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Visual Case Discussion

Distal ulnar nerve transection with claw hand deformity

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A 48-year-old male, history of diabetes and hypertension, presented after being stabbed in the left wrist, sustained in self-defense. On presentation, patient was hemodynamically appropriate with no active bleeding. Exam was significant for a 2 cm deep laceration to the medial volar surface of the distal left forearm. No other significant injury was identified. The patient's left hand demonstrated an ulnar claw deformity, and he was unable to abduct or adduct his fingers. In order to grasp a piece of paper between his first and second digits, the patient needed to flex the IP of his thumb, rather than adduct the entire thumb. An ulnar nerve injury was suspected, which was identified and repaired by Plastic Surgery. Patient regained full hand function within 5 months (Figs. 1 and 2).

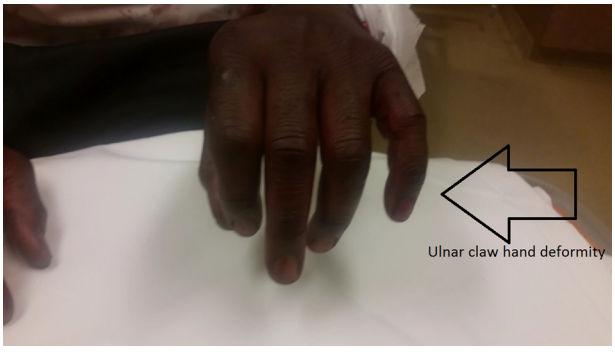

Fig. 1. Claw hand deformity.

Fig. 2. Patient unable to abduct fingers.

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.visj.2017.09.001.

References

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Questions

1. Which of these muscle groups of the hand is not controlled by the ulnar nerve?
   a. Hypothenar eminence
   b. Thenar eminence
   c. Lumbricals
   d. Interosseous muscles

2. In order to grasp between his first and second digit, the patient had to flex the IP of his thumb in order to pinch a piece of paper. What is the name of this finding?
   a. Claw hand
   b. Jeanne's Sign
   c. Wartenberg's Sign
   d. Froment's Sign

Answers

1. Thenar eminence. Explanation: The thenar eminence represents the group of muscles that control thumb movement. Three of these four muscles, as well as sensation to the lateral volar surface of the hand, are controlled by the median nerve. The exception is adductor pollicis, responsible for adducting the thumb, which is controlled by the ulnar nerve. The ulnar nerve also controls the hypothenar eminences (5th digit movements), interosseous muscles (finger abduction and adduction) and lumbricals (MCP flexion, IP extension). Reference: Kalomiri, Domna E., Panayotis N. Soucacos, and Alexandras E. Beris.[2] "Management of ulnar nerve injuries." Acta Orthopaedica Scandinavica 66.sup264 (1995): 41–44.

2. Froment's Sign. Explanation: Distal ulnar nerve injuries, as in this case, result in loss of thumb adduction due to loss of innervation of adductor pollicis. In order to grip between the first and second digit, the hand compensates by flexing the IP joint of the thumb, termed "Froment's sign." That, as well as the other answer choices, are all indicative of ulnar nerve palsy. Claw hand deformity refers to the abnormal extension of the 4th and 5th MCP joints and flexion of the 4th and 5th IP joints. Wartenberg's sign is identified by a greater degree of extension of the 5th digit, compared with the 4th digit, in the ulnar claw deformity. Jeanne's sign refers to a thumb deformity in the setting of ulnar nerve palsy, where the MCP is hyperextended and the IP is flexed.[1,3] Reference: Drury, William, and Peter J. Stern. "Froment's paper sign and Jeanne's sign—Unusual etiology." The Journal of hand surgery 7.4 (1982): 404–406. Wheeless, Clifford R., III. "Wheeless' Textbook of Orthopaedics." Wheeless Online. Duke University, 11 Apr. 2012. Web. 25 June 2017.