Conservative Management for Mallet Finger in Jordanians

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Abstract

This is a retrospective study of twenty-seven patients with mallet finger deformity. Irrespective of the subluxation or the size of the bony fragment all were treated conservatively in a stack splint for a continuous period of 8 weeks followed by 2 weeks of night splinting. The results according to Brown and Abouna were eleven successes, nine had improved and five failed. Fourteen had an extension deficit of six degrees and more. Few suffered skin complications but they improved with time.

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Keywords

Mallet finger, Proximal Interphalangeal Joint (PIP), Distal Interphalangeal Joint (DIP).

Introduction

Mallet finger deformity is the loss of active extension at the Distal Interphalangeal joint (DIP) and tightening of the extensor mechanism over the Proximal Interphalangeal joint (PIP) leading to a degree of swan neck deformity with laxity of the volar plate.[1] Mallet finger was first described in 1880 by Neil Ford Jones. It is the result of detachment of the extensor tendon mechanism from the base of the distal phalanx with or without an avulsion fracture[2,3] and tightening of the extensor mechanism at Proximal Interphalangeal joint (PIP). There is a big controversy concerning its management; conservative versus operative.

The operative treatment is plagued with complications while conservative treatment by splinting in hyper-extension mode of the (DIP) is not without problems. [4- 12]

Materials & Methods:

During the period between 1999- 2003, twenty-seven patients complaining of closed mallet deformity of the finger due to injury were treated by stack splint at Jordan University Hospital. There were sixteen males and eleven females; the age range was 11-58 years. Age range for females was 14-58 years, whereas the age range for males was 11-52 years. The treatment was with stack splint with the (DIP) at 5^{o} of hyperextension and (PIP) was free to mobilize.

All injuries were due to blunt trauma with severe hand fractures and only 2 of them had a degree of subluxation with no dislocation. All patients presented with the mallet deformity had an extension lag of at least 10^{o}. The mean delay between the injury and presentation was 1-3 weeks.

The following criteria were followed for application as instructed in the hand clinic:

1) Splint size should fit snuggly to preserve reduction.
2) Surgeon should show the patient how to care for the splint at intervals without allowing any flexion of DIP and loss of reduction.
3) Splint was kept on and maintained continuously on for an initial eight week period and in some cases for two extra weeks.
4) A night splint was worn for two weeks.
5) The patient is allowed to go to work while being treated. The splint should be worn when involved or is likely to be involved

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The non-dominant hand was affected in 10 patients. The lesions in 9 patients (8 males, 1 female) affected the middle finger (5 left hand and 4 right hand). The ring finger was affected in 8 (3 males, 5 females) patients (5 right and 3 left). The little finger was affected in 7 (4 males, 3 females) patients (5 right and 2 left). The index finger was affected in 3 (3 females) patients (3 left). Six cases were caused by sports. Nine occurred at work, 9 at home and causes were unknown in 3.

Results

The results of the treatment were assessed according to the criterion laid by Brown and Abouna in (1968) and are as follows:[6]

1) Success: Extension Loss 0^0 -5^0, No stiffness, normal active flexion & extension.
2) Improved: Extension Loss 6^0 -15^0, No stiffness, normal flexion
3) Failure: Extension Loss > 15^0 , Stiffness or impaired flexion

At the end of a 5 year period, 27 patients with mallet finger were available for follow up. There were 27 patients – 17 males, 10 females. Twelve were a success, 10 had improved and 5 failed.

The dominant side improved more than the non- dominant one and the middle finger had the best results. Male patients' improved more than female ones. The failures were related to the subluxed and fractured joint line as the pain and cold intolerance prevailed. As for the delay in commencing treatment, which was three weeks in some cases, it did not make a difference.

Discussion

An untreated mallet finger injury is painful. The digit becomes hooked and eventually develops a swan-neck deformity due to compensatory hyperextension at the PIP joint.[1,8,9,13] Conservative management aims to keep the DIP joint in extension to allow healing of the extensor mechanism to the distal phalanx.[1,2,3,6]

There is a debate as to whether the PIP joint should be maintained in flexion since detachment of the extensor mechanism from the distal phalanx tends to concentrate extensor forces over the PIP joint. Evans and Weightman emphasized the importance of holding the PIP joint flexed and the DIP joint extended to relax the lateral bands of the extensor mechanism and to allow approximation of the detached extensor tendon. Three of our patients developed swan neck deformity, 2 of which improved with time. A few of them complained of cold intolerance in the winter or if working near freezers, 2 of them had to wear fur gloves in winter.

Complications during conservative treatments are infrequent, benign in most cases are related to the skin.[4,5,14-17] A persistent extension deficit of approximately 10^o has been reported after conservative treatment in 40% to 70% of patients, fourteen of our patients have an extension loss of 6^o or more. [6,11] Operative treatment particularly for Mallet fractures with joint involvement had yielded disappointing results.[3,12-14,18-20] Irrespective of the operation used the complications remain high. Stern and Kastrup reported a 53% incidence of complications after operation. Many of these patients still had problems at a mean follow up of 38 months. Wehbe and Schnider concluded that most mallet fractures can be treated without operation, ignoring joint subluxation and the size or displacement of the bony fragment as we have elected to treat.

The residual extension deficit and reduced arc of flexion may not be important. Pulvertaft[7] noted that 60% of mallet fingers had satisfactory results after splintage and that a further 20% would improve sufficiently in the course of time.[3]

Conclusion

Most, if not all, mallet fingers should be treated conservatively ignoring the joint subluxation and the size or the degree of the displacement of the bony fragment and should be worn continuously for an initial period of eight weeks with two weeks extra of night splinting.

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المعالجة التحفظية للإصبع المطرقة عند الأردنيين – دراسة مستقبلية

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الملخص:

إن أذية الإصبع المطرقة ناتجة عن فقدان البسط الفاعل للمفصل بين السلامي البعيد للأصابع وكذلك الشد الناتج في جهاز البسط الفاعل حول المفصل بين السلامي القريب وارتخاء الصفيحة الراحية مما يؤدي الى تشوه يشابه عنق الأوزة شكلاً.

لقد كان نيل فورد جونز أول من وصف هذه الأذية عام 1880، وهي ناتجة عن انفصال وتر البسط الفاعل عن قاعدة السلامي البعيد بكسر اقتلاعي أو بدونه، وشد ناتج عن ذلك في جهاز البسط الفاعل عن المفصل بين السلامي القريب وهناك جدال وخلاف محتدم على طرق المعالجة، تحفظياً عن طريق التثبيت للمفصل السلامي البعيد بجبيرة بلاستيكية، بوضع البسط المفرط للمفصل بين السلامي البعيد، وهذه الطريقة لا تخلو من المشاكل وكذلك المعالجة الجراحية وهي محفوفة بالمخاطر والمضاعفات.