

## Teenager's Fracture in Arm Wrestling

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### Abstract

*A unique fracture pattern of distal humerus can be seen only in teenagers involved in arm wrestling sports. Presenting herewith a 16 year old right handed boy who was involved in arm wrestling. He had delayed presentation to fracture clinic. When treated with conservative management resulted in good function. The injury is presented here for its rarity and peculiarity.*

**Keywords:** Humerus, Arm Wrestling, Teenager.

### Case Presentation

A 16 year old right handed boy had injured his right elbow in arm wrestling. At the height of casual match as they were coming towards the end his opponent tried to put sudden extra force which he couldn't overcome and felt he is loosing after sudden give-way. He immediately felt sharp pain in medial side of his elbow followed by difficulty in movements. He felt it is a muscle sprain, treated himself with analgesics and carried on using his elbow. He was seen at fracture clinic at 7 weeks from initial injury due to persistent discomfort & pain on excessive use. On examination showed no real tenderness but some thickening of medial epicondyle. No swelling was demonstrable. He had loss of final 10 degree extension and flexion was about 100 degrees. The range in between was free of pain. No signs of any instability of elbow were observed. The X-ray showed medial epicondyle avulsion fracture. A periosteal reaction evident at distal end of humerus was suggestive of healing.

### Discussion

It is rare sport, other than softball, tennis,[1] baseball pitching,[2] missile throwing [3] to give avulsion of humeral epicondyle as most often they get fracture distal humerus[4]. Arm Wrestling is all about Timing of application of Forces to win over. Interestingly the fracture pattern not only depends on the forces but also on the age of player. Teenager is more likely to have avulsion fracture because of the weak growth plate[5,6]. Forces like tension, bending and axial compression are acting on the humerus[7]. In dynamic mechanism the torque produced between the internal rotators of shoulder and the long lever arm of the opposing competitor which externally rotates the humerus in turn contributes to the tension on

medial epicondyle[8]. Simultaneously static mechanisms shift the pivot point on the table from olecranon medially to the medial epicondyle. The vector of forces is directed medially and proximally which decides the displacement[5]. In teenagers the growth plate is weak point and the tension of the flexor muscles may overcome the strength of growth plate and avulse it. In adults this much muscular force results in distal humeral fracture. Review of literature shows very few reports but most are about distal humerus fractures while arm wrestling. Moon (1980) [9] presented 5 patients of avulsion fracture and all were treated with internal fixation. Nyska (1992) [5] presented 8 male teenager of 13-15 age group treated conservatively. Lokiec (1991) [10] also presented 5 cases of age 14-15. Ogawa (1996) [6] presented 10 males of 13-15 age group. They noted that the injury occurred only when the arm wrestler took a posture in which his center of gravity could shift easily & when one wrestler tried to force the end of the match and the other countered that move. When the maximally contracted muscles of medial humeral epicondyle are suddenly and passively stretched by the opponent, a shift from concentric contraction to eccentric contraction could occur resulting in a large muscle force acting on the medial epicondyle. Except Moon et al [9] rest all authors have treated these fractures by conservative management. All healed well with good functional range and without any instability. In our case as patient presented late, the 'neglect' has achieved equivocal result with good union and function. We think conservative management is the best option and open reduction should be restricted for ulnar nerve palsy or intrarticular fragment as advised by Lokiec[10]. In literature the most cases are from Israel and Japan but nil from India. With growing sports market & new arm wrestling machines, this case presentation reminds us of such peculiar fracture seen in teenage age group which requires evaluation and treatment to facilitate early recovery and to avoid later instability.

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**Figure 1:** X-ray of Right Elbow

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**Conflict of Interest:** NIL  
**Source of Support:** NIL

## How to Cite this Article

Deshpande SS. Teenager's Fracture in Arm Wrestling . *Journal of Trauma and Orthopaedic Surgery* Oct-Dec 2017;12(4):26-27.