

DISPLACEMENT OF THE MEDIAL EPICONDYLE INTO THE ELBOW JOINT

The final result in a case where the fragment has not been removed.

By

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Displacement of the epiphysis of the medial epicondyle of the humerus is a common injury in adolescents. An investigation at the communal hospital in Varberg into 138 elbow fractures in children has shown 26 fractures of this type making 18.8 %. The fractures can be divided into the following groups:

	Number	%
Supracondylar	71	51.5
Medial epicondyle	26	18.8
Capitulum radii	14	10.2
Olecranon	12	8.7
Lateral condyle { displ. of lat. cond. epiphysis 6 { displ. of lat. epicond. epiphysis 2 } { small superficial avulsions 3 }	11	7.9
Forward displacement of lower humeral epiphysis	3	2.2
Intercondylar	1	0.7

It appears from this investigation, as in the majority of reports, that displacement of the medial epicondyle is the most common elbow fracture in children next to the supracondylar. The fracture is more common among boys. Of the 26 cases in this report there are 16 boys.

This type of fracture is usually the result of valgus strain in the elbow from a fall on an outstretched and supinated arm, at which the pronator teres and the flexors on the forearm (*Musc.flex.carpi ulnaris*, *musc.palmaris longus*, *musc.flex.digiti sublimis*), which are all attached to the medial epicondyle, will be overstretched. Before the epiphysis

unites with the humerus at the age of eighteen it can easily be avulsed. If the strain is violent enough there will occur a dislocation in the elbow joint with the forearm displaced into dorso-lateral direction. In those cases there will often be added a fracture of the medial epicondyle. Among the 13 elbow dislocations which I have found at this investigation there are 9 with fractures of this type. In those cases it sometimes happens that the fragment is incarcerated into the joint cavity. It is most common that the incarceration occurs when the elbow dislocation is reduced. Cases are described however where an incarceration obviously has happened without any elbow dislocation. I have found 2 cases of dislocation in the elbow joint with fracture of the medial epicondyle and inclusion of the loose fragment in the joint cavity.

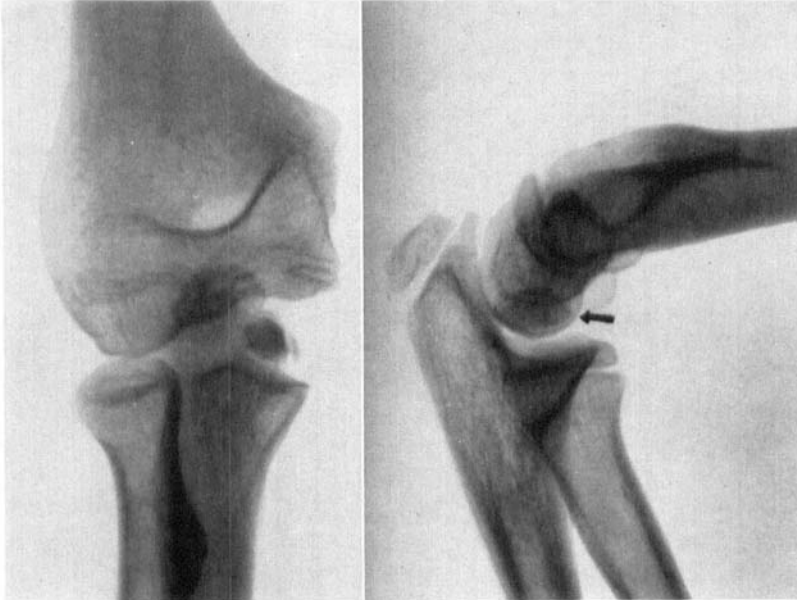
The 26 cases of fracture of the medial epicondyle can then be divided as follows:

Avulsion of the epiphysis without dislocation of the elbow	17
Avulsion of the epiphysis with dislocation of the elbow	7
Avulsion of the epiphysis with dislocation of the elbow and incarceration into the joint	2

In cases with inclusion of the fragment in the joint cavity there can be diagnostical difficulties. If a slight ulnar paresis or numbness in the ulnar area is found the diagnosis is easy. These symptoms will be present for 30-60 % according to different authors. There are often only a slight radial subluxation of the forearm and cubitus valgus as clinical signs. The included fragment is sometimes indistinctly outlined at the anteroposterior radiograph and can easily be overlooked at the lateral projection. Therefore this affection has been considered relatively uncommon but after the second world war new investigations have altered this opinion.

The treatment is an operative or manipulative reduction. There is a certain risk of getting ulnar paresis at manipulative reduction and some authors advise against this method. The reduction must be done immediately and thereafter the elbow must be immobilised in a plaster cast for 10 days. Afterwards the patient must practise active movements. Passive exercise must be forbidden.

If the fragment is left in the joint cavity the cubitus valgus and subluxation will remain. Very little has been written about this condition. *Patrick* points out that an open reduction of an inveterate incarceration of the epiphysis will give a bad result with instability in the joint. *McDonnel* and *Wilson* mention a case with 20 degrees impairment



Figs. 1 and 2.

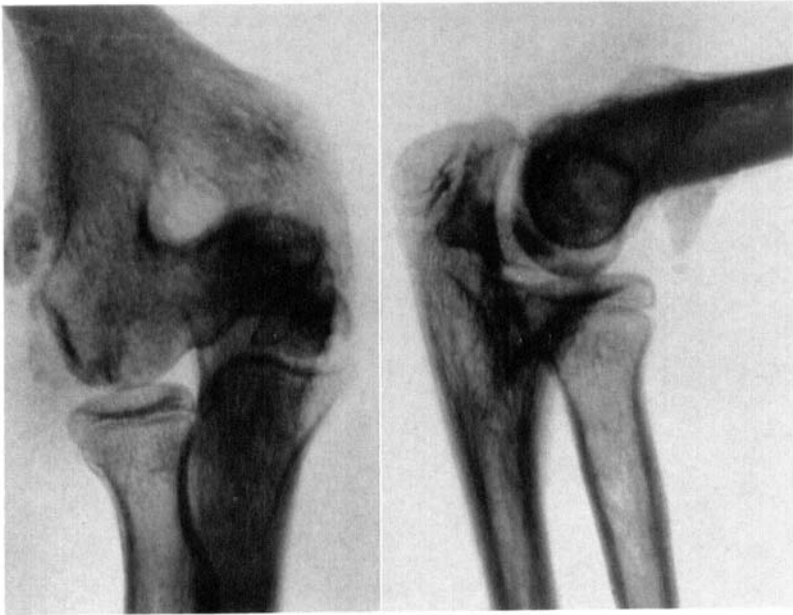
The 2nd of August 1949. The anteroposterior radiograph shows the epiphysis of the medial epicondyle incarcerated in the joint cavity between the trochlea and the ulna. There is a radial subluxation of the forearm and a cubitus valgus. Lateral projection shows the fragment in the joint cavity in a typical way.

of the extension and *Dunlop* incidentally mentions one with ankylosis. In the literature I have not found any description or followed-up examination of such a case and because of that a report on one case examined 8 years after the injury may be of interest.

Case report:

B. A. a boy born in 1936 was first admitted to the communal hospital in Varberg on the 18th of August, 1949. During a wrestling-bout he had sustained a dislocation of his right elbow joint. The dislocation was reduced immediately without any previous X-ray control.

At the check after the reduction the anteroposterior radiograph shows typical valgus position and radial subluxation. Between the trochlea and the ulna a bony fragment is included and the apophysis of the medial epicondyle is lacking. Lateral projection shows the fragment in the joint cavity. Control on the 22nd of August, 2nd and 12th



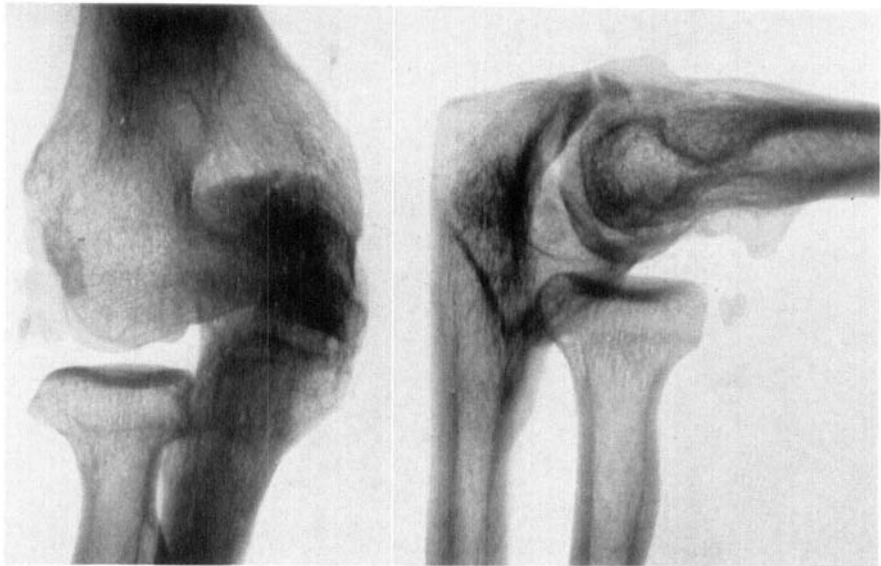
Figs. 3 and 4.

The 2nd of December 1949. The included fragment lies in the same place.

of September shows that the elbow obviously has been immobilised in a plaster cast during this time. The included fragment is still in the joint cavity. At the radiograph of the 12th of September there are small intracapsular calcifications in the lateral part of the joint evidently a sequel of the trauma on the capsule. On the 2nd of December the epicondyle fragment is still in the joint cavity.

At an investigation of elbow fractures treated at the communal hospital in Varberg I came across those radiographs from 1949 and fortunately I was able to find the man for an examination which was performed on the 28th of June, 1957. The patient complained of occasional pains in his elbow and could not possibly continue his work as a carpenter. He had not been able to do full military service because of pains in his right elbow and partly because of numbness in the little finger when the elbow was held in a bent position which prevented him from carrying a gun.

The examination revealed a slight impairment of extension and flexion (about 5 degrees) in the right elbow joint. Pronation was normal but supination was diminished 5 degrees. The elbow showed some



Figs. 5 and 6.

The 28th of June 1957. Anteroposterior radiograph still shows a cubitus valgus. Severe deformity of the ulna, the humerus and even of the radius has developed. The incisura semilunaris ulnae is gravely deformed. The epicondyle fragment is not clearly to be seen in those radiographs.



Fig. 7 and 8.

The 2nd of August 1957. Tomography. In the part of the joint where the epicondyle fragment was situated one finds the included fragment completely united with the ulna. Photography showing the volar part of the elbow.

thickening and a slight deformation. Circumference of the right elbow was 25 cm and of the left 24 cm. There was about 10–15 degrees valgus position. Over the medial epicondyle one could feel a shallow depression and in the volo-ulnar part of the joint obviously at the place of the incarcerated fragment there was a thickening as big as a walnut (fig. 8). Muscle power was normal. Sensibility was normal in the ulnar area but numbness and tingling occurred when the elbow was held in a bent position for more than 10 minutes.

SUMMARY

A case of unreduced inclusion in the elbow joint of the epiphysis of the medial humeral epicondyle is examined 8 years after the injury. There is a severe deformity of the elbow joint. The epiphysis is completely united with the ulna causing a deformation of the incisura semilunaris. In spite of that there is only a slight impairment of the mobility in the elbow joint and the muscle power is normal.

RESUME

Un cas l'inclusion non réduite dans l'articulation du coude de l'épiphyse de l'épicondyle huméro-médial a été examiné huit ans après la lésion. Il y avait une grave déformation de l'articulation du coude. L'épiphyse était complètement joint à l'ulna, ce qui causait une déformation de l'incisure semi-lunaire. Malgré cela, il n'y avait qu'une légère diminution de la mobilité de l'articulation du coude et la force du muscle était presque normale.

ZUSAMMENFASSUNG

Ein Fall von Einbeziehung der Epiphyse des epicondyles medialis humeri in das Ellbogengelenk, der 8 Jahre nach dem Unfall untersucht wurde, wird beschrieben. Das Ellbogengelenk ist schwer deformiert. Die Epiphyse ist vollständig mit der Ulna vereint und ruft dadurch eine Verbildung der incisura semilunaris hervor. Trotzdem besteht nur eine leichte Einschränkung der Beweglichkeit des Ellbogengelenkes und die Muskelkraft ist normal.

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