not positive after 6 weeks.

FIGURE 1- Swelling over dorsum of wrist



FIGURE 2- A lateral radiograph showing volcano -type appearance on either side of carpometacarpal joint



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