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CONSERVATIVE TREATMENT FOR A MALLET FINGER DEFORMITY

(A review of 50 cases)

SHOBHANA MULAY, NARENDRA PANDYA, A.S. KHULLODKAR

SUMMARY

50 cases of Mallet finger deformity were treated with a small splint restricting the D.I.P. joint. We found the method simple, giving satisfactory results.

(Key Words : Mallet finger, Deformities of Hand.*)*

The hand has been recognised as the symbol of man's power, the outward reflection of his inner mind and the indispensable tool of his inheritance and independent livelihood. The prime functions of the hand are feeling (sensibility) and motion. To accomplish its function, the hand is powered by an intricate system of synergistic and antagonistic muscles acting on a long cantilevered skeletal frame. (Kilgore and Graham 1977)., In correcting disorders of the hand, the focus is always on the restoration and maintenance of the basic functions. Though common, a Mallet finger needs precise treatment for restoration of the basic requirements.

The Mallet, baseball or drop finger results from the loss of continuity of extensor tendon to the distal phalanx at or near its insertion into the distal articular lip. The injury can be caused by the end of the finger being forcibly flexed with the extensor taut or by laceration of the tendon and/or Landsmeer's ligament at the level of the D.I.P. joint. (Heppenstall, 1980)

The Mallet finger injuries include,

(a) Injury to the tendon only.
(b) Avulsion of the tendon from the dorsal cortex with a small piece of distal phalanx attached to the tendon.
(c) Fracture of the dorsal cortex of the distal phalanx with the tendon attached to a large piece of the distal phalanx.

Review of Literature. Different methods of the treament :

1. Smillie (1937) described the plaster technique for correction and immobilisation of the Mallet finger. The plaster cast is applied so that D.I.P. joint is in slight hyperextension and P.I.P. joint is in 60° of flexion.
2. Lewin (1925) described a tubular splint that maintained the D.I.P. and P.I.P. joint in full extension.
3. Pratt (1952) described a technique for internal immobilisation of the Mallet Finger in which a longitudinal 'K' wire was placed across the D.I.P. joint and into the neck of the proximal phalanx with the P.I.P. joint flexed.
4. Numerous splints have been used since 1925 made up of metal, wood, plastic. Majority of the splints are placed on the volar side of the digit. (Green, 1988, Parry, 1977, Hunter, 1978)
5. McFarlane and Hampole (1973) reviewed 50 cases of Mallet finger treated with splinting the distal joint in extension for 6 weeks continuously, followed by 2 weeks night splinting. The results were satisfactory. They further noted that when some component of the extensor mechanism within the digit was torn or divided the tendon ends did not retract and even in untreated injuries scar tissue will bridge the gap. If this scar tissue reaction is minimised by splinting the joint in extension, normal relationship can be restored.

Above interesting references inspired us for the study on conservative methods of treatment.

Meterial and method

The clinical picture of the Mallet finger is inablity to extend the D.I.P. joint, hence the finger remains flexed at the D.I.P. joint as shown in the (Fig. 1). The total impairment produces a flexion deformity of nearly 90° which may be a major functional and cosmetic disability. Left untreated, the few millimeters of proximal migration of the Extensor hood following these injuries may produce an excessive pull of the central slip on the middle phalanx, resulting in hyperextension of the P.I.P. joint.

The main aim of the treatment was to restore active extension at the D.I.P. joint and there by once again establish the hand in its normal form.

In our technique, these 50 cases were treated with a small splint (Fig. 2) applied on volar aspect to hold the distal joint in extension. The hyper-extension of the distal joint is avoided in splinting, because it might impair circulation in these tight tissues and jeopardize healing.

Poly Vinyal Carbonate (a type of plastic) is used to fabricate the splint. The splint is applied on the volar surface of the finger, and held in position with a velcro strap. The Fig. 3 very well illustrates the splinting. The patient is asked to use splint continuously for 6 weeks. The need for constant splinting was emphasized repeatedly to the patient, as removal of the splint and droping of the finger will defeat the therapeutic purpose. This was followed by splinting only at night for 3-4 weeks. The first follow-up photograph was taken after 3 weeks, then at the end of the 4th week, and finaly at the end of 6th week. At the end of 6 weeks, hand functions were tested.

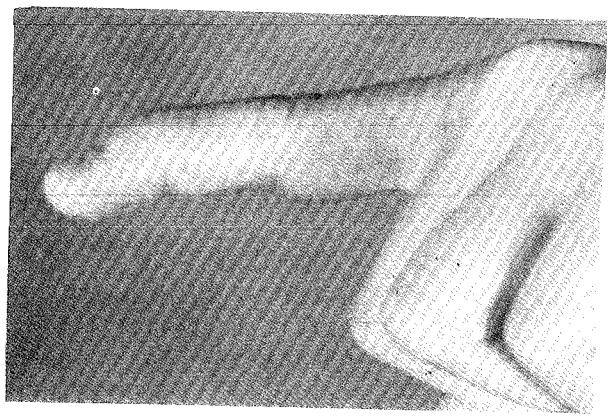

Fig. 1 Photograph on the day of injury

Observation and Discussion

In our study of 50 cases, 39 were males, 10 females, and one child. It was observed that the Index finger involvment was less than other fingers.

Table-I

Showing the incidence of the Mallet finger deformity

Finger Involved	No. of cases
Index finger	8
Middle finger	14
Ring finger	14
Little finger	14

Table-II

Showing the Age Group

Age	No. of cases
15-30 Years	25
30-40 Years	14
Above 45 Years	10

A 4 year old male child showing Mallet finger was the only child in our study.

8 cases had fracture along with extensor tendon injury.

26 patients carried out the complete treatment as prescribed.

12 cases attended only once.

12 patients did not come for follow-up at all. Only 2 out of 10 female patients completed the treatment.

One of the main reason for this, high drop out rate was the acceptance, on the part of the patient, of the minor residual deformity.

Those patients who attended only once could extend the D.I.P. joint (Fig. 4) actively and hence felt that there was no need for further splinting and probably discontinued the treatment. We were unable to trace these patients.

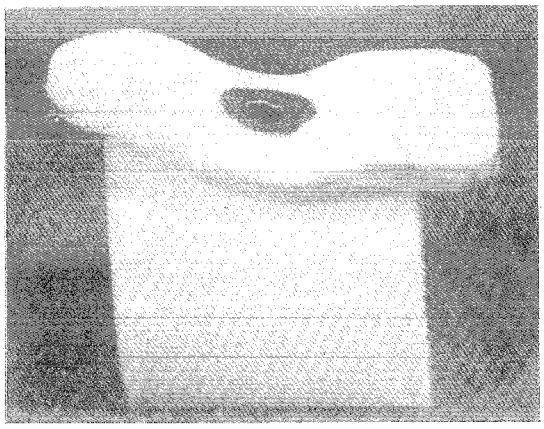

Fig. 2 Splint used for the treatment

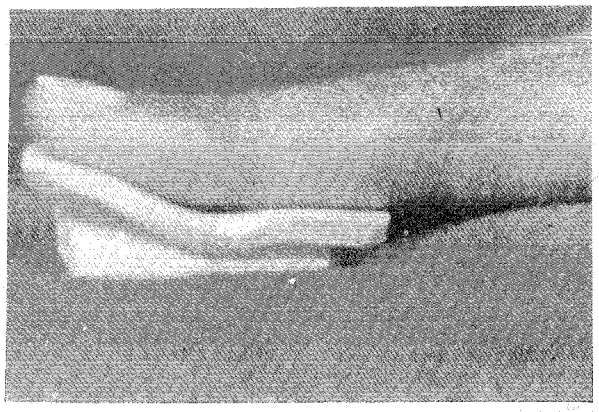

Fig. 3 Position of the finger with the splint

Fig. 4 1st Follow-up photograph at the end of 3rd week

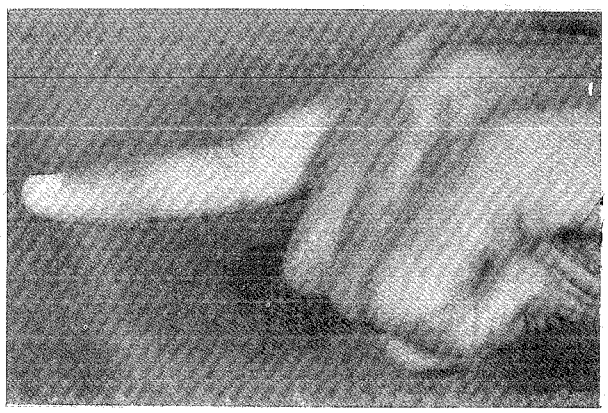

Fig. 5 Final photograph at the end of 6th week

26 patients who completed the treatment achieved full extension of the D.I.P. joint and there by normal hand functions. (Fig. 5).

Conclusion

A simple, volar splint made of P.V.C. plastic with a velcro strap was used to treat Mallet finger deformity in 50 cases. Splinting the involved finger with P.I.P. joint in flexion and D.I.P. joint in extension can cause stiffness at P.I.P. joint. This was over come by this small splint restricting the D.I.P. joint. Patients can lead normal routine during treatment period as the splint is small. This splint is very easy to prepare, can be done in half an hour and the treatment can be started immediately for satisfactory results.

The splint appears safe, conservative and time-tested method which eliminates all complications.

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