**Fractures of the metacarpal bones / by E.H. Bennett.**

# FRACTURES

OF THE

# METACARPAL BONES.

BY

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1882.

With Author's Kind Regards

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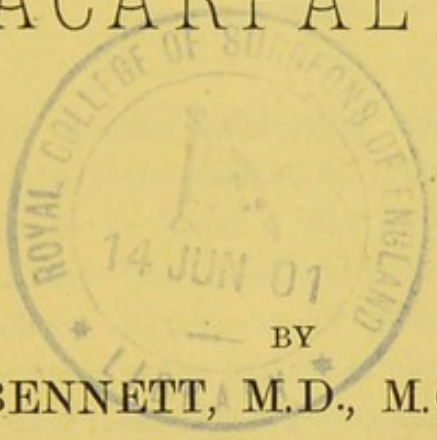

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# FRACTURES OF THE METACARPAL BONES.[a]

Every systematic treatise on surgery and the special treatises on fractures all contain some account of these injuries, but in few are any exact details to be found. The author of the "First Lines," S. Cooper, asserts that "the carpal and metacarpal bones can be broken only by great direct violence, as by gunshot wounds, the action of machinery on the parts, or the passage of the wheel of a heavy carriage over them." Beyond these compound fractures of the bones of the hand he recognises none. Sir A. Cooper mentions, apart from the compound injuries indicated in the passage I have quoted from the "First Lines," the occurrence of fracture of the distal extremity of the metacarpal, "which is called the head," as a simple injury. Boyer, taking a wider view, discusses the question of the relative frequency of simple fractures of the metacarpals in the individual bones, and assigns the premier position to the fifth metacarpal, while he states that, arguing *à priori*, we should expect to find the first most commonly broken, only for its free movement. To correct this uncertainty we find Malgaigne first giving statistical information, which proves the first bone to be equal in its liability to simple fracture to all the others taken together. His numbers are, however, too small for any final conclusion.

The following passage by Mr. Hulke exposes the facts most clearly:—

"The statements that have hitherto been made as to the comparative liability of the different bones of the series to fracture are very unsatisfactory, owing to the insufficient number of observations upon which they are founded. Of the 113 cases which I have collected from the records of the Middlesex Hospital, in 71 the particular bone is mentioned. Of these four are double fractures (two of the second and third, two of the

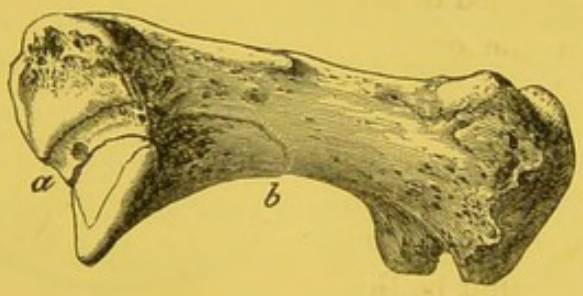
[a] Read before the Dublin Pathological Society, November 12, 1881.

third and fourth), and in one the third, fourth, and fifth bones were broken, making in all 78 fractures. The number to each bone is—

| | |
|---|---|
| First, - - - - | 27 |
| Second, - - - - | 16 |
| Third, - - - - | 9 |
| Fourth, - - - - | 12 |
| Fifth, - - - - | 14 |
| | 78 |

"Probably an undue prominence is here given to the first, as on account of its distinctive characters it is more likely than any of the others to be particularised in describing the nature of the accidents. Allowing for this probable source of error, we may still place it foremost in liability to fracture, as might be supposed from its position and extent of motion; the others seem to follow in order as their situation exposes them to injury, the third or middle bone being the last. The fracture is usually in the middle or distal third of the bone; it is transverse or oblique, often attended with very little displacement, in which case the mobility of the fragments and the crepitus are the chief signs of the injury" (Holmes' System).

In this passage the author makes no mention of any pathological facts, while it is evident that he has not had that personal acquaintance with the series of injuries he records which would enable him to write with confidence as to the seat of fracture. Museum records are most scanty in this matter, even the Musée Dupuytren contains but a single specimen. In this dearth of facts no apology is necessary for my submitting a series of those injuries which I have collected in the Museum of the School of Physic. All these have been procured from subjects dissected in the school, and, so collected, although few, are fairly representative of their class. They prove, I think, the truth of the observations of Malgaigne and of Hulke that the first metacarpal bone is more often fractured than its fellows; but, further, they go far to prove that the most common injury is a variety of fracture not as yet described by any writer, situated in the part of the bone most remote from the site assigned by the author I have quoted. The most common site of fracture is thus described by Humphrey:—"The metacarpal bones are thinnest and most liable to be broken just above the middle"—a position but little differing from that assigned by Hulke in the passage I have quoted.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b

The specimens I submit are united fractures of the third and fifth metacarpals of the same right hand, one of the shaft and one of the base of the fifth, both from right hands, and five of the first, all from the right side.

These are the entire number of these fractures which I have collected, and most remarkable is the fact that they are all of the right side. They show, so far as their evidence is of value, that the bones most frequently the subject of fracture are the first and fifth metacarpals of the right side.

Of greater interest is the fact that in each of the five examples of fracture of the metacarpal bone of the thumb, allowing for shades of difference such as must always exist, the type and character of the fracture is the same—a form and type of fracture not hitherto described in these bones; and if this series be of any value as representing the ordinary injuries, the commonest fracture, certainly the most common of the thumb, possibly of all the bones taken together, is that the characters of which are seen in this specimen, in which least of all have the lines of fracture been masked by changes on the articular surface which corresponds to the trapezium. The fracture passes obliquely (*a b* in woodcut) through the base of the bone, detaching the greater part of the articular facette with that piece of the bone supporting it, which projects into the palm. The amount of displacement in this and all the specimens is trivial, and from clinical observation of the injury it is evident that the fragment displaced is not the smaller, as one might infer from an examination of the isolated specimens of united fractures, but the larger—in fact, to the extent that the irregularity of the surface indicates the metacarpal bone of the thumb undergoes subluxation backwards. In all these specimens the dorsal surface of the bone is free from any implication in the fracture, and this fact, combined with the small amount of displacement which occurs, renders the fracture one extremely liable to escape detection. The importance of a correct diagnosis of this injury is illustrated by a case which I have had for nearly two years under observation. A girl, aged twenty, was thrown from an outside car and fell to the ground, saving herself from graver injury by putting forward her arm; she struck the ball of the thumb against the ground, and at once suffered extreme pain in it. Next morning I saw her at Sir P. Dun's Hospital, when at first sight no injury was apparent beyond the swelling of a bruised and sprained thumb. In handling the ball of the thumb I felt osseous crepitus, and, having my attention so arrested, I was

not long in establishing the diagnosis of this injury, for the dorsal surface of the metacarpal was entire; it projected backwards at the articulation with the carpus, and by reducing it into place crepitus could easily be elicited. So trivial an injury does this appear to be, and the specimens show so little deformity, except in some the signs of arthritis consequent on it, I might fairly be asked what importance attaches to the correct diagnosis. All will admit that a correct diagnosis even in trivial injuries is desirable, but in this case the diagnosis is essential to a correct prognosis, and here lies the importance of the injury. Seeing the value of the movements of the thumb, no injury of it is to be lightly regarded, and this fracture, though it unites readily by bone and with almost inappreciable deformity, renders the thumb for many months lame and useless. In the case I have reported, even now nearly two years after the accident occurring in a young and healthy subject, the hand fails to grasp or lift with certainty any body requiring a wide gape of the thumb—for instance, to lift a tumbler full of water from the table, and this in a case where every care was taken to keep the parts in place and at rest for a proper time.[a]

[a] Since presenting these specimens and the records of this case to the Society, I have had the opportunity of verifying the same details in four other instances—cause, fracture, and result, all similar. I have also added another to the series of museum specimens.—E. H. B., Oct., 1882.