

OLECRANON FRACTURES IN OSTEOGENESIS IMPERFECTA A CASE REPORT

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The author reports a case of bilateral recurrent olecranon fractures in a patient with osteogenesis imperfecta, both sets of fractures being posttraumatic.

Keywords : olecranon ; fracture ; osteogenesis imperfecta.

Mots-clés : olécrane ; fracture ; ostéogénèse imparfaite.

INTRODUCTION

Avulsion fractures of the olecranon usually result from a fall onto the outstretched hand, with a sudden contraction of the triceps muscle. The contraction of this muscle avulses the olecranon and tears the distal triceps expansion (3). The average time of appearance of the ossification center for the olecranon is at the age of 14 to 14.5 years (4). In the adult the avulsed fragment may be of a variable size. However, in the child with an open growth plate this injury usually results in an avulsion of the epiphysis, resulting in a Salter-Harris type I or type II injury (1, 2, 3). Following closure of the growth plate the fracture patterns appear more like those in an adult.

CASE

J. B., a 13-year-old girl has a proven case of osteogenesis imperfecta type IA, having suffered 20 fractures prior to her current set of fractures. In March 1989, she fell with both arms outstretched while pushing a supermarket trolley. She was admitted to this hospital with bilaterally displaced Salter-Harris type II injuries to her

olecranons (fig. 1 a, b). She underwent open reduction and internal fixation on the same day. After an initial period of immobilization for 48 hours, her elbows were mobilized, and she made an uneventful recovery with a full range of movement (fig. 1 c, d). The implants were removed in early June 1989 (fig. 2 a, b). In October 1990, she fell against a wall and sustained recurrent fractures of both olecranons (fig. 3 a, b). In addition, she also sustained an undisplaced crack fracture of the shaft of the right radius. She underwent open reduction and internal fixation on the same day, and following a 48-hour period of immobilization, was mobilized. Within 3 months following surgery, she had a full and painless range of movement in both her elbows (fig. 4 a, b).

DISCUSSION

Much of the triceps expansion inserts on the metaphysis distal to the physis. This fact probably accounts for the rarity of physeal injury in this area. Only a few reports mention any hypotheses regarding the mechanism of these physeal injuries. It has been postulated that either a direct blow or pure avulsion can produce such an injury (3). In this patient, the first set of fractures was probably an avulsion injury.

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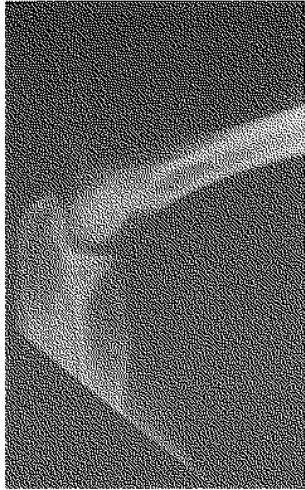
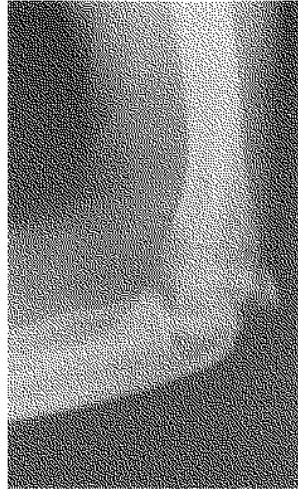
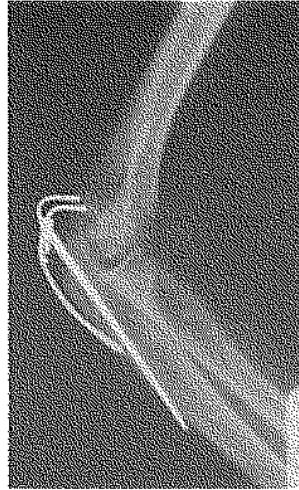
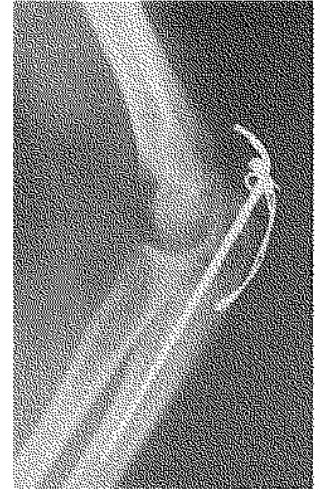
*Fig. 1a**Fig. 1b**Fig. 1c**Fig. 1d*

Fig. 1. — a, b : The first set of fractures. c, d : Following internal fixation.

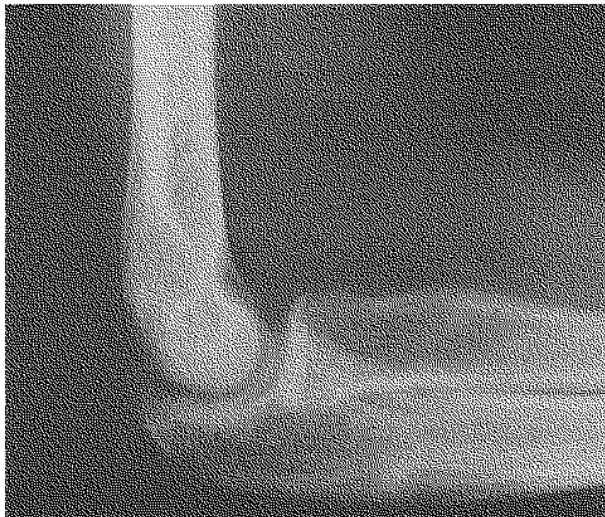
*Fig. 2a**Fig. 2b*

Fig. 2. — a, b : both olecranons after the first set of implants was removed.

*Fig. 3a**Fig. 3b**Fig. 3.* — a, b : The second set of fractures.

Since the olecranon is a metaphyseal area, the cortex is relatively thin and allows development of greenstick-type fracture deformities. The periosteum is immature and thick, which may prevent the degree of separation seen in the adult group (3). This patient at the time of her second injury was 13 years old, and hence it seems likely that her metaphyseal fractures showed a displacement more consistent with an adult injury. The mechanism of injury was also more suggestive of a direct blow resulting in significantly displaced metaphyseal fractures. Underlying osteogenesis imperfecta probably made this patient more susceptible to an otherwise extremely rare injury.

To the best of the author's knowledge, a case of bilateral recurrent fractures of the olecranon has not been described before in the English literature.

REFERENCES

1. Grantham S. A., Kierman H. A. Displaced olecranon fractures in children. *J. Trauma*, 1975, 15, 197-204.
2. Mathews J. G. Fractures of the olecranon in children. *Injury*, 1981, 12, 207-212.
3. Rockwood C. A. Jr., Wilkins K. E., King R. E. Fractures in children. J. B. Lippincott Company, Philadelphia, New York, London, Hagerstown, 1991. Vol. 3, 751-772.
4. Silberstein M. J., Brodeur A. E., Graviss E. R., Atchawee L. Some vagaries of the olecranon in children. *J. Bone Joint Surg.*, 1981, 63-A, 722-725.

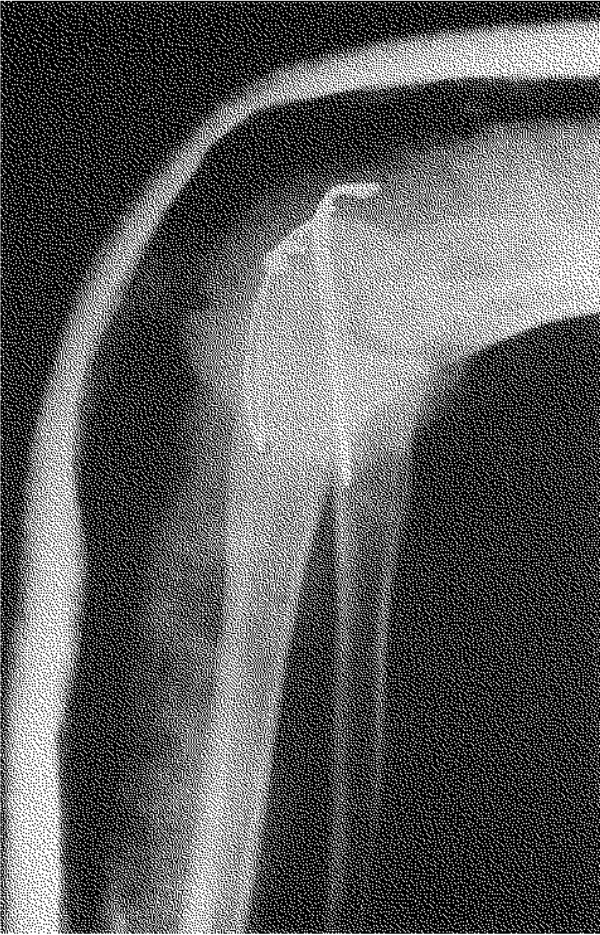


Fig. 4a



Fig. 4b

Fig. 4. — a, b : Following internal fixation.

SAMENVATTING

C. S. MUDGAL. Bilateraal recidiverende olecranonfractuur in osteogenesis imperfecta : een geval.

De auteur beschrijft een beiderzijds recidiverende olecranonfractuur bij een patiënt met bewezen osteogenesis imperfecta.

Beide fracturen traden op na een trauma.

RÉSUMÉ

C. S. MUDGAL. Fracture de l'olécrane bilatérale et récidivante dans un cas d'ostéogénèse imparfaite. Présentation d'un cas.

L'auteur rapporte un cas de fracture de l'olécrane bilatérale et récidivante chez un patient présentant une ostéogénèse imparfaite.

Les fractures sont apparues après un traumatisme.