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Original Article

Osteosynthesis of mallet finger using plate and screws: evaluation of 25 patients☆

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ABSTRACT

Objectives: To evaluate the results from surgical treatment of patients with mallet finger injury using a hook plate and screw.
Methods: Twenty-five patients (19 males and six females) between the ages of 20 and 35 years were analyzed between May 2008 and December 2012. They were evaluated in accordance with Crawford's criteria and the mean follow-up was 18 months.
Results: The results from 10 patients (40%) were excellent and from 15 (60%), good. Twenty-one patients (84%) reported no pain, 18 months after the operation. There was no limitation to range of motion in 14 cases (56%), limitation of extension in seven (28%) and limitation of flexion in four (16%).
Conclusion: Surgical treatment by means of open reduction and internal fixation using a hook plate and screw proved to be an excellent option for treating mallet finger fractures and was considered to be a safe and effective method.

Osteossíntese do dedo em martelo com placa e parafuso: avaliação de 25 pacientes

Palavras-chave:
Articulação interfalangeana distal
Falanges dos dedos da mão
Fraturas ósseas
Dedo em martelo
Osteossínteses

RESUMO

Objetivo: Avaliar os resultados do tratamento cirúrgico de pacientes com lesão de dedo em martelo com o uso de placa-gancho e parafuso.
Métodos: Foram analisados 25 pacientes entre 20 e 35 anos, 19 do sexo masculino e seis do feminino, de maio de 2008 a dezembro de 2012. Os pacientes foram submetidos à avaliação de acordo com os critérios de Crawford e o acompanhamento médio foi de 18 meses.
Resultados: Os resultados obtidos foram excelentes em 10 pacientes (40%) e bons em 15 (60%); 21 pacientes (84%) não referiram dor no 18° mês de pós-operatório. Foi verificada ausência de limitação da amplitude de movimento em 14 casos (56%), limitação da extensão em sete (28%) e limitação da flexão em quatro (16%).

☆ Study conducted at the Hospital Ifor, São Bernardo do Campo, SP, Brazil.

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Conclusão: O tratamento cirúrgico com redução aberta e fixação interna com placa-gancho e parafuso demonstrou ser uma ótima opção de tratamento nas fraturas em martelo e é considerado um método seguro e eficaz.

Introduction

The mallet finger deformity with bone involvement is determined by an intra-articular fracture of the dorsal lip of the distal phalanx, in which the traumatic mechanism is an axial load on the extended distal interphalangeal (DIP) joint, as occurs, for example, in sport injuries.[1]

The fracture may involve a large area of the articular surface and may sometimes also be associated with volar subluxation of the distal phalanx. In such cases, surgery is usually indicated, due to the inability to achieve or maintain an appropriate reduction without directly addressing the fracture focus.[2]

The treatment options for this type of injury may involve indirect fracture reduction with stabilization that could be achieved by immobilization or even by surgical fixation with Kirschner wires, percutaneous pins, absorbable devices, screws and other methods. Although the results of conservative treatment with immobilization splints apparently leads to good results, an argument among those who defend this method is the risk of complications involving surgical techniques, such as infection, nail deformity, osteomyelitis, hypertrophic scar, synthesis material migration, recurrent subluxation, and bone fragment fracture in the attempt of osteosynthesis, among others.[3]

Some authors defend surgical therapy, especially when there is involvement of more than one-third of the articular surface of the distal phalanx or DIP joint subluxation.[4] The need for anatomical reduction is also fundamental in these cases. Also with regard to surgical treatment, there are several techniques and devices that aim to facilitate the implementation of osteosynthesis and also determine better future outcomes. Among the articles that demonstrate the efficacy of surgical intervention, some used direct or indirect reduction, which differences are related to the stabilization systems for these injuries. The literature describes Kirschner wires fixation in various configurations,[5,6] pull-out suture with transarticular fixation,[2] tension band,[7] hook plates, sutures, and miniscrews.[8]

This study aimed to demonstrate the results of surgical treatment of mallet finger using hook-plate and screws, assessing its effectiveness.

Material and methods

This study was approved by the Research Ethics Committee under the No. CEP-786.101. The study consisted of a review of 25 patients who underwent surgical treatment between May 2008 and December 2012. Of these, 19 were male and six were female, aged between 20 and 35 years.

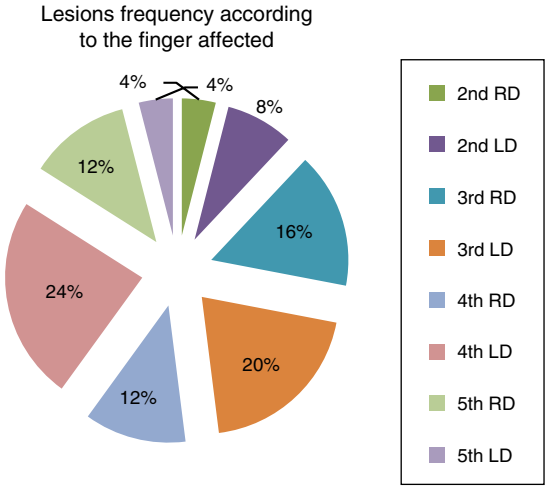

Fig. 1 – Distribution of frequency of occurrence of injuries, considering the affected finger.

Of the 25 patients, 17 (68%) had the injury in the dominant hand, while eight (32%) had it in the non-dominant hand.

Six patients (24%) had involvement of the fourth left digit (LD); five patients (20%), of the third LD; four patients (16%), of the third right digit (RD); three patients (12%), of the fourth RD; three patients (12%), of the fifth RD; two patients (8%), of the second LD; one patient (4%), of the second RD; and one patient (4%) of the fifth LD, as shown in Fig. 1.

The inclusion criteria comprised patients of both genders with history of acute traumatic injury in the 15 previous days and without surgical intervention; without previous injury in the affected finger; without previous or current inflammatory disease, such as rheumatoid arthritis, or degenerative disease of the fingers; and signing the Free and Informed Consent Form. Only those categorized as type C2 according to the Albertoni classification[9] were included.

Surgical treatment was indicated for patients with an avulsed bone component corresponding to one-third of the articular surface of the distal phalanx, evidenced on a finger lateral view radiograph (Fig. 2) or when volar subluxation of the distal phalanx was observed during physical examination.

The study excluded patients who had undergone any previous treatment in the affected finger, including those who failed to non-surgical treatments. Patients who had contralateral finger involvement were also not selected, as this segment would serve as a comparative model in the postoperative evaluation.