SURGICALLY REPAIRED BONY MALLET AVULSION FRACTURE OF FOURTH FINGER IN TWO-SPORT COLLEGIATE MALE ATHLETE

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Background: An 18 year old collegiate male golf and wrestling athlete reported with severe fourth digit pain after getting his hand caught between the mats during bear crawls at wrestling practice. Patient reported hearing a “pop” and felt immediate numbness and tingling along his fingers. Upon examination, there was moderate swelling and effusion as well as a slight distal fourth phalanx rotation along the longitudinal axis. Patient was sitting with flexed distal interphalangeal (DIP) joint with a 10-15 degree extensor lag. There was extreme point tenderness over proximal interphalangeal (PIP) and DIP joints as well as the middle phalanx. Manual muscle testing was not performed secondary to pain and decreased range of motion. Negative valgus and varus stress tests; positive tap and long bone compression tests with no palpable crepitus. There was decreased sensation along the entire fourth digit. The patient had no significant history of hand or finger injury. Differential Diagnosis: Distal phalanx fracture, middle phalanx fracture, distal phalanx contusion, DIP sprain, extensor digitorum tendon strain, mallet finger avulsion fracture. Treatment: Patient was splinted to prevent motion and referred to urgent care secondary to extreme pain and positive special tests. Radiographs were positive for fourth distal phalanx fracture. Patient was then referred to team orthopedic, re-evaluated, and re-x-rayed. An avulsed portion of fourth distal phalanx was noted on second x-ray and patient was diagnosed with mallet finger avulsion fracture. Patient was advised of treatment options including surgery due to displacement. Though conservative treatment is most common, the patient opted for surgery secondary to physician recommendation. Bony mallet surgery was performed four days post-injury. Two k-wires were inserted dorsally and longitudinally to reduce and stabilize the avulsed bone fragment. The patient followed up four weeks post-surgery for removal of both the dorsal and longitudinal k-wires. Patient did not follow up for rehabilitation but was given a home exercise program to increase finger strength and range of motion. Follow up radiographs demonstrated fully healed fracture without joint subluxation. Patient currently reports being fully functional with no pain during athletic activity. Uniqueness: Surgical intervention for mallet finger is uncommon; most cases receive conservative treatment with splinting of the DIP in hyperextension with positive results. However, surgery is indicated in the case of open injuries, patients unable to tolerate splinting, palmar subluxation of the distal phalanx, and injuries with significant avulsion of the bone fragment. In this case, the patient opted for surgery with the hopes of a more complete repair of the tendon so that it would not affect his golf swing. Complete realignment is possible with splinting alone, but the team physician felt more confident with the surgical procedure as a better way to allow for full healing with less splinting time and quicker recovery secondary to the fracture size and displacement. Conclusions: Athletic trainers should know that DIP pain should be highly suspicious for bony mallet finger and large fractures and/or joint subluxation are often surgically repaired. Though conservative treatment is more common and has shown positive results, patient compliance is critical because any compromise to the splint may inhibit full healing. Additionally, surgery may be warranted with a displaced fragment and/or joint subluxation. Athletic trainers should be aware of all treatment options and work closely with their team physician to determine appropriate treatment on a case by case basis. Relevant Evidence: Lee et al determined that a two point k-wire fixation technique for bony mallet finger provides a precise and accurate way to secure the avulsed bone fragment, yielding excellent results in 73% of patients. The surgical technique demonstrated successful outcomes for deformities with and without distal phalanx subluxation.

Word Count: 600

References