LOCKING OF THE METACARPO-PHALANGEAL JOINT 
FROM A LOOSE BODY

Report of a Case

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Triggering of finger joints due to tendon lesions is a well known entity, but locking of the metacarpo-phalangeal joint due to a derangement of the joint or its capsule is uncommon. In 1949 Langenskiöld reported two cases in which the collateral ligaments were catching on the metacarpal head and causing the locking; he noted that this possibility had been mentioned by Poirier in 1889. The same mechanism was responsible in the five cases described by Aston (1960). Goodfellow and Weaver (1961) reported five patients in whom locking was due to osteophytes on the volar aspect of the metacarpal head catching in the anterior part of the capsule and the volar plate; they pointed out that this type of lesion could explain the curious case reported by Allred (1954). Locking from irregularities in the articular surface of the metacarpo-phalangeal joint has been reported by Flatt (1961) and by Dibbell and Field (1967). Other causes are the sesamoid catching on palmar osteophytes (Flatt 1958, Bloom and Bryan 1965), and abnormal bands and membranes within the joint (Bruner 1961, Yamauchi and Kurima 1966).

The following case is presented because it shows yet another cause of locking of the metacarpo-phalangeal joint, namely the presence of a loose body.

FIG. 1
Figure 1—Showing the limitation of flexion.

FIG. 2
Figure 2—Showing the loose fragment in the first metacarpo-phalangeal joint.
CASE REPORT

A woman aged fifty-five years suffered a twisting injury to the right index finger in December 1967. The metacarpo-phalangeal joint remained painful and stiff. When she was first seen four months after the injury she was found to have full extension but could flex to only 35 degrees (Fig. 1). The joint was stable yet swollen and tender. Radiographs at this stage showed slight irregularity of the articular surface of the metacarpal head. Active mobilisation was recommended but the finger showed no recovery after four weeks, and radiographs at the second visit revealed an intra-articular loose body (Fig. 2).

In May 1968 the joint was opened through a transverse incision in the palm and a longitudinal incision on the ulnar side of the fibrous flexor sheath. The loose body presented on the ulnar side of the joint, and its removal allowed full passive movement of the joint. No other abnormality was found in the joint other than slight erosion of the metacarpal head; the origin of the loose body was not apparent. After operation the range of movement at the metacarpo-phalangeal joint improved steadily for six months and a final range of 0-85 degrees was regained.

DISCUSSION

Locking of the metacarpo-phalangeal joint of the fingers has been reported in men and women of all ages, usually in the index or middle finger, the ring and little fingers less often (Table I). The patient usually has loss of approximately 50 degrees of extension of the metacarpo-phalangeal joint with full flexion. They may have a block to full flexion, as described in this paper. Clinical examination of the patient should include attempted flexion and extension of the joint in radial and ulnar deviation, as this often indicates which collateral ligament is involved in locking. Standard antero-posterior and lateral radiographs of the joint may not show all the bony abnormalities of the joint, and oblique views should be taken also. Arthrography may be of use; and in reporting this technique Yamauchi and Kurimura in 1966 suggested the site of the lesion, but their findings were not conclusive.

An analysis of the history, clinical features, radiographic appearances and operation findings in the twenty-one reported cases suggests the following. Patients under fifty, with normal radiographs and no history of trauma, usually have an abnormal band in the joint causing the locking, but in a few the sesamoid bone is trapped. Some patients under fifty have a definite history of trauma before joint locking; the radiographs may show an obvious cause such as a loose body or irregularity of the joint surfaces, but if the radiographs appear normal the cause usually turns out to be an osteophyte on the side of the metacarpal head preventing normal movement of the ulnar collateral ligament. Patients over fifty with locking of the metacarpo-phalangeal joint usually have marked degenerative changes in the joint on radiographic examination. The common cause is a large osteophyte on the anterior surface

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TABLE I

<table>
<thead>
<tr>
<th>Sex of patient</th>
<th>Finger affected</th>
<th>Number of cases</th>
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</thead>
<tbody>
<tr>
<td>Men . 11</td>
<td>Middle</td>
<td>8</td>
</tr>
<tr>
<td>Women . 10</td>
<td>Ring .</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Little .</td>
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of the metacarpal head catching in the capsule and volar plate; this osteophyte can nearly always be seen on the radiographs. Less commonly a large osteophyte cannot be seen on the palmar surface of the metacarpal head and in these patients a lateral osteophyte obstructing collateral ligament motion is found to be the cause.

An appreciation of the likely mechanism of locking is important in the management of the individual case. Manipulation is rarely worth while; if it is too vigorous it damages the capsule or causes an intra-articular fracture (Langenskiöld 1949). In patients over fifty without an obvious large palmar osteophyte on the metacarpal head a period of observation is well worth while, as Aston (1960) has shown. These patients can recover nearly normal function with gradual active mobilisation. In those with an obvious cause on radiography, and in all patients under fifty, operation appears to be the only way to restore full function to the joint. An anterior transverse palmar incision provides the best access, opening the joint by a longitudinal incision in the volar plate to one side of the fibrous flexor sheath. Almost invariably the cause is apparent and the appropriate measures can be taken to restore full movement. Occasionally no cause can be found, and in these patients division of the collateral ligaments may restore full movement to the joint. The ulnar collateral ligament should be divided first and the joint range tested, this ligament being more commonly involved than the radial (Aston 1960). Anatomical differences in the collateral ligaments may be responsible for this (Landsmeer 1955).

SUMMARY

1. Locking of the metacarpo-phalangeal joint from articular derangements is rare.
2. A case due to an intra-articular loose body is described.
3. The literature is reviewed. The commonest cause is catching of the volar capsule or collateral ligaments on osteophytes about the metacarpal head, but intra-articular bands, incongruities of the articular surface and entrapment of the sesamoid have also been described.
4. An analysis of the reported cases suggests the likely cause in the individual patient.
5. Operation is usually required to restore joint motion.

I am grateful to Mr D. W. Lamb for permission to publish this case.

REFERENCES