Hypothenar Hammer Syndrome in an NCAA D1 Collegiate Men’s Ice Hockey Player
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**Background:** Hypothenar hammer syndrome is a rare vascular condition caused by arterial occlusion and subsequent aneurysm in the hand. Its patho-etiologic includes repetitive blunt trauma or a single high velocity impact over the hypothenar eminence, generally found in occupations involving repetitive hand trauma such as lumberjacking or construction. Presentation may include decreased sensation of warmth or cold sensitivity in the fourth and fifth digits, pain, and paresthesia, with or without significant loss of strength or range of motion (ROM). Surgical intervention is often required to reduce digital ischemia through excision of the aneurysm and resection of the involved artery. This injury is very rare in athletics, with a surprisingly low occurrence in ice hockey, a sport involving considerable repetitive use and blunt trauma of the hand and wrist.

**Case Presentation:**

a. **Patient:** A 22-year-old male NCAA Division 1 ice hockey player presented with decreased sensation of warmth in the fourth and fifth digits of the right hand with insidious onset and no relevant previous medical history. Differential diagnosis included hamate fracture and contusion of the hook of the hamate and/or hypothenar eminence musculature. Further medical evaluation was sought after radiographs were negative. The team orthopedic surgeon diagnosed the injury as hypothenar hammer syndrome secondary to ulnar artery aneurysm with thrombosis following a magnetic resonance angiogram (MRA).

b. **Intervention:** Following initial presentation in October, the patient continued full team participation since he maintained full strength and ROM without pain and radiographs were negative. As neurological symptoms persisted into December, referral was made to the team orthopedic surgeon who ordered advanced diagnostics including an MRA. Imaging showed an occlusion of the right ulnar artery proximal to the hook of the hamate. The patient completed the season with no changes in strength, ROM, or pain. In March, surgical intervention was performed for right ulnar artery resection of the aneurysm followed by microscopic end-to-end vessel repair. After two weeks of splinting and two additional weeks without loading, hand strengthening was prescribed (i.e. putty and towel gripping activities) along with wrist and rotator cuff strengthening. Team resistance training sessions were substantially modified to eliminate loading of the hand and wrist. After 6 weeks, the athlete returned to light on-ice stick handling, which progressed to passing and shooting drills, with an overarching focus on finger, hand, and wrist strengthening, dexterity and agility.

c. **Comparative Outcome:** For this case, the surgical intervention and subsequent rehabilitation regimen resulted in favorable outcomes with the patient returning to collegiate-level ice hockey without limitations. As described in the literature, patients treated with a vascular graft instead of microscopic end-to-end repair experienced minor disabilities and a greater likelihood re-occlusion. Although this patient’s treatment produced more favorable results, caution should be taken as outcomes have only been assessed through one-year follow-up, whereas other cases were monitored over 5-10 years.

**Conclusions:** Hypothenar hammer syndrome is a rare condition, especially in an athletic setting, and early identification and treatment are necessary to prevent significant morbidity and progression of the disease. This case presented similarly to others described in the literature, however, this patient was allowed to continue full athletic participation as he maintained full strength and ROM without pain or increased neurological pathology. Carefully following and monitoring patients over time is critical to help identify potential reformation of an aneurysm within the ulnar artery, which may be dependent upon surgical and rehabilitative interventions as well as the patient’s chosen sport.

**Clinical Bottom Line:** Although Hypothenar hammer syndrome is especially rare in otherwise healthy athletes, it is important to accurately identify and treat, as inappropriate management may lead to embolism and possible amputation of the limb.