LOCKED MIDDLE FINGER

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By far the commonest cause of “locking” in the finger is stenosing tendovaginitis of the sheaths of flexor tendons as they enter their fibro-osseous canals. The result is the common condition of “trigger” finger. Four other ways in which the finger may get locked have been described:

1. The extensor tendon may slip off the head of the metacarpal bone and come to lie in the interdigital cleft. This can happen in rheumatoid arthritis, and rarely may follow trauma. Legouest (1868) saw one case, Paget (1875) three, and Marsh (1896) four (but as Marsh was Paget’s assistant, and edited Paget’s manuscript, only one of the four may have been his own). Razemon (1930), in a review of the literature, was able to find sixteen traumatic cases (only thirteen, if three of Marsh’s patients had been earlier described by Paget). He was able to add one more of his own. Since, cases have been described by Straus (1940), Mouchet (1942) and Meyran (1951). The extensors to the index and middle fingers were most commonly affected, and in all but one case (Becker 1903) the tendon dislocated to the ulnar side.

2. Allred (1954) described a case in which the capsule of the metacarpophalangeal joint of the index finger split transversely, and the proximal part became caught round the base of the metacarpal head, thereby producing an irreducible block to extension.

3. Flatt (1958) described a case of recurrent locking in the metacarpophalangeal joint of the index finger, from catching of an abnormal sesamoid on the head of the metacarpal.

4. Langenskiöld (1949) described two cases of recurrent locking in the index finger caused by catching of the collateral ligaments on the head of the metacarpal. He pointed out that Poirier (1889), on purely anatomical grounds, thought this mechanism should be a fairly common cause of “trigger” finger.

The literature therefore suggests that, apart from the classical “trigger” finger, locking in the finger is uncommon. For this reason the following five cases are described; all the patients attended the casualty department of one hospital within ten months.

CASE REPORTS

Case 1 — A retired printer’s compositor, aged sixty-seven, was lifting a chair with both hands under the seat when he felt a “click” and a sudden sharp pain in the metacarpophalangeal joint of the right middle finger, and found that he was unable to straighten it. At the time he had the interphalangeal joints extended, but the metacarpophalangeal joints flexed at 90 degrees.

He came to hospital the next day (September 10, 1957). On examination there was a block both to passive and active extension at about 130 degrees in the metacarpophalangeal joint of the right middle finger, with some tenderness round the joint, particularly on the ulnar side. Radiographs (Fig. 1) showed early degenerative changes with an osteophyte on the ulnar side of the head of the metacarpal.

Findings at operation — Under general anaesthesia an attempt was made to manipulate the finger straight, but the block to extension remained unchanged. The metacarpophalangeal joint was then explored from the ulnar side. There were degenerative changes in the joint, the ulnar collateral ligament appeared to have caught in front of a small osteophyte, and this was the cause of the block (Fig. 2). The ligament could not be released, and was therefore divided. At once it became possible to extend the joint fully.

After operation the patient was able to extend the joint almost fully as soon as the sutures were removed, and full flexion was regained within three weeks of operation. Five degrees loss of extension persisted, and was still present when he was last seen seven weeks after the operation (Fig. 3). This patient has since died.
Case 1. Figure 1—Radiograph showing mild degenerative changes in the third metacarpo-phalangeal joint. Figure 2—A drawing, modified from Poirier (1889), to show how, at operation, the ulnar collateral ligament was found to be caught by an osteophyte, making a block to extension. Figure 3—Condition on discharge. There is terminal loss of extension persisting in the third metacarpo-phalangeal joint.

Case 2. Figure 4—Condition on admission—ulnar view. Limitation of extension is present in the middle metacarpo-phalangeal joint. Figure 5—Radiograph, showing no significant abnormality. Figure 6—Condition on discharge. A little limitation of extension persists.
Case 2—The day after the first patient attended (September 11, 1957) a cold-store worker aged forty-seven came to hospital saying that the same morning he and two mates were lifting a two-hundred-pound carcase of beef wrapped in sacking. He was holding the sacking, with the fingers tightly clenched. He felt a sudden "cramp" in the left hand and had to let go. On doing so he found that he was unable to extend the metacarlo-phalangeal joint of the middle finger beyond 130 degrees (Fig. 4). The clinical findings were the same as in the previous case, but the radiograph (Fig. 5) was normal.

Findings at operation—As in Case 1, an attempt was first made to manipulate the joint straight under anaesthesia; this failed, and the joint was explored. In accordance with Aldred's (1954) recommendation an incision in the palmar crease-line was used. No tear in the capsule such as he described was found, but early osteophyte formations were found round the metacarpal head. The block to extension persisted until the knife was slipped round the sides of the metacarpal head and both collateral ligaments were divided. It was not possible through this approach to see the collateral ligaments clearly. As soon as the second ligament was divided full passive extension became possible.

The patient made a rapid recovery, but a few degrees loss of full extension remained (Fig. 6). He was last seen seventeen months after injury.

Case 3—A stoker aged fifty-nine reported on January 31, 1958, stating that, the day before, he was pulling on a "dart" (the long rod used in cleaning boilers) when it suddenly jammed, giving his hands a sharp jolt. He then found that he was unable to extend the metacarlo-phalangeal joint of his left middle finger beyond 120 degrees, though he was able to flex it fully. Clinical examination confirmed that this was the only abnormality (Fig. 7). Radiographs showed degenerative changes in the joints of the hand, including the third metacarlo-phalangeal joint (Fig. 8).

This patient refused to have a general anaesthetic or open operation; so the area was infiltrated with local anaesthetic and an attempt was made to manipulate the joint, without success. He was given a short course of physiotherapy and his progress was observed.

Progress—Six days after the injury the patient was stretching his hand in the physiotherapy department when he felt a sudden pain in the joint, which came out straight with a "snap." From then onwards he regained full movement in the hand, though some swelling and tenderness persisted on the ulnar side of the affected metacarpal head. He left the area three weeks after the injury and a longer follow-up was not possible.

Case 4—A woman of sixty-four reported on May 1, 1958, having been the front seat passenger in a car which was involved in a collision. She said that she struck her right hand against the dashboard and then found that she was unable to straighten the metacarlo-phalangeal joint of the middle finger. She was first seen three days after the accident and was found to have a block both to active and passive extension at 130 degrees (Fig. 9). There were a little swelling and tenderness on the ulnar side of the joint, and radiographs (Fig. 10) showed osteophytic lipping of the head of the third metacarpal, with the suggestion of a fracture through one of the osteophytes on the ulnar side.

Progress—Because of the success with conservative measures in Case 3 it was decided to adopt the same treatment for one week. If, at the end of this time the block to extension was still the same, she
was to be admitted at once for exploration of the joint. However, on May 4, one week after the accident, and only three days after she was first seen, the pain and limitation of movement became much less. When she was seen on May 7 there remained only 10 degrees loss of extension, and the swelling was much less. When she was last seen ten months after the injury there was a little residual thickening on the ulnar side of the metacarpal head and the 10 degrees loss of extension remained (Fig. 11).

Case 5—A printer aged fifty-seven reported on July 14, 1958, with the history that, three days before, he had reached forward to grab an iron lever with his right hand, missed, and struck the back of his right middle finger against the bar. He noticed no immediate ill effects; and, making a second attempt, he was able to grasp the lever normally, but, when he came to relax his grip, he found that he was unable fully to extend the metacarpo-phalangeal joint of the middle finger. This block to extension persisted, though over the next few days he was able to extend his finger a little farther. When he was seen seven days after injury both active and passive extension at the right third metacarpal-phalangeal joint were restricted by 30 degrees. There was a little swelling over the ulnar side of the joint, but very little pain. Radiographs were normal.

Progress—This patient was treated conservatively, and rapidly regained all but 10 degrees of extension. The limitation and some thickening on the ulnar side of the joint persisted for a while, but when last seen, seven months after injury, his finger was clinically normal.

DISCUSSION

Five cases of locking in the metacarpo-phalangeal joint of the middle finger are described. All occurred in middle-aged or elderly people, and in all but the last case evidence of degenerative changes in the metacarpal head was found—in Cases 1 and 2 at operation, and in Cases 3 and 4 by radiography. Muscular contraction against resistance seems to have been the precipitating cause in the first three, and direct violence in Case 4 and probably Case 5.

In the two patients on whom exploration was carried out the block to extension appeared to be caused by catching of the collateral ligament on an osteophyte arising from the metacarpal head. This is the identical mechanism postulated by Poirier in 1889 (Fig. 2) but the basic factor seems to have been the degenerative changes, and it is doubtful if it ever happens in entirely normal joints.

In the three patients treated conservatively, the cause of the block to extension was not known for certain. In Case 3 it was probably the same as in Cases 1 and 2. The nature of the
injury in Cases 4 and 5 differs from that in the other three in that there was a direct blow on the joint, and the force appeared to be one of flexing the fingers against resistance. According to Straus (1940) direct trauma to the back of the flexed joint, damaging the capsule on its radial side, is the usual cause of subluxation of the extensor tendon into the interdigital cleft. In neither of the cases described was the tendon seen to be displaced. In both all the initial pain and bruising were on the ulnar, not the radial, side of the joint, as would be expected were the capsule torn on the radial side to allow the tendon to displace to the ulnar side. Further, in Case 4 the radiographs suggest that an osteophyte on the ulnar side of the metacarpal head was fractured.

It thus seems likely that the same mechanism produced locking in all five patients.

A possible explanation for the involvement only of the ulnar side of the joint is to be found in the work of Landsmeer (1955). He pointed out that the collateral ligaments of the metacarpo-phalangeal joints always differ on the two sides, the ulnar ligament being weaker than the radial, and running more obliquely from the dorsum of the metacarpal head to the palmar aspect of the base of the proximal phalanx.

It is interesting to speculate on why so little attention has been drawn to this condition, which, from this small series, seems fairly common. Perhaps this is because, as the last three cases show, in time the ligament either frees itself or stretches; so that the locking resolves without treatment.

SUMMARY

1. Five cases of a sudden block to extension in the metacarpo-phalangeal joint of the middle finger, in middle-aged patients, are described.
2. A possible explanation is that the ulnar collateral ligament gets caught on an osteophyte on the metacarpal head.

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REFERENCES