OPERATION FOR COLLATERAL LIGAMENT RUPTURES OF THE
METACARPOPHALANGEAL JOINTS OF THE FINGERS

JEFFREY M. SCHUBINER, DANIEL P. MASS

From the University of Chicago, USA

Ten cases of complete rupture of the collateral ligaments of the metacarpophalangeal finger joints are reported. The nature of this injury, the pre-operative morbidity and the intra-operative pathology are analysed. In all cases surgery was performed with satisfactory results. Operation is indicated for joint stability, grip and pinch strength, pain control and early functional recovery.

Rupture of a collateral ligament of the metacarpophalangeal joint is rare except in the thumb, where rupture of the ulnar collateral ligament is relatively common among skiers. Stener, in 1962, described a specific derangement in 25 of 39 cases of this thumb injury; he found that the adductor aponeurosis was interposed between the distally avulsed ligament and its insertion into the proximal phalanx. This so-called 'Stener lesion' prevents apposition of the ligament to its insertion and results in failure of anatomical alignment, so that many surgeons advocate operative repair.

Rupture of the metacarpophalangeal collateral ligaments of the other digits also can occur as a result of forced radial or ulnar deviation of the digit. Little has been written about this injury and only a few surgeons have advised operative repair. The purpose of this present article is to describe the nature of this injury, the pre-operative morbidity, the intra-operative pathology and the surgical results in 10 patients.

MATERIALS

Between 1981 and 1986, 10 patients were treated operatively at the University of Chicago Hospitals with rupture of a collateral ligament of a metacarpophalangeal finger joint. All clinically unstable injuries seen during that time are included, but no thumb injuries. The length of time from the initial injury to the operative repair was from one week to 16 weeks, the average being 6.6 weeks. The follow-up ranged from six months to five years, the average being 2.7 years.

All the patients had a definite history of trauma. The most common injury was rupture of the radial collateral ligament of the metacarpophalangeal joint of the little finger, which occurred in four patients. All the patients complained of pain, swelling, and instability of the joint when grasping objects; these symptoms were present initially and persisted until the time of surgery. The patients were examined under a local nerve block with the metacarpophalangeal joint flexed to 90°. When an ulnar or radial force was applied to the involved digit, deviation of more than 40° with no firm end point was found in all patients (Fig. 1). With three of the patients the radiographs showed an avulsion fragment adjacent to the joint and another showed a fleck of bone; the remaining radiographs were normal.

The pathology found at operation in six cases was rupture of the ligament at its distal insertion. In all but two of these cases, small avulsion fragments or flecks of bone were attached to the torn ligament. The ligament and bone were re-approximated with a pull-out suture through a drill hole in the proximal phalanx in all but one case. In two patients the ligament, together with a small piece of bone, was avulsed from the metacarpal. These two patients underwent similar repair with a pull-out suture.

Fig. 1

Before operation 60° ulnar deviation of the metacarpophalangeal joint of the little finger is possible.
One patient had had a previous injury and the ligament could not be used, so a palmaris longus tendon graft was used for repair. In another with an old injury there was no discrete rupture, but the ligament and capsule were fibrotic so, after debridement and excision of the distal end, the ligament was re-attached with a pull-out suture. A third patient had a midsubstance tear which was imbricated and repaired primarily.

There was one unusual case which was similar to the ‘Stener lesion’ of a patient with a gamekeeper’s thumb (Fig. 1). The collateral ligament was torn at its insertion into the proximal phalanx and the accessory collateral ligament was torn at its insertion into the volar plate. The sagittal band was interposed between the torn collateral ligaments and their insertions.

Postoperative care consisted of protected exercises which were begun early.

RESULTS
At follow-up all the patients were free of pain, had no swelling, and no instability of the involved joint. All participated in work and other activities at their pre-injury level within three months of the operation. In particular, patients who had had chronic instability noted subjective improvement of function. Eight of the 10 patients regained full movement of the involved metacarpophalangeal joint and of the interphalangeal joints. One patients lacked 10° of extension and 10° of flexion at the metacarpophalangeal joint, and another had full extension, but lacked 15° of flexion at the metacarpophalangeal joint. All joints were free of pain and stable under forced lateral deviation of the involved digit. There were no operative or postoperative complications.

DISCUSSION
Little has been written on collateral ligament ruptures of the metacarpophalangeal joints of the finger, as distinct from the thumb. Dray, Millender and Nalebuff (1979) reported on the largest series, consisting of six patients with this finger injury; all of them had had chronic pain, swelling, and instability for several weeks before operation. These authors concluded that complete rupture of the collateral ligament with gross instability should be repaired operatively, but that incomplete tears would heal with conservative treatment. Gee and Pho (1982) reported an avulsion fracture at the proximal attachment of the radial collateral ligament of the fifth metacarpophalangeal joint. Surgical repair was decided upon because of gross joint instability. An excellent result was obtained, which the authors ascribed to rigid fixation and immediate rehabilitation.

Green (1983) recommends surgery for this injury if there is a chip fracture that is displaced by more than 2 to 3 mm, or if the fragment involves more than 10% of the articular surface with displacement. Otherwise, he immobilises the finger for three weeks. If conservative treatment over several months is unsuccessful, he recommends surgery. According to Eaton (1971), conservative treatment should be used unless the joint is markedly unstable.

We agree that conservative treatment is indicated unless there is gross instability of the joint. If, however, the joint is unstable and there is no firm end point when a lateral force is applied to the digit, then the collateral ligament has ruptured completely; this is liable to cause symptoms and operation is advisable. In all our cases repair was successful and was followed by early functional recovery.

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REFERENCES