

FRACTURE OF HUMERUS DURING ARMWRESTLING : REPORT OF 5 CASES

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ABSTRACT

Five cases of fracture of the humerus, including two types were treated over a period of twelve months. Three of these were simple spiral fractures of the lower third of the shaft. The other two were fractures of the medial epicondyle of the humerus. Two of the spiral fractures were complicated by radial nerve paresis and delayed union, and were operatively treated. The remaining three fractures were treated conservatively. These fractures are the result of a number of factors giving rise to violent torsional forces or avulsion forces. All five patients recovered well with respective treatment.

Keywords : Fracture of humerus, armwrestling

SINGAPORE MED J 1991; Vol 32: 47-49

INTRODUCTION

Within the period from October 1987 to the end of September 1988, five fractures of the humerus sustained during armwrestling were treated. All five patients were healthy young males between 14 and 24 years of age, and had no underlying bone disease. All of them wrestled with their right arm.

Two types of fractures were encountered, firstly, simple spiral fracture of the distal third of the shaft, and secondly, fracture of the medial epicondyle.

Of the three fractures of the shaft, two were treated surgically as these were complicated by delayed union and radial nerve palsy.

Both of the medial epicondylar fractures united well with conservative treatment.

A summary of the five cases is found in Table I.

CASE REPORT

A summary of cases is found in Table I.

In Case 1 (Fig a & b), a 24 year-old man, while armwrestling for less than 20 seconds, heard a crack and felt a sharp pain in his right arm. He was found to have a closed spiral fracture of the lower third of the shaft of his humerus. While in hospital, he developed a right radial nerve paresis. During the subsequent operation, tension of the radial nerve over the proximal fragment was found. No gross signs of interrupted continuity of the nerve were evident during the operation.

Post-operatively, the fracture united well. The radial nerve palsy gradually improved over a period of twelve months. He was discharged from follow-up thereafter, having gained full range of movement of his right elbow and shoulder, and full recovery from the radial nerve palsy.

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Case 3 (Fig d) was complicated by delayed union; open reduction and internal fixation was done. Intraoperatively, excessive callus formation was found.

Cases 2 and 5 (Fig c and f) were treated conservatively. X-rays during follow-up showed no mechanical obstruction or significant malalignment in Cases 4 and 5. The reduction in ROM encountered might be due to prolonged immobilisation, and was seen and expected to improve with time and physiotherapy.

In Case 4 (Fig e), a 16 year-old boy, while armwrestling, suddenly felt a sharp pain on the medial side of his right elbow, which was pivoted on a concrete surface as he forced his opponent's arm down in victory.

X-ray showed a minimally displaced fracture of the medial epicondyle of his humerus.

He was treated conservatively in backslab. The fracture united well, with an elbow range of movement (ROM) of 10° - 140° after eight months.

Table I
Summary of Cases

Case	Age	Type of Injury	Treatment	Remark
1	24	Spiral fracture lower third of humeral shaft	Open reduction & plating	Radial nerve palsy Recovery & function good
2	17	Spiral fracture lower third of humeral shaft	Conservative	Recovery & function good
3	21	Spiral fracture lower third of humeral shaft	Open reduction & plating	Delayed union. Recovery & function good
4	16	Medial epicondylar fracture	Conservative	ROM 10°-140°
5	14	Medial epicondylar fracture	Conservative	ROM 20°-140°

Fig a & b. Case 1 – closed spiral fracture of the lower third of the shaft of the humerus.

Fig c. Case 2 – conservative treatment of fracture

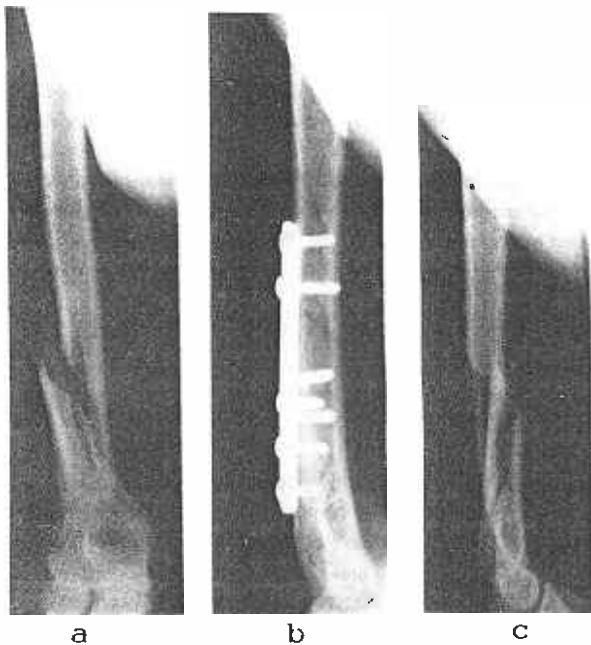


Fig d. Case 3 – complicated by delayed union; open reduction and internal fixation was done.

Fig e. Case 4 – follow-up X-rays showed no mechanical obstruction or significant mal-alignment

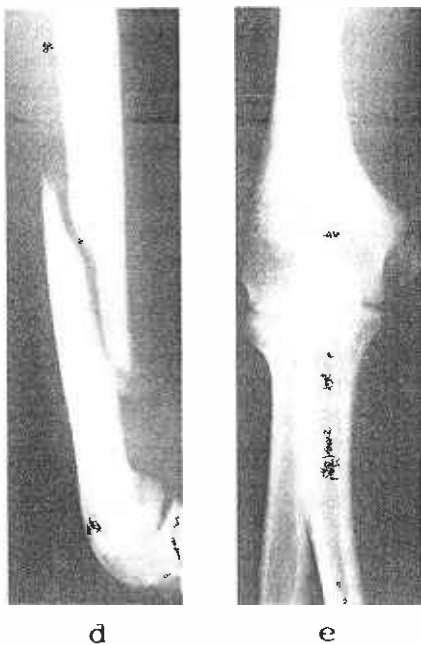


Fig f. Case 5 – follow-up X-rays showed no mechanical obstruction or significant mal-alignment.



Fig g. – Special table with 'elbow containers' made of cushions (arrowed) for armwrestlers.



DISCUSSION

Armwrestling is gaining in popularity in Singapore. In the past four years, annual armwrestling competitions were held locally, each comprising more than 300 amateur competitors. Despite the large number, there had not been a single fracture sustained during these competitions.

The rules of the competition are probably responsible for the good record. As part of the arrangement, a special table with 'elbow containers' made of cushion, is provided (Fig g). At no time should the participant's chest be in contact with the edge of the table, because as such, additional forces would be brought into play from the weight of the body. A time limit of three

minutes was set for each individual contest. The contest may be terminated or winner declared at the referee's discretion.

The situation in the case of the five patients was quite different. All five armwrestled outside competition rules, without a referee and paid no attention to time or surfaces on which they armwrestled.

In armwrestling, the muscles act of the humerus to flex the elbow, wrist and fingers as well as to semipronate the forearm. Fixing the limb in that position, the arm is internally rotated against the resistance of the opponent. In previous reports, antagonism of the muscles in the act of armwrestling causing the spiral fractures, have been suggested. Other factors like hypertrophy of muscles, cold, fatigue, kinetic forces of the body weight, may all have a part in the occurrence of unbalanced forces tending to fracture the humerus.

In the two boys with medial epicondylar fractures, the surface on which they armwrestled may also play a part. Both of them armwrestled on concrete surface, and felt pain in the medial side of their elbow only after they had gained advantage over their opponents, and were forcing the opponents' arm down in victory. In this position, the medial epicondyle is the point where forces converge and are transmitted to the concrete surface. These violent unbalanced forces tending to point in the direction of the common flexor muscle pull, had caused the avulsion fractures seen. Both these patients were of a younger age group. MS Moon reported 7 cases of humeral fractures during armwrestling in 1979. All five of his reported medial epicondylar fractures were aged between 13 and 15. His remaining two cases were fractures of the shaft, and these were aged 17 and 24.

CONCLUSION

Two types of fracture were encountered in this case report. The treatment and complications were not unlike those resulting

from fractures of the humerus sustained from other causes. X-rays during follow-up showed no mechanical obstruction or significant mal-alignment in cases 4 and 5. The reduction in ROM encountered might be due to prolonged immobilisation, and was seen and expected to improve with time and physiotherapy.

The mechanism of injury probably involves a combination of muscular action, muscular hypertrophy, cold, fatigue, kinetic forces of the body weight in an unrefereed game. The shock-absorbing properties of the surfaces used and the age of the patient are probable additional factors in the occurrence of the medial epicondylar fractures.

ACKNOWLEDGEMENT

We would like to thank the staff of the Departments of Orthopaedic Surgery of Toa Payoh Hospital and Alexandra Hospital; and the Malayan Breweries Pte Ltd, for their kind assistance.

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