

SEPARATION OF THE EPIPHYSIS OF THE FIRST METACARPAL BONE.

WITH REPORT OF A CASE.

BY WM. PEARCE COUES, M.D.,
OF BOSTON, MASS.,

Surgeon to the Boston Dispensary; Instructor in Clinical Surgery, Tufts College Medical School.

THE first metacarpal bone develops from two centres, one for the shaft and one for the epiphysis, which is situated at the proximal end of the bone instead of the distal end as in the four other metacarpal bones. Rarely an epiphysis forms at the distal end.

"The epiphyseal centre appears during the third year and is united to the shaft at twenty years" (Poland¹).

This bone is in effect anatomically a phalanx. Authentic cases of separation of the epiphysis are extremely rare. Piersol² in 1907 says but one case of disjunction has been recognized during life. It resembled a dislocation at the carpometacarpal joint, but the seat of abnormal movement was below the level of the lower edge of the trapezium. Cotton³ says that in injuries of the metacarpals the epiphyses play little part, rarely they may be displaced. No specific instance of separation of this epiphysis is made. Poland says that direct as well as indirect violence may be the cause of the separation. He states there are only two simple cases recorded, one at eighteen and one at sixteen years of age, and quotes Mr. R. Clement,⁴ who reports a case of displacement backward.

These two cases are the only ones I have been able to find in medical literature of separation of the epiphysis of this metacarpal. It is doubtless possible that others which I have missed have been reported. The following is then perhaps the second reported case of pure separation of the lower epiphysis of this bone:

FIG. 1.

Normal epiphysis of first metacarpal bone. Boy, 14 years old. (December, 1911.)

FIG. 2.

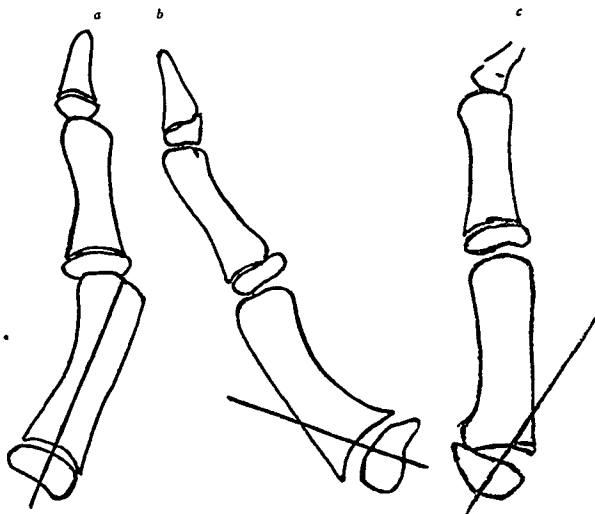
Separation of epiphysis of first metacarpal bone. (December, 1911.)

FIG. 3.

Separation of epiphysis of first metacarpal bone. (December, 1911.)

M. S., a healthy boy of fourteen years, was seen at the Surgical Clinic of the Boston Dispensary December 18, 1911. The day before coming to the clinic he had fallen down while running in the street. He tripped on the curbing, striking his left thumb on the curb with great force. The hand was in front of the body, the fingers and thumb flexed. Immediate great pain and disability of the left thumb was noticed.

FIG. 4.



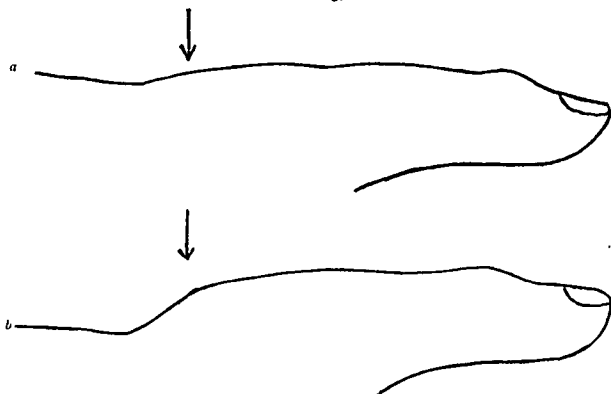
a, X-ray tracing of normal thumb. Note axis of epiphysis to diaphysis. (December, 1911.) b, c, X-ray tracing of injured thumb. Note axis of epiphysis. (December, 1911.)

Examination showed a well-developed and nourished boy of fourteen years. There was considerable swelling over the dorsum of the thumb in the neighborhood of the carpometacarpal joint. There was no obvious deformity but extreme pain on pressure here, which was also present on pressure over the snuff-box. There was abnormal mobility detected at the base of the metacarpal with a slight doughy crepitus. Flexion and extension of the fingers was perfect; the radius and ulna were not painful to palpation. Hand put temporarily on anterior splint.

December 22, marked pain on pressure over the base of the metacarpal; abnormal mobility of the epiphysis detected; slight grating crepitus; flexion and extension of fingers normal; radius and ulna normal. Thumb splint applied. The X-ray, two views, showed plainly separation of the epiphysis.

December 29 there was slight ecchymosis seen for the first time over the region of the external border of the second metacarpal. Slight rounded prominence at base of first metacarpal; tenderness gone almost entirely; flexion and extension of entire thumb not painful. Lateral pressure over epiphysis still very painful. Last appearance at clinic.

FIG. 5.



a, Tracing of normal thumb, February 8, 1912; b, tracing of injured thumb, February 8, 1912. Note sharp jog at epiphysis of metacarpal.

February 8, 1912, the boy was seen outside and the following note was made: He has been using the hand for some weeks. There is no pain or disability; he plays ball without trouble. Examination shows no abnormal mobility. Considerable thickening about carpometacarpal joint with slight prominence on outer free border. Movements of thumb not restricted. Slight pain on pressure over prominence.

Clement's case is as follows:

C. W., age sixteen, came to Guy's Hospital March 6, 1885. He had fallen with his hand bent under him, the weight of the body being received upon the outer side of the left thumb. This was bruised and painful.

He was unable to move it without great pain. There was a projection outward and backward at the base of the metacarpal bone which at first sight appeared to be caused by a dislocation of the carpometacarpal joint. The dresser attempted a reduction and failed. Under chloroform, Mr. Lucas traced the metacarpal bone down toward its base, where it terminated in a projection situated on the outer and posterior aspect of the thenar eminence. It could be easily pressed into place, but showed a tendency to recur to its usual position. There was no true bony crepitus. The seat of abnormal movement was too inferior to be in the joint between the metacarpal bone and the trapezium, and the symptoms present were considered sufficient to distinguish it from dislocation of the metacarpal bone. Reduction was effected by pressure and extension, and a well-padded splint was applied from the wrist to the end of the thumb on its dorsal aspect. A complete recovery without deformity took place in three weeks.

Sturrock⁵ says one case was seen where separation of the head of the first metacarpal as an epiphysis was diagnosed by an eminent surgeon, though the epiphysis for the extremity of this bone is usually at the base. In many instances there is also one for the head (Quain). The accident referred to occurred in a patient of eighteen years, and now, fourteen years after the accident, there is very slight stiffness of the joint, with some thickening but no shortening.

The possibility of separation of the epiphysis of the first metacarpal bone should always be considered in the diagnosis of injuries in the neighborhood of this region in children and young adults. A skiagraph, two views, should always be taken. This injury should not be confused with Bennett's stove fracture of the metacarpal.

REFERENCES.

- ¹ Poland: Traumatic Separation of the Epiphyses, 1898, pp. 588-589.
- ² Piersol: Anatomy, 1907, p. 319.
- ³ Cotton: Dislocations and Joint Fractures, chapter on Metacarpal Injuries, p. 380.
- ⁴ Clement, R.: The Lancet, October, 1885, p. 81. (Quoted by Poland.)
- ⁵ Sturrock, C. A.: Edinboro Hospital Reports, vol. ii, p. 603, 1894. (Quoted by Poland.)